

ARCHAEOLOGICAL CONSTRAINTS STUDY
for the
UNIVERSITY OF CALIFORNIA, SAN DIEGO
UNIVERSITY HOUSE

Prepared for



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1.0 INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

This study describes the results of archaeological archival research and field surveys at the University House, located on La Jolla Farms Road and owned by the University of California, San Diego (Figures 1 and 2). This study was overseen by Dr. Susan Hector of ASM Affiliates and reflects her research and recommendations.

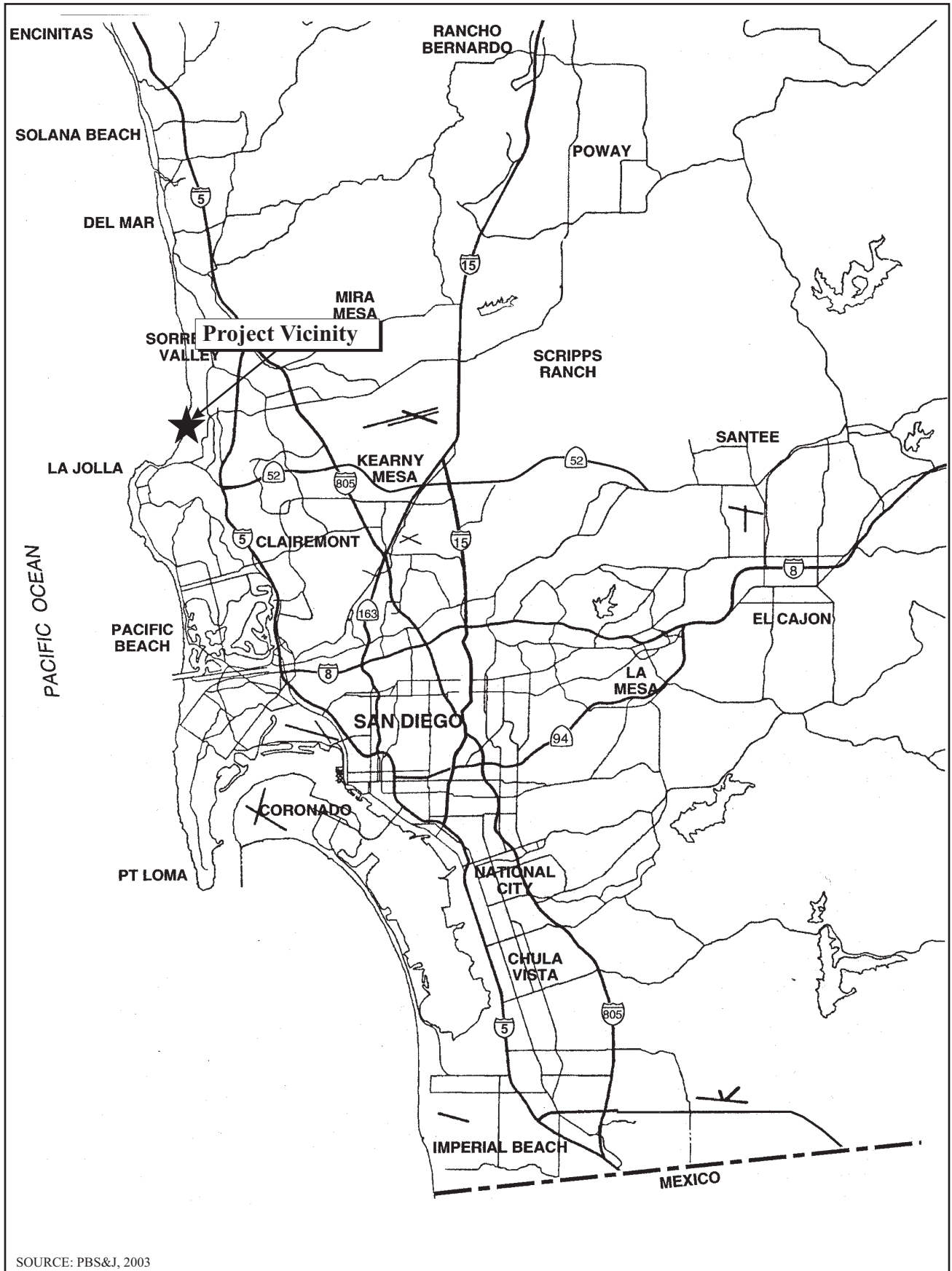
1.2 SUMMARY

Preliminary studies were undertaken by ASM Affiliates to gather information about the known archaeological site on the property. These included research on previous studies, documents about the neighboring residence, research at the San Diego Museum of Man, an archaeological survey by ASM personnel, and a ground penetrating radar (GPR) study by Southwest Geophysics, Inc. No subsurface exploration was done, and the ground surface was not disturbed by any of the research or survey methods.

The project area has long been known as the location of archaeological site SDM-W-12. The site was recorded in the 1920s by the San Diego Museum of Man (SDMM) as containing two locations of archaeological materials: Locus A and Locus B. Human burials have been removed from both locations. Locus B has been largely destroyed or buried by the construction of a house offsite and adjacent to the University House. Locus A still exists as an archaeological site, potentially with human burials, within the University House property. There may be components of this site within other surrounding properties. In addition, several other sites in the vicinity are known to contain human burials. Archaeologists have long known that the mesa is rich in cultural deposits and archaeological sites.

Forty-three anomalies were found as a result of the GPR study. Thirty-six of these had characteristics that could indicate human burials or other archaeological features. Additional studies and testing are recommended to evaluate the integrity of the cultural resources within the project area and determine the site boundaries prior to commencement of project construction.

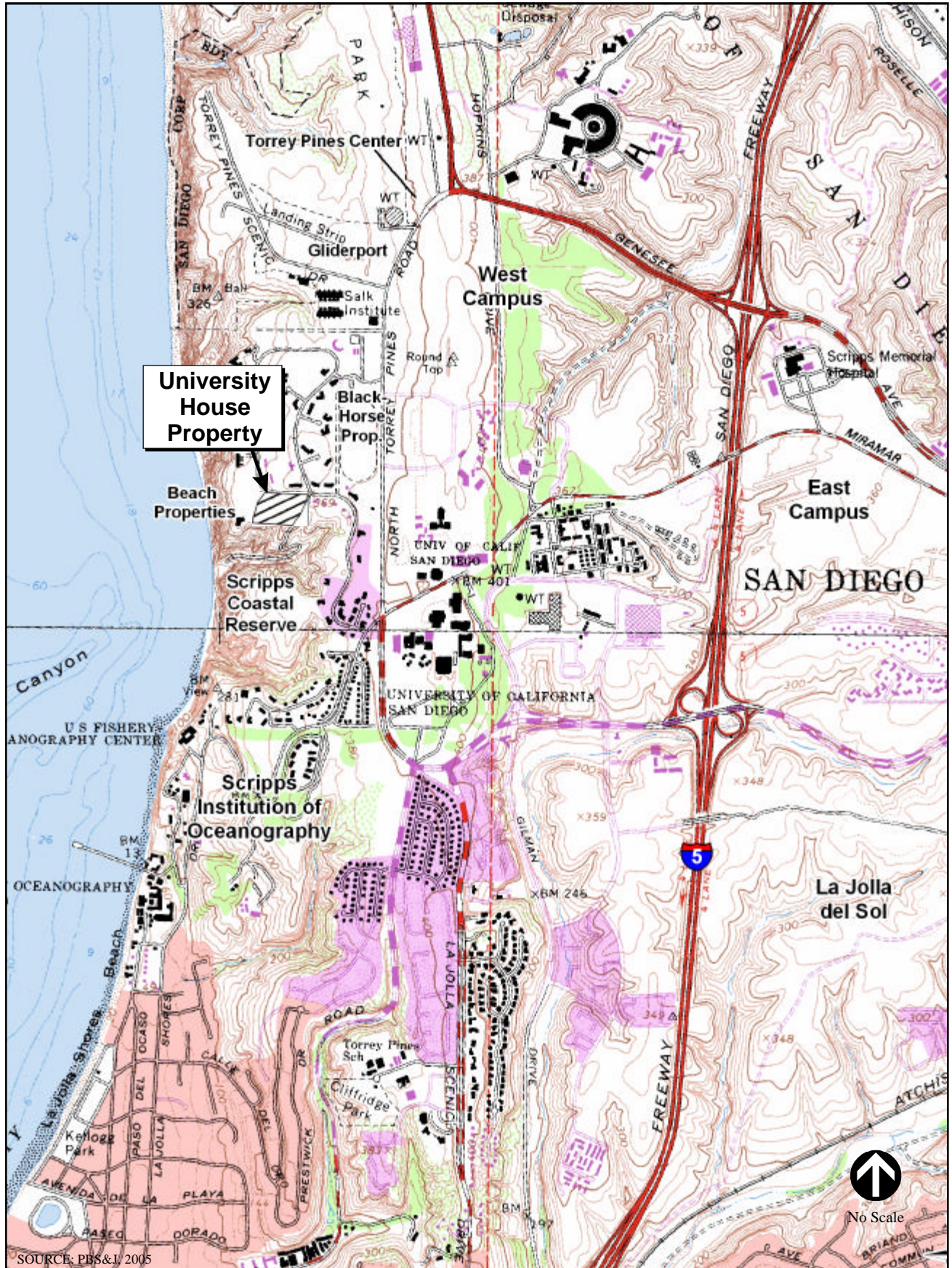
There are several strategies available to proceed with the project, varying from abandoning the project to providing sterile dirt to cap the existing archaeological site.



SOURCE: PBS&J, 2003

PROJECT VICINITY

FIGURE 1



PROJECT LOCATION

FIGURE 2

2.0 EXISTING CONDITIONS

The property currently contains one structure, formerly used as a private residence with public space for conducting official university business. The property is landscaped with turf and ornamental plants, and features a swimming pool.

2.1 PREVIOUS ARCHAEOLOGICAL STUDIES AT UNIVERSITY HOUSE

UCSD provided copies of several previous studies that have been conducted within the project area. These are summarized below.

Ike et al. (1979) article

Circa 1936, Malcolm Rogers of the SDMM found a skeleton eroding out of the midden exposed on the cliff face of SDM-W-12 (SDI-4669). George Carter excavated the skeleton, and found four whole “killed” metates and other ground stone fragments with the burial. The skeleton was dated to 8,300 years ago.

Hanna (1979, 1980) RECON reports

Dr. Jason Smith excavated at SDM-W-12 in July and August of 1976; his affiliation was CSU Northridge. Darcy Ike supervised the fieldwork, and Gail Kennedy of UCLA analyzed the human bone. Dr. Jeffrey Bada and Dr. Pat Masters of UCSD were involved in the project. The project found evidence of occupation from the Archaic through the Late Prehistoric periods. Smith’s excavations were restricted to the southern margin of Locus A. The location of the material collected by Dr. Smith is not known.

The area surrounding the William H. Black home was where the 1976 survey and excavation took place. At that time, the site was recorded as SDI-4669. The 1976 site form states that 35 percent of the site has been excavated, and 65 percent is unexcavated. Construction of the Black home removed the upper portions of the cultural deposits in the south-central portion of Locus A. Landscaping around the house involved topographic recontouring which may have spread cultural material from Locus A into areas beyond the original site boundaries. Grading and road construction north of the house have impacted the northern half of Locus A. Locus B is located on the lot west of the Black home. Hanna felt that the remaining deposit around the chancellor’s house was “sizable”. Hanna reviewed Rogers’ notes (1929: 18-20). Rogers observed that the midden had been farmed, and that rocks had been removed for farming. Rogers excavated a 25-foot trench 2 feet 6 inches deep to bedrock, and the midden soil had been worked by cultivation. Rogers noted that the deepest burial at Locus A was at a depth of six feet. Precise trench and burial locations were not identified by Rogers (according to Hanna). Burials were all flexed on the right side and all were isolated - there was no concentration of burials or a “cemetery”. Rogers may have concentrated his work near the cliff face.

In the 1940s, George Carter of the Museum of Man watched the site area for newly eroding burials. H.T. Cain worked on excavations with Carter in 1947 and 1948. In 1947, he removed another burial from the cliff edge. There were fragments of shell and flakes in the burial pit. The grave pit was dug into the hard pan. Carter stated that other burials were removed by Carr Tuthill and Jim Moriarty while they were at Scripps.

Isolated burials occur within the midden deposit. An article in the San Diego Union Tribune in 1950 described a burial removed during patio construction at the Black house. The Museum of Man (Spencer Rogers) removed it.

Hanna Miscellaneous notes from 1980 (pages do not have numbers or a reference)

SDCAS excavated one posthole at W-12. Hanna refers to this as the McElory (sic) site. This was in early 1977. Hanna states that additional work was undertaken by RECON in 1979, but the information Dr. Hector was provided does not state where the work took place. RECON excavated seven postholes, apparently near a tennis court as shown on a map that was not available. This may be site 9S, not W-12.

Gallegos et al. (1989) ERCE report

The site SDM-W-12/SDI-4669 is also known as SDI-201 (Treganza site form). “Numerous” burials have been removed from this site. There is shell present on the surface around the landscaping at the Chancellor’s house.

Kyle (2004) report

This summary document recommended preservation, and consultation with an archaeologist during any proposals to develop the area.

2.2 MITIGATED NEGATIVE DECLARATION FOR THE ADJACENT PROPERTY

In 1993, an environmental document was prepared for a project at 9650 La Jolla Farms Road, adjacent to and west of the University House property. The proposed project included the demolition of an existing structure and construction of a single-family residence. Most of Locus B of the site is within the 9650 La Jolla Farms Road property. There is an elevation difference between that property and the University House property, with the neighboring property situated at a lower level.

The portion of SDM-W-12 within the adjacent property was tested for significance, and several burials were found. At least six burials were removed from the property (Biberman 1995). The burials were dated at approximately 7,800 years before the present. The environmental document required mitigation in the form of data recovery up to the excavation of a 15 percent sample of the site. Areas not proposed for development would be capped, and construction in the capped areas would be designed to avoid impacts to the site. Archaeological monitoring was required during construction. Ultimately, the house was built on top of the archaeological site with design measures incorporated to minimize impacts.

2.3 ARCHIVAL AND FIELD STUDIES

Archival studies at the San Diego Museum of Man were also conducted. In addition, field studies in the form of an archaeological survey and GPR studies were performed.

2.3.1 RESEARCH CONDUCTED AT THE SAN DIEGO MUSEUM OF MAN

On February 4, 2005, Dr. Hector conducted research at the San Diego Museum of Man. She had previously interviewed Rose Tyson, curator of physical anthropology, on January 26, 2005. Ms. Tyson indicated that the Museum still holds some of the burials from the site in their collections. She also stated that there is one burial from the site at the Smithsonian Institution. There are two groups of files at the Museum pertaining to the site, called SDM-W-12, which are discussed below.

Museum of Man site files for SDM-W-12

The San Diego Museum of Man began work on site SDM-W-12 in 1929. The site form stated that the south canyon “has always had many washed out burials in it.” Artifacts were removed from Locus A by farmers and tossed into the canyon. The deepest burial recovered by the Museum was at 6 feet below ground surface. One of the burials from Locus B had four whole metates and five metate fragments. A burial was taken from Locus A in 1947 by George Carter. In summary, four burials were removed from Locus B, seven from Locus A, and three others were removed by the Museum with no provenience provided. The site file has a map that shows the burials as they were removed from along the face of the cliff, including where the University House is now located (Locus A). In 1949, two more burials were removed from the site. The form states that in 1950 a burial was found in the patio area of the “new house.” In all, 17 burials are noted as having been removed from the site by the Museum or its staff.

Malcolm Rogers’ notebook for the western part of San Diego County

At SDM-W-12B, a burial was found flexed on the side. It was excavated into the hardpan 48 inches from the surface. The notebook has a sketch map of the two burials removed in 1949. They were found eight feet apart, two feet below the surface. The sketch shows the burials removed from trenches excavated near a pipeline. There are also two undated photographs taken during archaeological investigations at the site, which were useful in locating where investigations took place.

2.3.2 ARCHAEOLOGICAL FIELD SURVEY

Dr. Susan Hector and Ken Moslak of ASM Affiliates conducted a detailed archaeological survey of the project area on February 22, 2005. All areas not covered by structures, lawn, or landscaping were examined for any traces of cultural materials. Shell fragments were identified along the cliff edge below the pool (weathered clam shell, mussel shell) and a fine-grained metavolcanic flake was observed in this area. This area appeared to contain midden soil. A mano was found on the south side of the property, near the edge of the house.

UCSD Chancellor House staff indicated that they heard a story that the adobes used to build the house and walls were made from materials found at the site. A photograph shows adobe blocks

piled in the front yard. However, Dr. Hector closely examined the adobes used to build the walls in the front yard and they appear to be made from granitic soils. This is not the type of soil present on the property. The geophysicists agreed that it was unlikely that the soil onsite was used to make the adobes.

In summary, except for the cultural materials found near the edge of the cliff, no trace of the archaeological site was found. This is probably because any remaining cultural material has been buried under topsoil and landscaping. It is likely that site SDM-W-12 is present within the project area as a buried site. The site is considered significant, however, its contents are only partially known.

2.3.3 GROUND PENETRATING RADAR (GPR) SURVEY RESULTS

A non-intrusive ground penetrating radar study was undertaken of the property to better determine whether there are subsurface anomalies that could represent prehistoric burials on the property. Southwest Geophysics was engaged to conduct this study. Their report can be found as Appendix A of this study. The following summarizes the methods and results of their study.

Southwest Geophysics, Inc., performed surface surveys using a 400 MHz transducer to delineate the locations of disturbed ground or buried objects characteristic of gravesites. The machine rolls and slides over the surface of the ground, and does not physically disturb the ground surface. The profiles were completed on a one-meter grid system established on the University House property.

The company also performed an electromagnetic (EM) survey of the property. This equipment is used on the surface only, and does not disturb the ground. The EM survey was designed to identify subsurface metal objects such as pipes and reinforced structures. Completion of the EM survey helps the GPR operator locate modern disturbance associated with utilities, to distinguish this type of disturbance from burial sites.

Buried utilities were found throughout the project area. Many of these were irrigation lines. Forty-three GPR anomalies were identified within the project area, to a depth of 1.5 meters. Several of these are very large and may be the result of ground disturbance from construction of the house. Others may be the remains of archaeological excavation trenches. A number of the smaller areas of disturbance may represent gravesites or other features, such as prehistoric hearths, artifact concentrations, or house pits.

The Southwest Geophysics report concluded that, of the 43 subsurface anomalies identified, Anomalies 1 through 17, and 20 through 39 represent the most significant candidates for archaeological features such as burials (Figure 3). Anomalies 1 through 17 are located mostly east of the entry driveway. Anomalies 20 through 39 are located in the central and western portion of the property. The area directly in front of the existing house contains anomalies that are most likely the result of construction activities.

Figure 3. Candidate Subsurface Anomalies

Confidential Information

**Available for review by qualified individuals at the
UCSD Physical Planning Office**

The GPR study could not assess the potential for burials located under the house. Presumably, construction of the house resulted in the disturbance and removal of soil from its footprint to some unknown depth. In 1950, a burial was removed from the patio of the house as it was under construction. It is unknown whether additional burials are located underneath the existing house.

3.0 ALTERNATE ARCHAEOLOGY STRATEGIES

Archaeological site SDM-W-12 has been recorded on the University House property. This site contains archaeological materials (artifacts, shell, and midden) and human burials. The University considers the site to be significant under CEQA, however, site boundaries have never been precisely identified, nor is the integrity of the site known. Farming, construction, and landscaping have probably disturbed the site. Significant and important components of the archaeological site may still be present.

The GPR studies indicated the presence of thirty-six anomalies that could represent human burials. These anomalies could also be other archaeological features associated with site SDM-W-12, such as hearths, artifact concentrations, or other features. The sensitivity of Native American burials cannot be overstated. These remains are considered to be the most significant element of cultural heritage by Native American people.

There are alternative ways to proceed given the information known at the present time. Table 1 identifies five strategies and the corresponding advantages and disadvantages associated with each strategy. These strategies range from no project to cultural resources monitoring during construction to total avoidance of all resources.

In summary, this property has a high potential for burials to be present. Every effort should be taken to avoid impacts to human burials and associated artifacts and features.

Table 1. Advantages and Disadvantages of Potential Strategies

Strategy	Advantage	Disadvantage
<p>1. No Project</p>	<ul style="list-style-type: none"> This strategy would avoid potential impacts to burials and archaeological materials. 	<ul style="list-style-type: none"> No development or improvements to the property would occur.
<p>2. No Further Action</p> <ul style="list-style-type: none"> Take no further actions regarding the cultural resources, except for monitoring during construction. 	<ul style="list-style-type: none"> Project planning and implementation would proceed. 	<ul style="list-style-type: none"> The integrity and extent of cultural resources (archaeological deposits associated with SDM-W-12) on the project site is unknown. Because the site is considered significant, monitoring will not be considered adequate mitigation by the State Historic Preservation Officer (SHPO) when his office reviews the project CEQA document. If burials are discovered, the project would be halted during grading, causing delays and increased costs.
<p>3. Cap The Project Site</p> <ul style="list-style-type: none"> Cap the proposed construction site with non-cultural soils, so that foundations, footings, and utilities would be placed entirely within the cap or fill layer. Engineering would have to provide confidence that no excavations into the original ground surface would occur. 	<ul style="list-style-type: none"> This strategy would avoid potential impacts to burials and archaeological materials. Project planning and implementation would proceed. Native Americans prefer no impacts to burials. 	<ul style="list-style-type: none"> The integrity of the cultural resources and site boundaries would still be unknown, which may be an issue for the SHPO when his office reviews the project CEQA document.
<p>4. Controlled Test Excavation in Development Area</p> <ul style="list-style-type: none"> Conduct controlled test excavation in areas proposed for development where the GPR identified anomalies, as well as additional testing in selected other locations that would be disturbed by construction but where the GPR did not identify anomalies. Obtain a pre-excavation agreement that provides for Native American monitoring during testing. 	<ul style="list-style-type: none"> The anomalies would be identified, and other areas would be explored to find significant cultural resources. This information could be used to avoid adverse impacts to cultural resources through a more sensitive project design, such as constructing the new residence on pilings or on a “floating” foundation. This approach would satisfy the concerns of the SHPO when they review the project CEQA document. Unlikely that the project would be delayed by Native American issues during construction. 	<ul style="list-style-type: none"> The University would commit to the time and cost of these test excavations. Testing may not result in mitigation if an adequate sample of the site within the impact area was not excavated.

Table 1. Continued

Strategy	Advantage	Disadvantage
<p>5. Excavate Entirely Those Areas Where the Proposed Project Would Impact the Ground Surface</p> <ul style="list-style-type: none"> • Conduct archaeology excavations in all areas proposed for development that would impact the ground surface. • Provide Native American monitoring during excavation activities and obtain a pre-excavation agreement. 	<ul style="list-style-type: none"> • All cultural materials within the disturbance area would be identified and removed unless burials are discovered. In that case, consider project design modifications to avoid burials. • Highly unlikely that the project would be delayed by Native American issues during construction. 	<ul style="list-style-type: none"> • The University would commit to the time and cost of this excavation.

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APPENDIX A
GEOPHYSICAL EVALUATION
UNIVERSITY HOUSE

**GEOPHYSICAL EVALUATION
UNIVERSITY HOUSE
9630 LA JOLLA FARMS ROAD
LA JOLLA, CALIFORNIA**

PREPARED FOR:
ASM Affiliates, Inc.
2034 Corte del Nogal
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June 28, 2005
Project No. 105013

June 28, 2005
Project No. 105013

Ms. Susan Hector, Ph.D.
ASM Affiliates, Inc.
2034 Corte del Nogal
Carlsbad, California 92009

Subject: Geophysical Evaluation
University House
9630 La Jolla Farms Road
La Jolla, California

Dear Dr. Hector:


In accordance with your authorization, we are pleased to submit this report pertaining to our geophysical evaluation for the University House property located at 9630 La Jolla Farms Road in La Jolla, California. The purpose of our evaluation was to delineate potential archaeological features at the site. This report presents our survey methodology, equipment used, analysis, and findings from our study.

We appreciate the opportunity to be of service on this project. Should you have any questions please contact the undersigned at your convenience.

Sincerely,
SOUTHWEST GEOPHYSICS, INC.



Patrick F. Lehrmann, R.Gp.
Principal Geologist/Geophysicist



Hans van de Vrugt, C.E.G., R.Gp.
Principal Geologist/Geophysicist

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Table

Table 1	–	Candidate Anomalies
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1. INTRODUCTION

In accordance with your authorization, we have performed a geophysical evaluation of the University House property located at 9630 La Jolla Farms Road in La Jolla, California. The property is currently under archeological evaluation. The primary purpose of our evaluation was to delineate potential archaeological features beneath the ground surface at the subject site. Additionally, we were requested during the course of our study to perform a utility survey. The purpose of the utility survey was to delineate detectable underground utility lines (i.e., irrigation, gas, sewer, electric, etc.) at the property. This report presents the findings from our surveys.

2. SCOPE OF SERVICES

Our scope of services for the subject project included:

- Preparation of detailed survey grids at the site. An X-Y coordinate system was defined and staked in the field with wood stakes and survey feathers. The grids encompassed much of the front and side yards of the property.
- Performance of a detailed ground penetrating radar (GPR) survey utilizing a GSSI SIR 3000 with a 400 MHz transducer to delineate the locations of disturbed ground or possible buried objects. The profiles were conducted along grid lines spaced 1 m apart. In addition, random traverses were conducted over candidate anomalies. Anomalies were marked in the field and their positions recorded with a high precision Trimble Pro XRS GPS (Global Positioning System).
- Performance of a utility line survey using GPR, a Fisher M-Scope TW6 pipe and cable locator, and a Metrotech 9860 line tracer. Locations of detected lines were marked in the field and mapped with GPS.
- Compilation, processing and geophysical analysis of the collected data.
- Preparation of this illustrated report presenting the findings from our study.

3. SITE AND PROJECT DESCRIPTION

The subject site is a residential property located at 9630 La Jolla Farms Road in La Jolla, California (Figure 1). The site consists of a single family home, lawn and planter areas, swimming pool, patio areas, and associated hardscape. The site is relatively flat to gently inclined on the north, east, and west sides of the home, with steep to very steep slopes on the south side of the

residence. In general, the primary study area includes the lawn areas and portions of adjacent planters around the residence, as well as the driveways and pool decking (see Figures 2A and 2B for limits of the study area). Vegetation at the site includes grass, scattered trees, and various types of flowers and shrubs. Additional site improvements include low planter walls, and a pool equipment enclosure.

4. SURVEY METHODOLOGY

Several grids (1-15) were established to guide data acquisition over the project site (Figures 2A and 2B). Grids 1-10, and 12-15 are oriented with the X axis in the north-south direction and the Y axis in the east-west direction. Grid 11 is roughly oriented with the X axis in the northwest-southeast direction and the Y axis in the northeast-southwest direction.

Radar traverses were conducted over the study area at 1 m spacings. Recorded GPR data were downloaded to a portable computer in the field for preliminary analysis and stored for subsequent processing in the office. Significant candidate anomalies detected in the field were temporarily marked in the field. Following our data processing and analysis, the limits of significant anomalies were more precisely defined in the field with survey feathers, and in some cases anomalies were added or removed based on the results of our analysis. The locations of the delineated anomalies were then mapped utilizing a Trimble Pro XRS GPS unit, with sub meter accuracy.

Prior to the acquisition of GPR data over the established grids, the site was surveyed for the presence of underground utilities using a Fisher M-Scope TW6 pipe and cable locator, and Metrotech 9860 line tracer, as well as GPR. The location of the utilities detected were mapped on the ground surface and mapped with the GPS unit. Figure 3 presents the mapped location of the utilities detected during our survey. The purpose of the utility survey was to provide information regarding the as-built location of the utilities for future construction consideration. Additionally, the data collected during the utility survey was used to distinguish recent manmade subsurface disturbances, associated with utility line installation activities, from older pre-construction features that may have archaeological significance.

5. GEOPHYSICAL INSTRUMENTATION AND APPLICATIONS

Our evaluations included the use of a Fisher M-Scope TW6 pipe and cable locator, Metrotech 9860 line tracer, and GSSI SIR 3000 GPR with a 400 MHz transducer (antenna). As previously discussed, the archaeological survey was conducted with GPR, and the utility line survey was conducted with the utility locating devices, including GPR. The following sections provide a brief overview of these instruments.

5.1. Fisher M-Scope TW6

The M-Scope TW-6 device energizes the ground by producing an alternating primary magnetic field with ac current in the transmitting coil. If conducting materials are within the area of influence of the primary field, A.C. eddy currents are induced to flow in the conductors. A receiving coil senses the secondary magnetic field produced by these eddy currents, and outputs an audio response. The strength of the secondary field is a function of the conductivity of the object, say a pipe, tank or cluster of drums, its size, and its depth and position relative to the instrument's two coils. Conductive objects, to a depth of approximately 10 feet are sensed. Also the device is somewhat focused, that is, it is more sensitive to conductors below (and above) the instrument, than to conductors off to the side.

5.2. Metrotech 9860

Where risers are present, the Metrotech 9860 utility locator transmitter is connected to the object, and a current with a sharp frequency, 82 kHz in this instance, is impressed on the conductor pipe or cable. The receiver unit is tuned to this same frequency, and it is used to trace the pipe's surface projection away from the riser. In addition, the instrument is used in a passive mode, where signals produced by the utility line itself (i.e., 60Hz and radio frequency) are detected. Typically the passive method is used to locate electrical and communication lines.

5.3. GPR

The GPR instrument beams energy into the ground from its transducer/antenna, in the form of electromagnetic (EM) waves. A portion of this energy is reflected back to the antenna at

boundaries in the subsurface across which there are an electrical contrast. The recorder continuously makes a record of the reflected energy as the antenna is moved across the ground surface. The greater the electrical contrast, the higher the amplitude of the returned energy. The EM wave travels at a velocity unique to the material properties of the ground being studied, and when these velocities are known, or closely estimated from ground conductivity values and other information, two-way travel times can be converted to depth. Penetration into the ground and resolution of the GPR images produced are a function of ground electrical conductivity and dielectric constant. Images tend to be graphic, even at considerable depth, in sandy soils, but penetration and resolution may be limited in more conductive clayey moist ground.

6. RESULTS

As previously discussed, our evaluation of the subject site included the performance of utility and archaeological surveys. The purpose of the surveys was to delineate the location of detectable utilities, and the presence of buried objects and disturbed ground which could be interpreted to be candidate archaeological features. Our archaeological survey focused on open accessible areas of the property, outside the home.

6.1. Utility Survey

The results of our utility survey revealed a substantial number of underground utilities at the site. Irrigation, electric, telephone, water service, gas, sewer, cable, and drain lines were detected with the utility tracing instruments and GPR. Figure 3 illustrates the location and type of lines encountered. The majority of the lines encountered, and the most widespread, were irrigation.

6.2. Archaeological Survey

Ground penetrating radar detects variations in the dielectric constant which can be produced through disturbances in the subsurface materials from excavations and the presence of bur-

ied objects. The purpose of our GPR survey was to detect and record significant subsurface anomalies which could potentially represent archaeological features.

As previously discussed, traverses spaced 1 m apart were conducted in each of the grids (1-14, Figures 2A and 2B). When potential candidate anomalies were encountered, the anomaly was marked and numerous random traverses were conducted over the anomalous area. The field data were later processed and analyzed to validate field anomalies, as well as identify additional potential features. Information regarding the lateral extent, depth, and nature of the anomalies was developed during this process. In some instances, the analysis revealed that the target anomaly was not especially significant (i.e., result of tree roots, erosion feature, utility, etc.). It should be noted that the depth of penetration generally ranged from 1 m to 1½ m. Accordingly, objects deeper than this would not be detected.

The results of our study revealed 43 GPR anomalies that could represent potential archaeological features. These anomalies include localized below ground disturbances and/or buried objects. Each anomaly is unique in its GPR signature, however, each anomaly was grouped into three separate categories: point targets, areas of significant disturbance, or both. Point targets include buried objects that generally are localized subsurface features (not attributed to tree roots, utilities, etc). Disturbance area anomalies are features that are caused by subsurface dielectric variations that are not related to natural processes such as erosion, or bioturbation. Figure 4 depicts the general limits and locations of the detected anomalies.

Figures 5 and 6 are samples of GPR depth slices developed from the data. These figures illustrate the variability of the subsurface soils, presence of utilities and other near surface manmade improvements, locations of trees and plants, as well as subsurface disturbances. For example, Figure 5 which provides 6 snap shots of the subsurface at depths of 0.1 m to 1.0 m, reveals the presence of a pine tree (coordinate 58,2) and the paved driveway in the shallower depth slices. In general, the near surface depth slices were of little value in delineating potential archaeological features; however, they do provide a geographic depiction of

the area, which is useful when analyzing the data from the deeper time slices. Notable features revealed in the deeper depth slices are the presence of utilities.

For this study, the depth slices were used to delineate potential anomalies not previously revealed during the field survey. It should be noted that not all anomalies considered as potential archaeological features were revealed in the depth slices, and not all of the bright spots (localized color variations) present in the depth slices, represent potential anomalies. Bright spots in the data can be caused by changes in soil type, erosion features, etc. As previously discussed, multiple traverses in various directions are used to delineate and validate an anomaly. Note that in Figure 6 Anomaly 42 is very evident but that the presence of Anomaly 43 is not so clear.

Table 1 lists the approximate location and depth, as well as the nature of the anomalies delineated during our study as potential archaeological features. The size of the candidate anomalies varies from less than 1 m to several meters across, and the depths generally range from ½ m to 1 m (note: depth of radar penetration was limited to 1½ m).

Table 1: Candidate Anomalies

Anomaly	Location	Depth (m)	Type
1	(1,2) ¹	0.3	Disturbance
2	(1,6) ¹	0.5	Disturbance
3	(16,6) ¹	0.4	Disturbance/Object
4	(16,12) ¹	0.5	Disturbance
5	(27,9) ¹	0.5	Disturbance
6	(20,20) ¹	0.5	Disturbance
7	(24,37) ¹	0.8	Object
8	(34,37) ¹	0.8	Disturbance
9	(46,27) ¹	0.8	Disturbance
10	(46,12) ¹	0.8	Disturbance
11	(41,-2) ¹	0.8	Disturbance
12	(36,56) ¹	0.7	Object
13	(39,53) ¹	0.5	Object
14	(50,55) ¹	0.5	Object
15	(57,60) ¹	0.5	Disturbance
16	(71,51) ¹	0.4	Object
17	(71,42) ¹	1.0	Disturbance
18	(94,39) ¹	0.7	Disturbance

Anomaly	Location	Depth (m)	Type
19	(104,21) ¹	0.5	Disturbance
20	(64,19) ¹	0.8	Object
21	(74,20) ¹	0.6	Object
22	(69,21) ¹	0.7	Object
23	(53,10) ¹	1.0	Disturbance/Object
24	(67,-2) ¹	0.5	Disturbance
25	(70,13) ¹	0.5	Object
26	(72,16) ¹	0.7	Object
27	(78,15) ¹	1.0	Object
28	(78,12) ¹	1.0	Object
29	(79,8) ¹	0.7	Disturbance/Object
30	(82,7) ¹	0.5	Disturbance
31	(135,-6) ¹	0.5	Disturbance/Object
32	(141,-5) ¹	0.5	Object
33	(145,-2) ¹	0.5	Disturbance
34	(150,8) ¹	0.4	Disturbance
35	(18,12) ²	0.8	Disturbance
36	(18,16) ²	0.7	Disturbance
37	(26,12) ²	0.7	Disturbance
38	(25,13) ²	0.7	Object
39	(19,5) ²	0.9	Object
40	(49,32) ²	1.0	Disturbance
41	(122,17) ¹	0.8	Disturbance
42	(121,34) ¹	0.7	Disturbance
43	(111,40) ¹	0.8	Disturbance
¹ Based on coordinate system used for Grids 1-10, and 12-15.			
² Based on coordinate system used for Grids 11.			

Figures 7 and 8 include linescan images of anomalies 12, 18, 29, 34, 35, 36, 39, and 41. These Linescan images represent typical images of the anomalies encountered during our study. Anomalies 12 and 39 are scans of unidentified objects, Anomalies 18, 34, 35, and 41 are scans of ground disturbance, and Anomalies 29 and 36 are scans of both an object and ground disturbance. Note that the object shown on the Anomaly 36 linescan image is a pipe. In general, objects detected with GPR are revealed as hyperbola, with the center of the object centered about the hyperbola. The ground disturbances are revealed as disruptions in the soil stratigraphy or profile.

7. CONCLUSIONS AND RECOMMENDATIONS

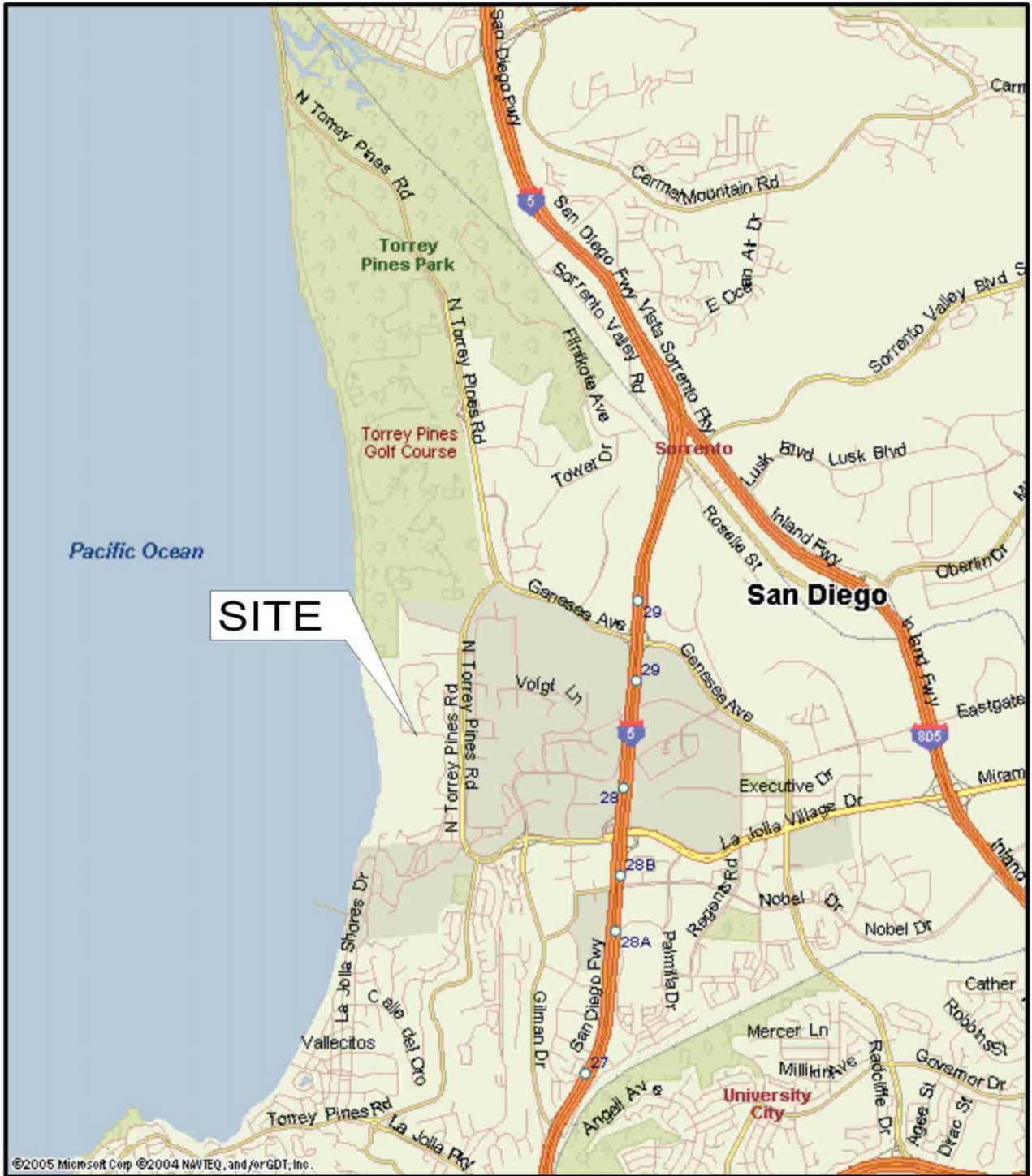
The purpose of our evaluation was to delineate the presence of potential archaeological features buried at the subject site. Based on the results of our survey, it is our opinion that Anomalies 1

through 17, and 20 through 39 represent significant candidate anomalies which have a likelihood of representing an archaeological feature. Anomalies 18, 19, and 40 through 43, however, are possibly related to more recent activities such as construction of the residence or previous archaeological activities. This opinion is based on the relatively large size of these anomalies and the degree and nature of the ground disturbance. Based on our discussions with you, it is our understanding that archaeological excavations were previously conducted at the site. Reportedly, details regarding their location, depth, and size were not available.

8. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Southwest Geophysics, Inc. should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings and conclusions of this report by parties other than the client is undertaken at said parties' sole risk.



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SITE LOCATION MAP



UNIVERSITY HOUSE
9630 LA JOLLA FARMS ROAD
LA JOLLA, CALIFORNIA

PROJECT NO.: 105013

DATE: 6/05



FIGURE 1

Confidential Figure. Qualified Individuals can contact the UCSD Office of Physical Planning to view the Figure.

SITE PLAN
WITH GPR SURVEY
GRID LOCATIONS



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LA JOLLA, CALIFORNIA

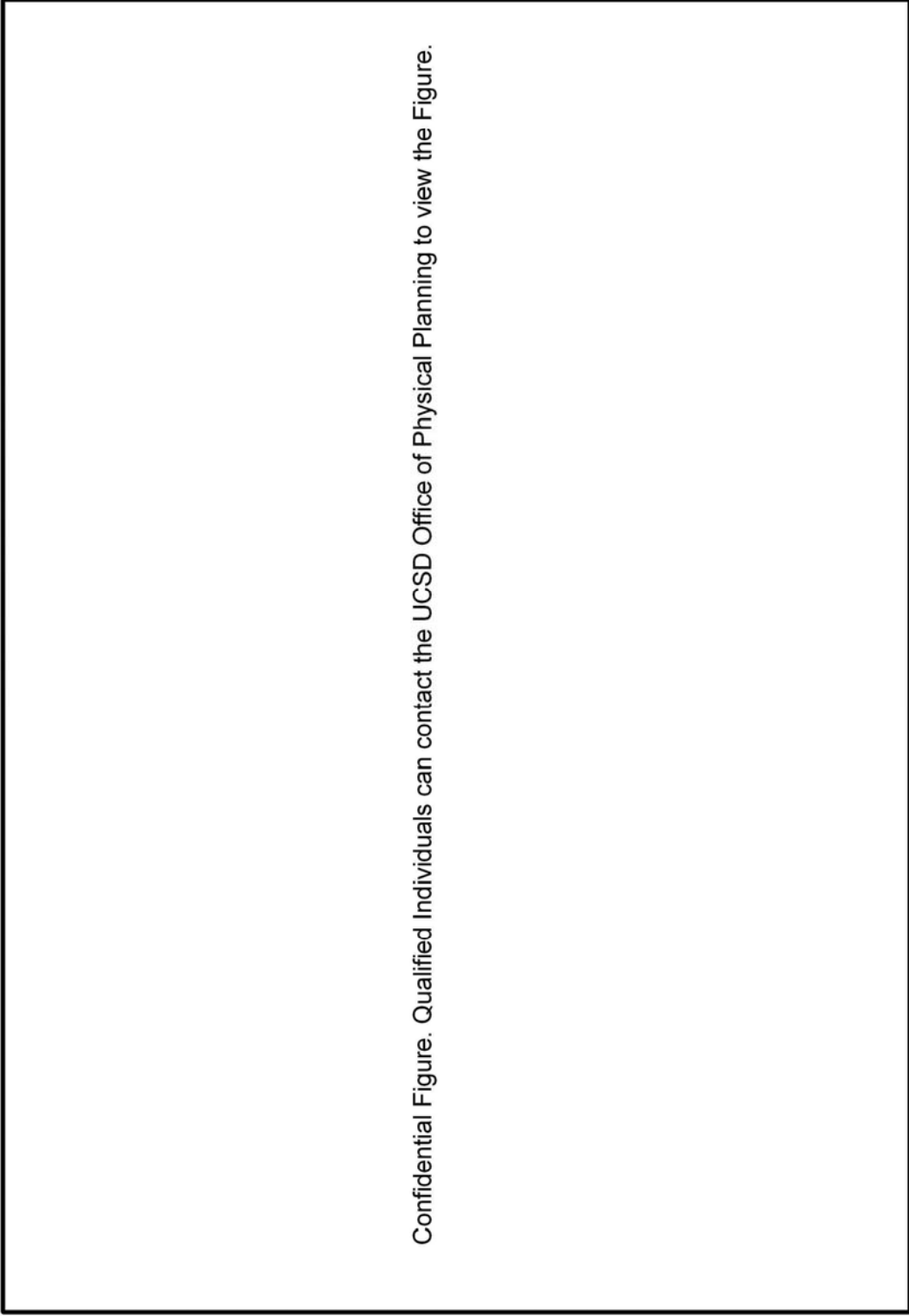
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SOUTHWEST
GEOPHYSICS, INC.





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**SITE AERIAL
PHOTOGRAPH**
WITH GPR SURVEY
GRID LOCATIONS



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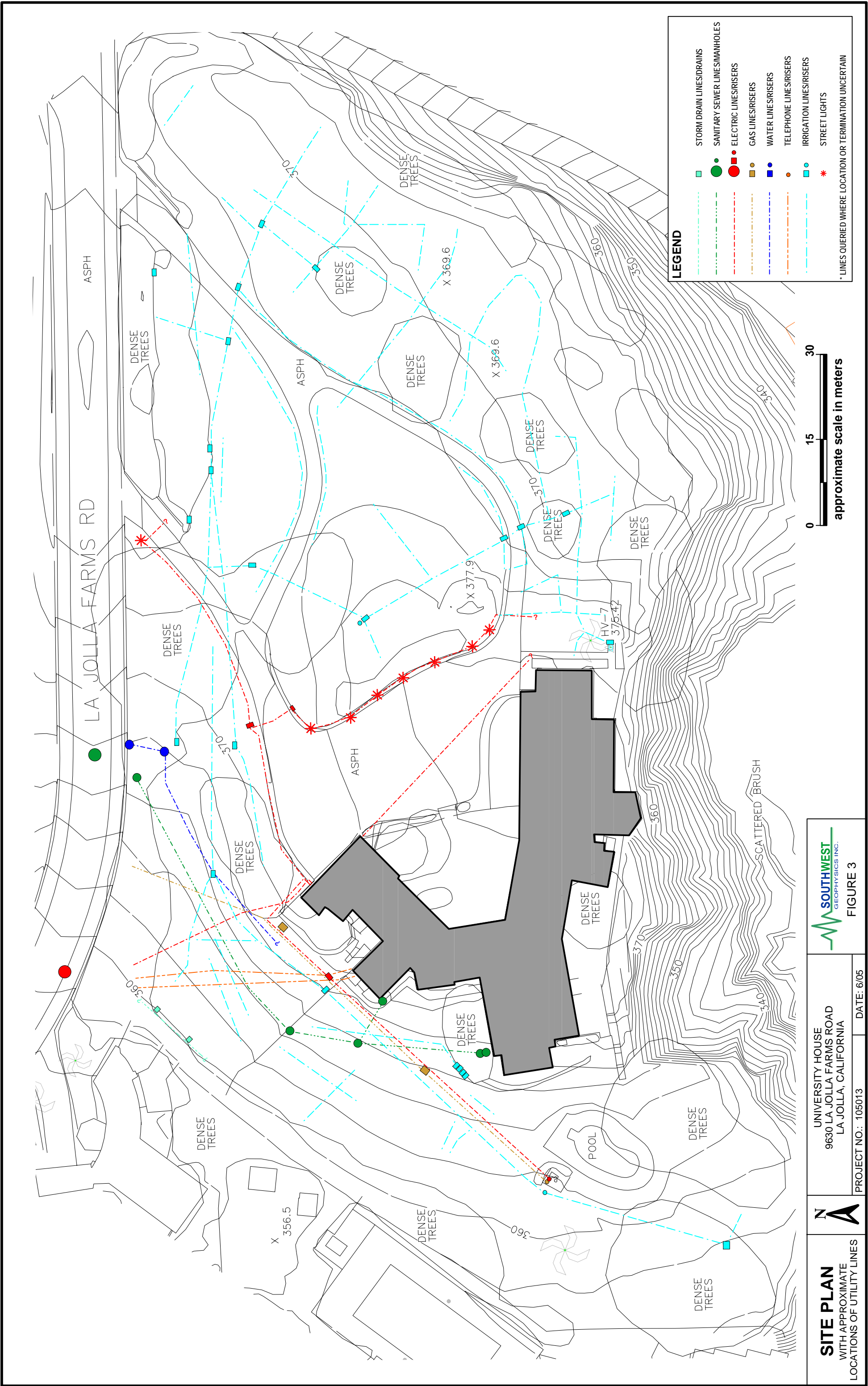
DATE: 6/05



FIGURE 2B



approximate scale in meters



SITE PLAN
WITH APPROXIMATE
LOCATIONS OF UTILITY LINES

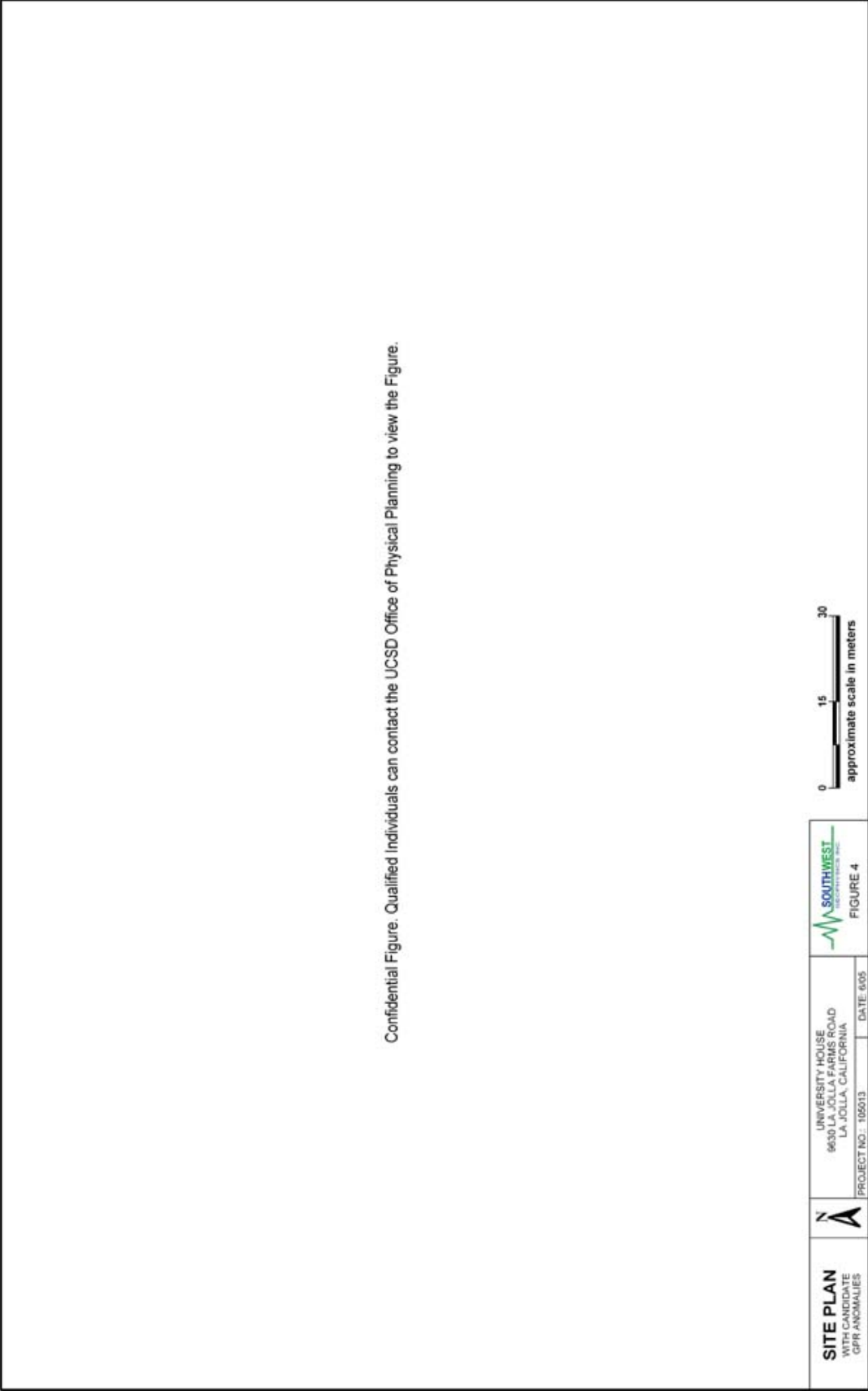
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FIGURE 3

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Confidential Figure. Qualified Individuals can contact the UCSD Office of Physical Planning to view the Figure.

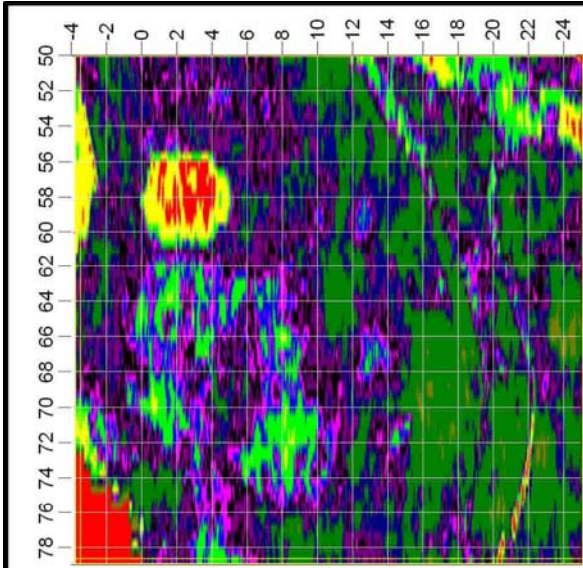
SITE PLAN
UNIVERSITY HOUSE
7075 ANACAPLES



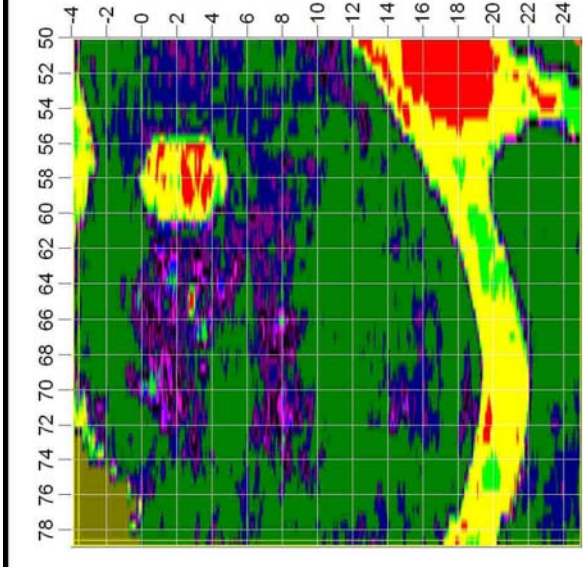
UNIVERSITY HOUSE
6630 UNIVERSITY BLVD
LA JOLLA, CALIFORNIA
PROJECT NO.: 105013



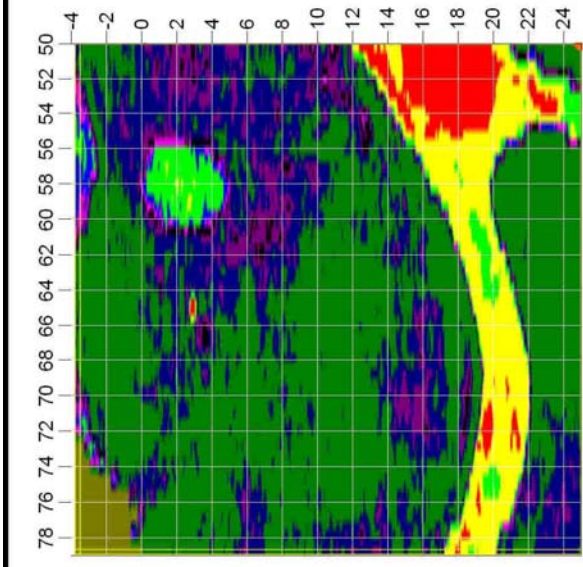
DATE: 6/05
FIGURE 4
approximate scale in meters
0 15 30



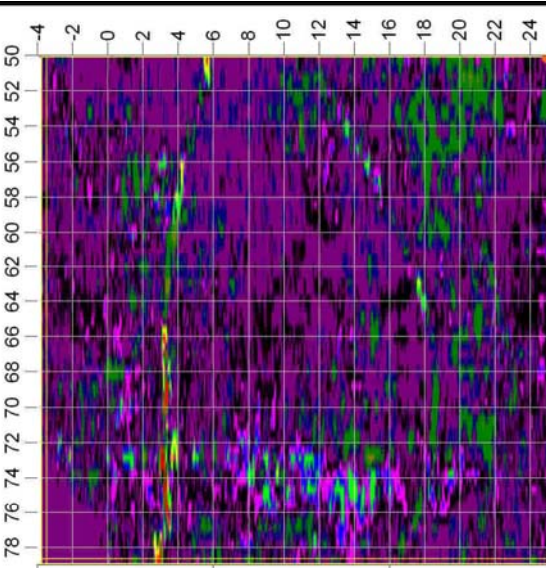
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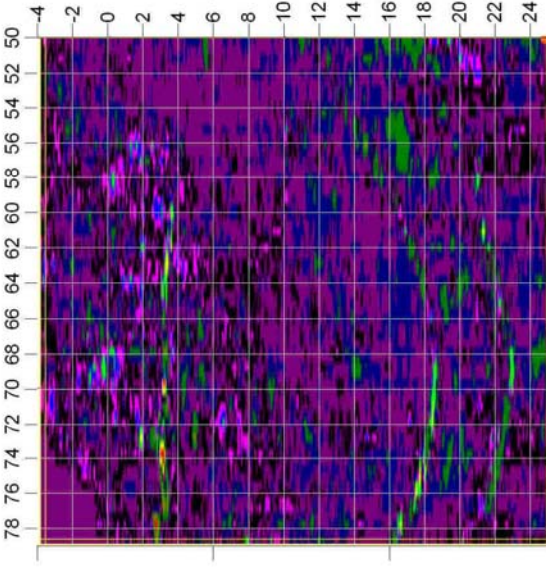
GPR DATA 0.3 METER DEPTH SLICE



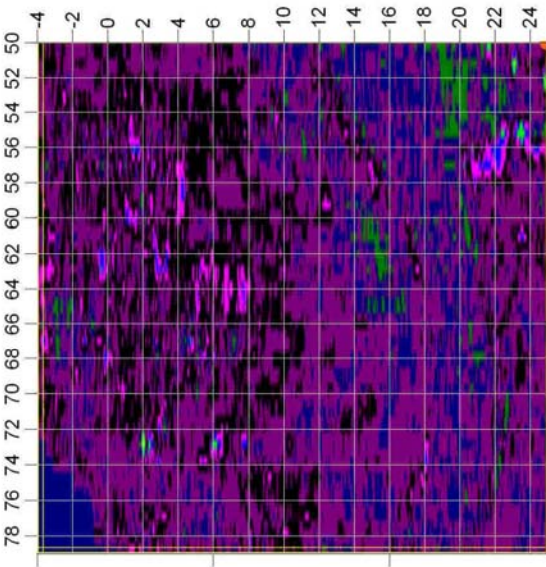
GPR DATA 0.5 METER DEPTH SLICE



GPR DATA 0.7 METER DEPTH SLICE



GPR DATA 0.9 METER DEPTH SLICE



GPR DATA 1.0 METER DEPTH SLICE



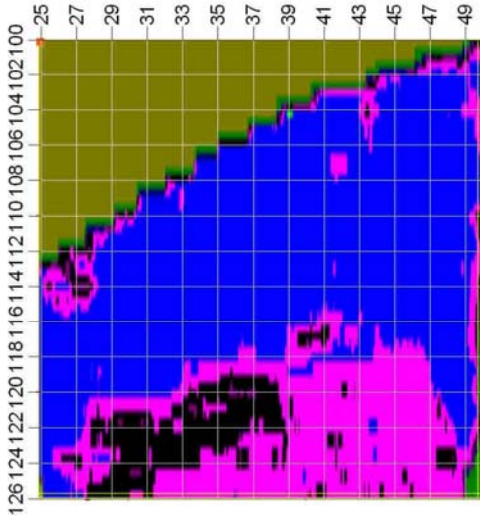
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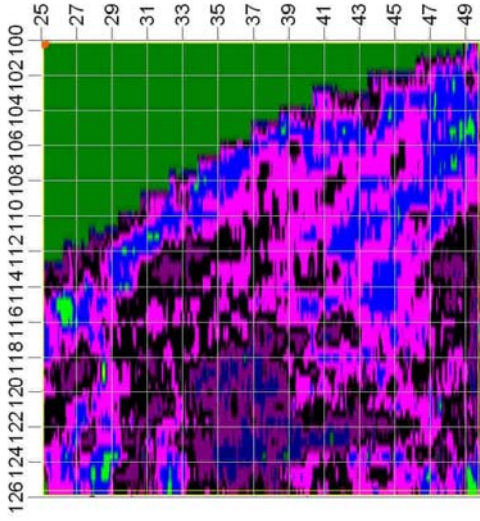
DATE: 6/05

GRID 1
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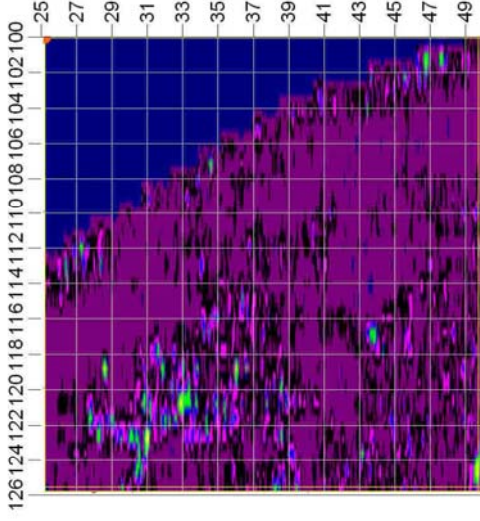
FIGURE 5



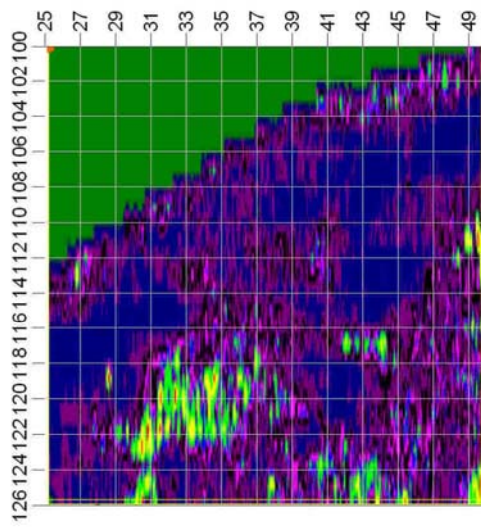
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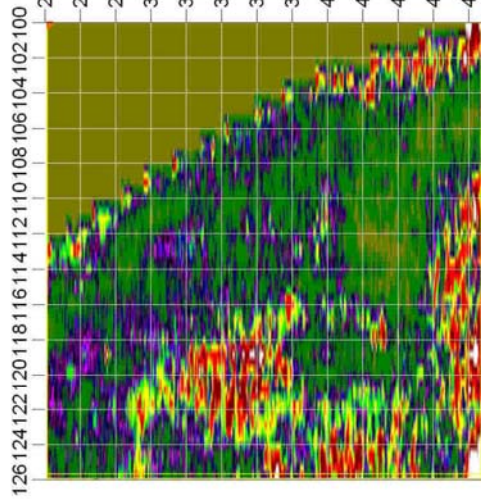
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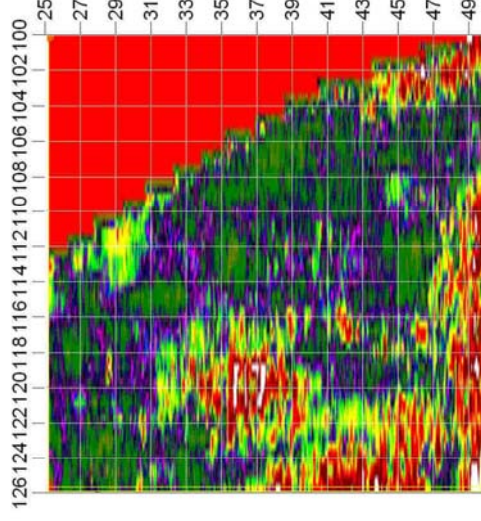
GPR DATA 0.9 METER DEPTH SLICE



GPR DATA 1.0 METER DEPTH SLICE



GPR DATA 1.2 METER DEPTH SLICE



GPR DATA 1.3 METER DEPTH SLICE

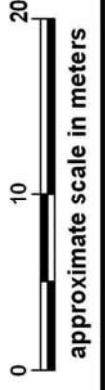


GRID 2
GPR DEPTH SLICE DATA

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LA JOLLA, CALIFORNIA

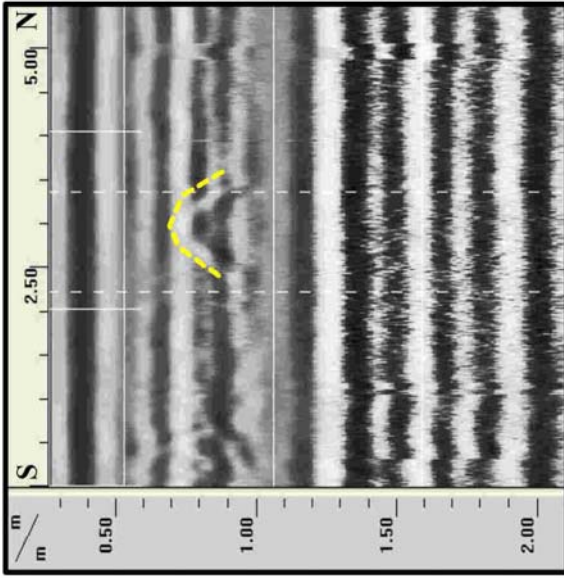


FIGURE 6

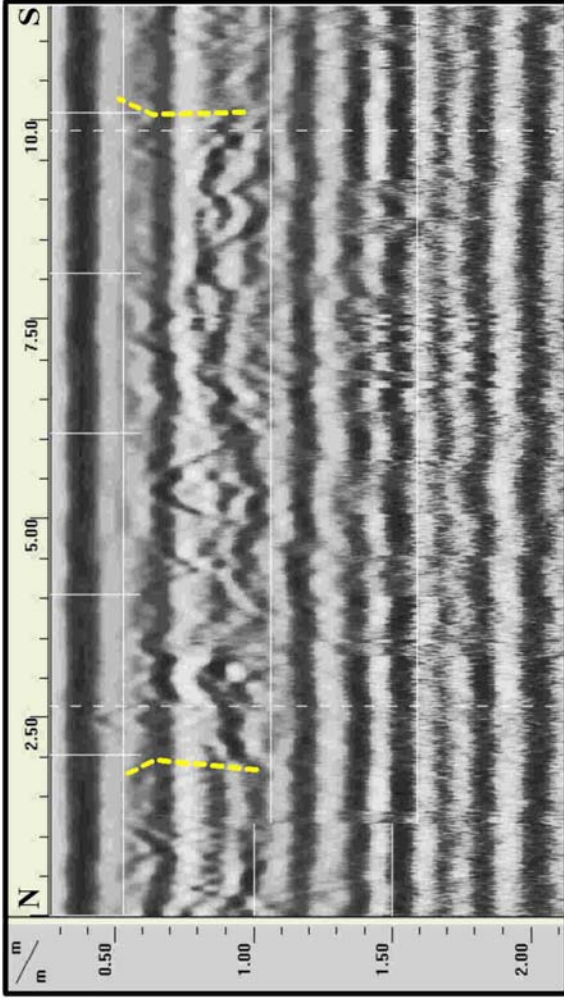


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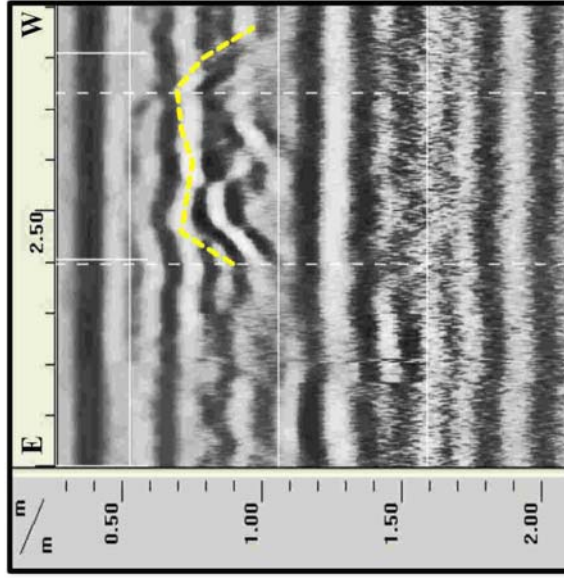
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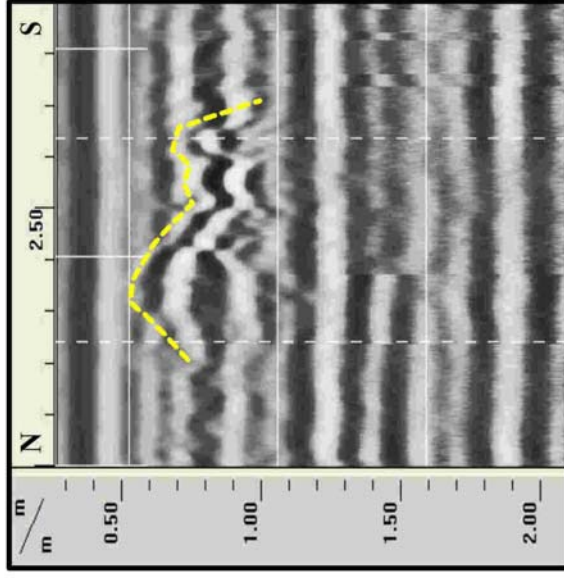
ANOMALY 12



ANOMALY 18



ANOMALY 29



ANOMALY 34

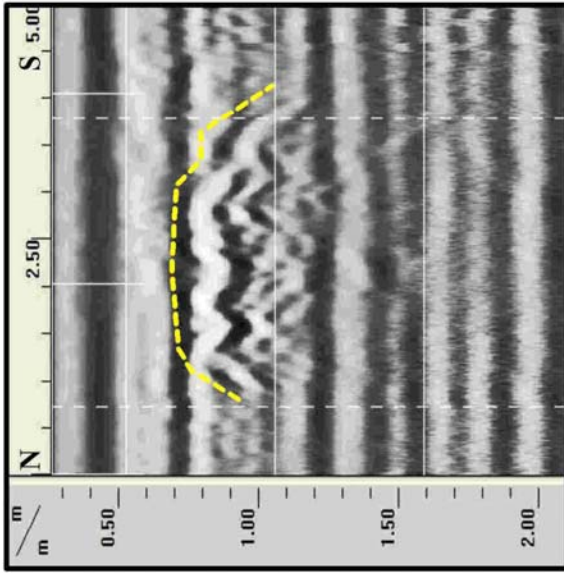
GPR LINESCAN IMAGES
ANOMALIES 12, 18, 29, AND 34

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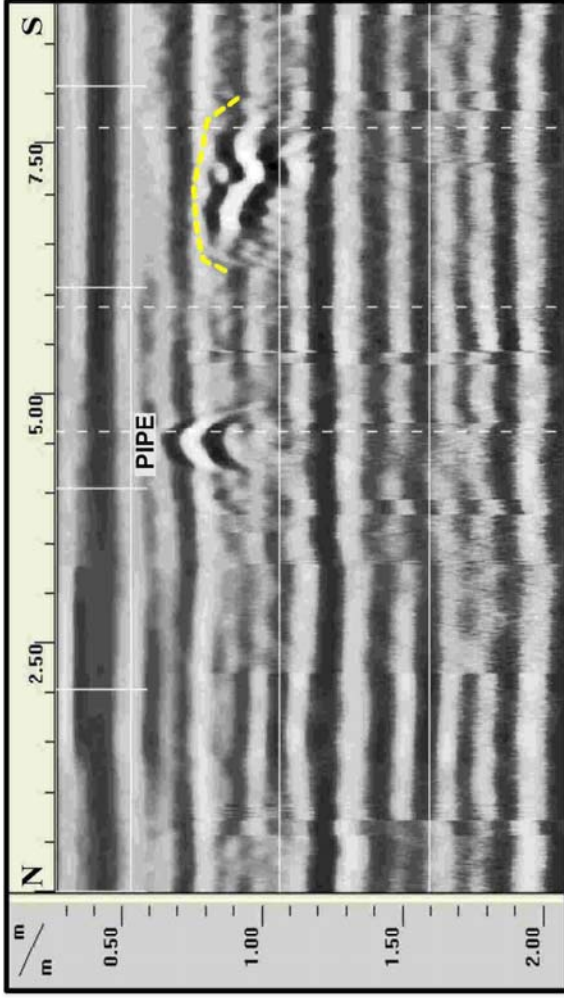
PROJECT NO.: 105013 DATE: 6/05



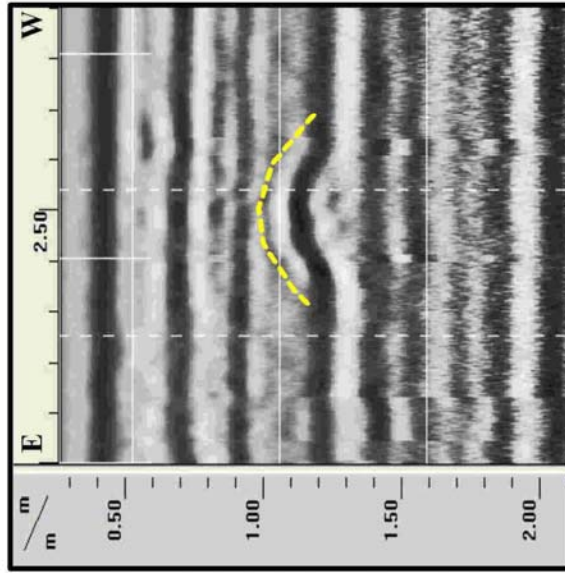
FIGURE 7



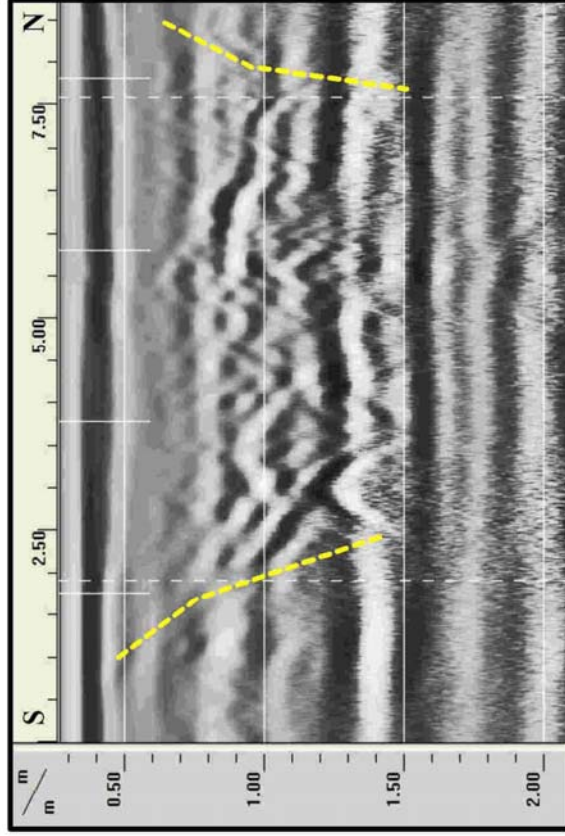
ANOMALY 35



ANOMALY 36



ANOMALY 39



ANOMALY 41

GPR LINESCAN IMAGES
ANOMALIES 35, 36, 39, AND 41

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FIGURE 8