

# Atlantic Richfield Company

**Chuck Carmel**  
Remediation Management Project Manager

PO Box 1257  
San Ramon, CA 94583  
Phone: (925) 275-3804  
Fax: (925) 275-3815  
E-Mail: chuck.carmel@bp.com

June 18, 2014

Re: Well DistructionReport  
Atlantic Richfield Company Station #2112  
1260 Park Street, Alameda, California  
ACEH Case #RO0000044

I declare that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by,



Chuck Carmel  
Remediation Management Project Manager

Attachment



**WELL DESTRUCTION REPORT**  
**Atlantic Richfield Company Station No. 2112**  
**1260 Park Street**  
**Alameda, Alameda County, California**

**Prepared for:**

Mr. Chuck Carmel  
Atlantic Richfield Company  
P.O. Box 1257  
San Ramon, CA 94583

**Prepared by:**

Broadbent & Associates, Inc.  
4820 Business Center Drive, Suite 110  
Fairfield, California 94534  
(707) 455-7290

June 18, 2014

Project No. 06-88-616



**BROADBENT**

875 Cotting Ln., Suite G, Vacaville, CA 95688

[T] 707-455-7290 [F] 707-455-7295

broadbentinc.com

**CREATING SOLUTIONS. BUILDING TRUST.**

June 18, 2014

Project No. 06-88-616

Atlantic Richfield Company  
P.O. Box 1257  
San Ramon, CA 94583  
Submitted via ENFOS

Attn.: Mr. Chuck Carmel

Re: Well Destruction Report, Atlantic Richfield Company Station No. 2112  
1260 Park Street, Alameda, Alameda County, California  
ACEH Case No. RO0000044

Dear Mr. Carmel:

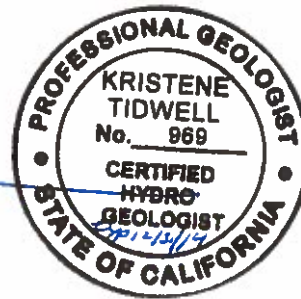
Broadbent & Associates, Inc. (Broadbent) is pleased to submit this *Well Destruction Report* (Report) for Atlantic Richfield Company Station No. 2112 located at 1260 Park Street, Alameda, California (Site). This Report documents the permanent decommissioning of five groundwater monitoring wells, two groundwater extraction wells, seven vapor extraction wells, and four soil vapor sampling probes. These activities were carried out in accordance with the Alameda County Environmental Health Agency's directive letter dated March 11, 2014.

Should you have questions or require additional information, please do not hesitate to contact us at (707) 455-7290.

Sincerely,

BROADBENT & ASSOCIATES, INC.

Kristene Tidwell, P.G., C.H.G.  
Senior Hydrogeologist



Enclosures

cc: Mr. Jerry Wickham, Alameda County Environmental Health (Submitted via ACEH ftp Site)  
Electronic copy uploaded to GeoTracker

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## WELL DESTRUCTION REPORT

Atlantic Richfield Company Station No. 2112  
1260 Park Street, California  
ACEH Case #RO0000393

### 1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company, RM (a BP affiliated company) Broadbent & Associates, Inc. (Broadbent) has prepared this *Well Destruction Report* (Report) documenting case closure activities at Atlantic Richfield Company Station No. 2112, located at 1260 Park Street, Alameda, California (Site). Case Closure was recommended by Alameda County Environmental Health (ACEH) in their March 11, 2014 *Well Decommissioning Letter* (Appendix A). This Report presents details of the field activities performed.

### 2.0 SITE BACKGROUND

The Site is located at 1260 Park Street, Alameda, California. It is an active ARCO-brand gasoline station (Station No. 2112) with an AM/PM convenience store. Current structures on the Site include four underground storage tanks (USTs), two fuel dispenser islands with a total of four dispensers, and a small building. The majority of the Site is paved with asphalt and concrete. Limited planter islands are present along the perimeter of the Site. A Site location map is included as Drawing 1. A Site Plan depicting current building, UST, and, well locations is presented as Drawing 2.

The Site is bound by Park Street to the northwest, Encinal Avenue to the northeast, and commercial and residential buildings to the south. Across Park Street, to the northwest is a Jack in the Box and a Dimitra's Sandwiches restaurants. Directly to the north of the Site is Lucky 13 bar with residential apartments on the second floor. Across Encinal Avenue, to the northeast is an Alameda Fire Department Fire Station.

The Site has operated as a gasoline fueling station since the environmental case was open in 1987. The Site is likely to remain a service station for the foreseeable future. A detailed Site history is included in Appendix B.

### 3.0 FIELD ACTIVITIES PERFORMED

During April 7 through 10, 2014, Broadbent oversaw Gregg Drilling & Testing (Gregg), pressure grout monitor wells A-1 through A-5; groundwater extraction wells AR-1 and AR-2; vapor extraction wells AV-1 through AV-7 and vapor extraction wells SG-1A, SG-1B, SG-2A, and SG-2B. The top two feet of well casing was also removed from each well following completion of pressure grouting. A Site map depicting abandoned well locations is provided as Drawing 2.

#### 3.1 Preliminary Field Activities

Necessary permits from Alameda County Public Works Agency (ACPWA) and an encroachment permit (for well A-5 along Park Street – see Drawing 2) from the City of Alameda were secured prior to performing the field investigation. Copies of these permits are included in Appendix C. All borings were marked and areas were outlined with white spray paint, and an Underground Service Alert (USA) ticket was secured to notify all member utility companies of the planned field activities. Additionally, all

boring locations were cleared for underground utilities by NORCAL Geophysical Consultants, Inc. (NORCAL) on April 4, 2014. NORCAL's survey report is included in Appendix D.

### **3.2 Well Destruction Activities**

During April 7 through 10, 2014, monitor wells -1 through A-5; groundwater extraction wells AR-1 and AR-2; vapor extraction wells AV-1 through AV-7 were destroyed by pressure grouting. Additionally, soil vapor probes SG-1A, SG-1B, SG-2A, and SG-2B were destroyed by removing the tubing and well boxes and finishing the surface to match the existing grade. Following completion of pressure grouting, the top two feet of each well casing was removed from each well. On April 21 through 24, 2014, Cornerstone Environmental Contractors, Inc. removed all well boxes/vaults and completed surfaces to match existing. Each well was destroyed in accordance with ACPWA requirements. California Department of Water Resources Well Completion Reports have been completed, but are not published in this Report due to confidentiality of the records.

### **3.3 Excess Soil Produced**

Excess soil produced during investigation activities was temporarily being stored onsite in Department of Transportation-approved 55-gallon drums until June 2014, when they were removed and transported to appropriate California-regulated facilities by Belshire Environmental Services, Inc. of Foothill Ranch, CA.

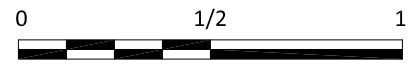
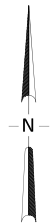
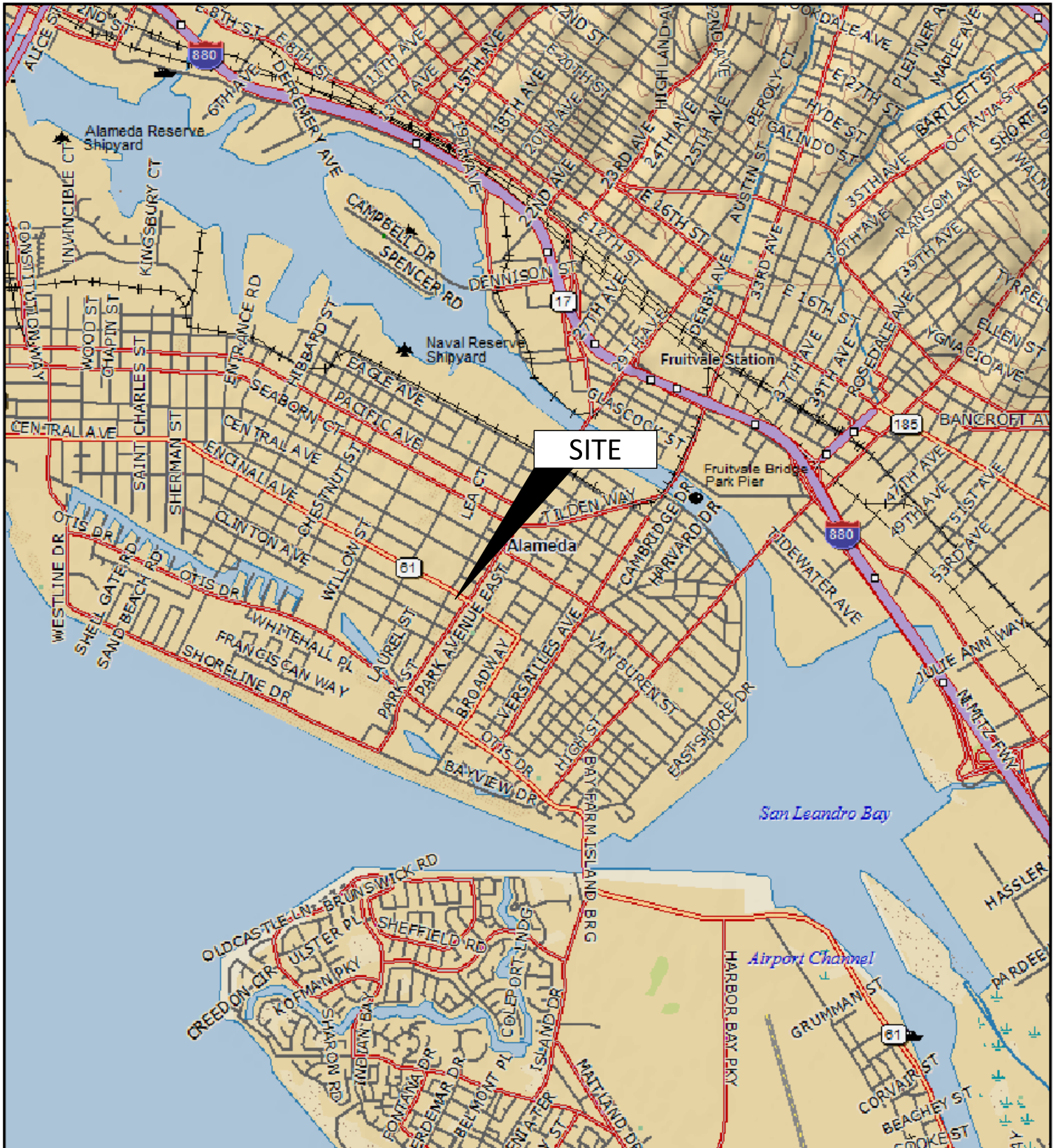
## **4.0 CONCLUSIONS & RECOMMENDATIONS**

Monitoring, groundwater extraction, soil vapor extraction and soil vapor probes wells were abandoned in general accordance ACPWA monitoring well destruction requirements. Well abandonment work activities complete the Site case closure process. No further actions are recommended. We anticipate that following submittal of this report, Atlantic Richfield Company will be issued a "Remedial Action Completion Certificate."

## **5.0 LIMITATIONS**

This document has been prepared for the exclusive use of Atlantic Richfield Company. The findings presented in this report are based upon the observations of Broadbent field personnel. Services were performed in accordance with the generally accepted standard of practice at the time this report was written. No warranty, expressed or implied, is intended.

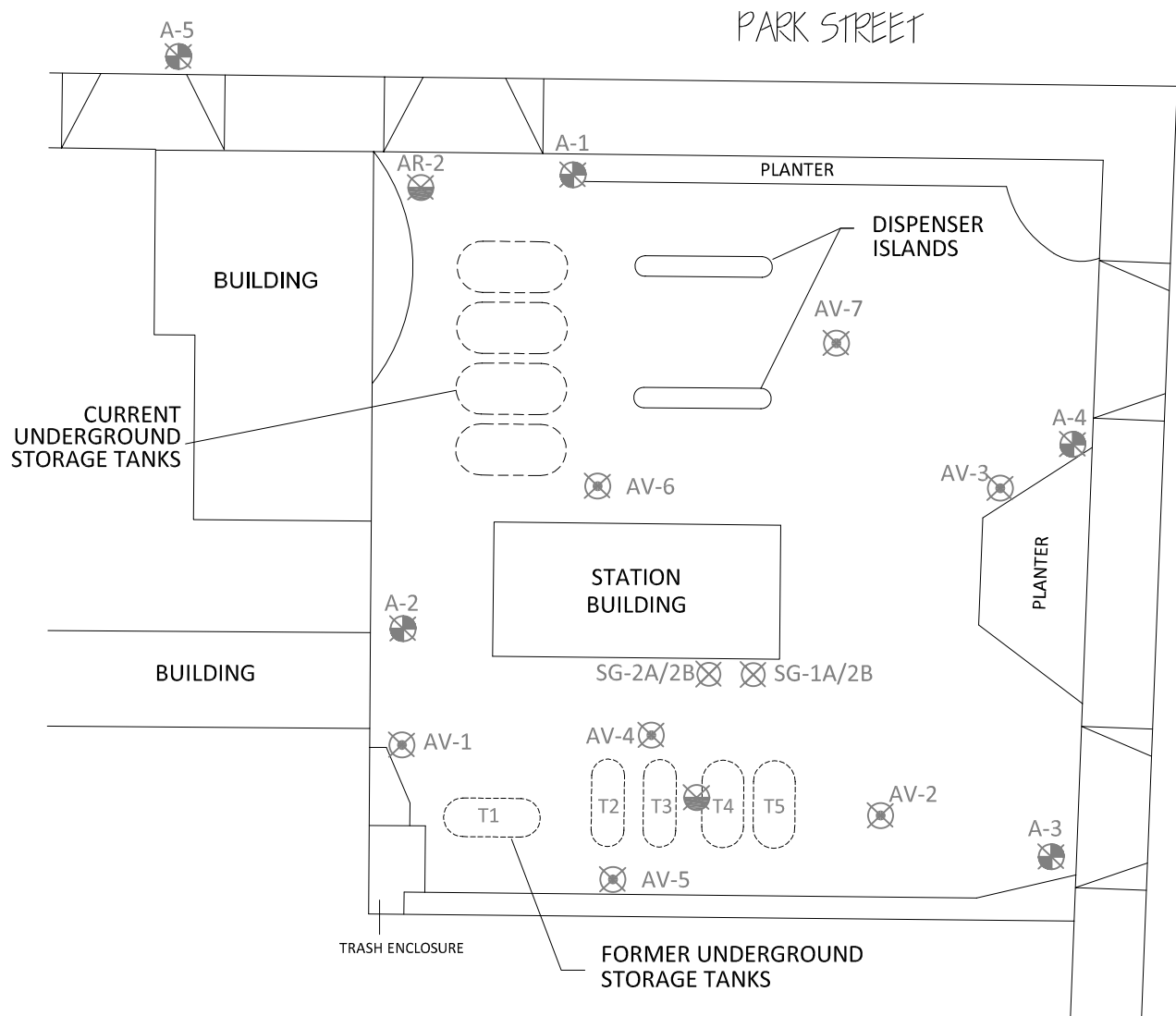
## **DRAWINGS**



APPROXIMATE SCALE (mi)

IMAGE SOURCE: USGS



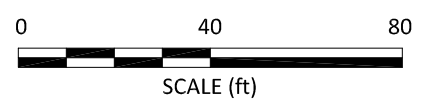
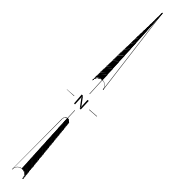


ENCINAL AVENUE

PARK STREET

**LEGEND:**

- SG-2A/2B DESTROYED SOIL VAPOR PROBE LOCATION
- A-1 ABANDONED MONITORING WELL LOCATION
- AR-1 ABANDONED GROUNDWATER EXTRACTION WELL LOCATION
- AV-1 ABANDONED VAPOR EXTRACTION WELL LOCATION



**BROADBENT**  
 1370 Ridgewood Dr., Suite 5  
 Chico, California 95973  
 Project No.: 06-88-616    Date: 6/4/2014

Station #2112  
 1260 Park Street  
 Alameda, California

WELL DISTRACTION  
 LOCATION MAP

**APPENDIX A**

REGULATORY CORRESPONDENCE



ENVIRONMENTAL HEALTH SERVICES  
ENVIRONMENTAL PROTECTION  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577  
(510) 567-6700  
FAX (510) 337-9335

March 11, 2014

Charles Carmel  
Atlantic Richfield Company  
P.O. Box 1257  
San Ramon CA 94583  
(Sent via E-mail to: [charles.carmel@bp.com](mailto:charles.carmel@bp.com))

M & S Mini Mart Inc.  
c/o Joel Gutierrez  
13411 Imperial Highway  
Whittier, CA 90605-4236

Subject: Well Decommissioning for Fuel Leak Case No. RO0000044 and GeoTracker Global ID T0600100083, ARCO #2112, 1260 Park Street, Alameda, CA 94501

Dear Mr. Carmel and Mr. Gutierrez:

Alameda County Environmental Health (ACEH) staff have reviewed the fuel leak case file for the above-referenced site and concur that no further action related to the underground storage tank fuel release is required at this time. No comments were received on the proposed case closure during a public comment period that ended March 6, 2014. Please decommission the monitoring wells and provide documentation of the well decommissioning and waste disposal to this office no later than June 30, 2014. Remedial action completion certification will be issued following receipt of the documentation.

Well destruction permits may be obtained from the Alameda County Public Works Agency (<http://www.acgov.org/pwa/wells/index.shtml>). If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at [jerry.wickham@acgov.org](mailto:jerry.wickham@acgov.org).

### **TECHNICAL REPORT REQUEST**

Please upload technical reports to the ACEH ftp site (Attention: Jerry Wickham), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- **June 30, 2014** – Well Destruction Report  
File to be named: WDR\_R\_YYYY-MM-DD RO44

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

Responsible Parties  
RO0000044  
March 11, 2014  
Page 2

If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at [jerry.wickham@acgov.org](mailto:jerry.wickham@acgov.org). Online case files are available for review at the following website: <http://www.acgov.org/aceh/index.htm>. . As your email address does not appear on the cover page of this notification ACEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case.

Sincerely,

Jerry Wickham, California PG 3766, CEG 1177, and CHG 297  
Senior Hazardous Materials Specialist

Attachments: Responsible Party(ies) Legal Requirements/Obligations

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Kristene Tidwell, Broadbent, 875 Cotting Lane, Suite G, Vacaville, CA 95688 (*Sent via E-mail to: [ktidwell@broadbentinc.com](mailto:ktidwell@broadbentinc.com)*)

Jerry Wickham, ACEH (*Sent via E-mail to: [jerry.wickham@acgov.org](mailto:jerry.wickham@acgov.org)*)

GeoTracker, eFile

## Attachment 1

### Responsible Party(ies) Legal Requirements/Obligations

#### REPORT/DATA REQUESTS

These reports/data are being requested pursuant to Division 7 of the California Water Code (Water Quality), Chapter 6.7 of Division 20 of the California Health and Safety Code (Underground Storage of Hazardous Substances), and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations (Underground Storage Tank Regulations).

#### ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (Local Oversight Program [LOP] for unauthorized releases from petroleum Underground Storage Tanks [USTs], and Site Cleanup Program [SCP] for unauthorized releases of non-petroleum hazardous substances) require submission of reports in electronic format pursuant to Chapter 3 of Division 7, Sections 13195 and 13197.5 of the California Water Code, and Chapter 30, Articles 1 and 2, Sections 3890 to 3895 of Division 3 of Title 23 of the California Code of Regulations (23 CCR). Instructions for submission of electronic documents to the ACEH FTP site are provided on the attached "Electronic Report Upload Instructions."

Submission of reports to the ACEH FTP site is in addition to requirements for electronic submittal of information (ESI) to the State Water Resources Control Board's (SWRCB) Geotracker website. In April 2001, the SWRCB adopted 23 CCR, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1 (Electronic Submission of Laboratory Data for UST Reports). Article 12 required electronic submittal of analytical laboratory data submitted in a report to a regulatory agency (effective September 1, 2001), and surveyed locations (latitude, longitude and elevation) of groundwater monitoring wells (effective January 1, 2002) in Electronic Deliverable Format (EDF) to Geotracker. Article 12 was subsequently repealed in 2004 and replaced with Article 30 (Electronic Submittal of Information) which expanded the ESI requirements to include electronic submittal of any report or data required by a regulatory agency from a cleanup site. The expanded ESI submittal requirements for petroleum UST sites subject to the requirements of 23 CCR, Division, 3, Chapter 16, Article 11, became effective December 16, 2004. All other electronic submittals required pursuant to Chapter 30 became effective January 1, 2005. Please visit the SWRCB website for more information on these requirements. ([http://www.waterboards.ca.gov/water\\_issues/programs/ust/electronic\\_submittal/](http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/))

#### PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

#### PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 7835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

#### UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, late reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

#### AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to \$10,000 per day for each day of violation.

<b>Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)</b>	<b>REVISION DATE:</b> July 25, 2012
	<b>ISSUE DATE:</b> July 5, 2005
	<b>PREVIOUS REVISIONS:</b> October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010
<b>SECTION:</b> Miscellaneous Administrative Topics & Procedures	<b>SUBJECT:</b> Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (petroleum UST and SCP) require submission of all reports in electronic form to the county's FTP site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

## REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as a **single Portable Document Format (PDF) with no password protection.**
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document.** Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

RO#\_Report Name\_Year-Month-Date (e.g., RO#5555\_WorkPlan\_2005-06-14)

## Submission Instructions

- 1) Obtain User Name and Password
  - a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
    - i) Send an e-mail to [.loptoxic@acgov.org](mailto:.loptoxic@acgov.org)
  - b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses,** and the **Case Numbers (RO# available in Geotracker) you will be posting for.**
  
- 2) Upload Files to the ftp Site
  - a) Using Internet Explorer (IE4+), go to <://alcoftp1.acgov.org>
    - (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
  - b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
  - c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
  - d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
  - e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.
  
- 3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
  - a) Send email to [.loptoxic@acgov.org](mailto:.loptoxic@acgov.org) notify us that you have placed a report on our ftp site.
  - b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
  - c) The subject line of the e-mail must start with the RO# followed by **Report Upload.** (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
  - d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

**APPENDIX B**

DETAILED SITE HISTORY

## Previous Environmental Activities at Site

On May 15, 1987, a 550-gallon capacity waste oil tank was removed from the Site by Crosby & Overton Environmental. Laboratory analytical tests performed on soil samples collected beneath the waste oil tank indicated the presence of Total Petroleum Hydrocarbons (TPH) as Diesel (TPHd) at concentrations up to 430 milligrams per kilogram (mg/kg) and TPH as Motor Oil (TPHmo) at up to 2,400 mg/kg. Approximately 14 cubic yards of petroleum hydrocarbon impacted soil from the underground storage tanks (UST) excavation was reportedly\* removed and transported offsite for disposal. Confirmation samples collected following the excavation activities did not contain TPHmo, indicating TPHmo impacted soil had been removed. The UST pit was backfilled with imported clean sand.

On January 22 and 29, 1990, Applied GeoSystems, Inc. performed a subsurface investigation prior to removal and replacement of the existing five gasoline USTs in the southeastern portion of the Site. The USTs removed included one 10,000 gal (T1), two 4,000 gal (T2 and T3), and two 6,000 gal (T4 and T5). Five soil borings (B1-B5) were advanced in the vicinity of the gasoline USTs, and one boring (B6) was advanced in the location of the proposed new UST complex in the northwestern portion of the Site. Total boring depths ranged from 11.5 to 13 feet (ft) below ground surface (bgs) with the exception of boring B1, which was advanced to a total depth of 25 ft bgs. Groundwater was encountered at approximately 12 ft bgs. Petroleum hydrocarbons were reported in samples collected from each boring, with the exception of B6. Maximum detected concentrations include TPH as Gasoline (TPHg) at 21,000 mg/kg, benzene at 210 mg/kg, toluene at 1,100 mg/kg, ethylbenzene at 320 mg/kg, and total xylenes at 2,600 mg/kg. No petroleum hydrocarbons were reported in boring B6, located near the proposed new UST.

Between July 27 and September 30, 1990, gasoline USTs and product piping was removed. During excavation activities, soil samples were collected from the sidewalls and bottoms of each tank complex excavation, the new UST complex location, and within the product line trenches. The existing UST complex was excavated to approximately 13 ft bgs in an area approximately 23 by 77 ft. Soil samples were collected between 6 and 12 ft bgs. Based on the soil analytical results, the excavation was expanded slightly to an area of approximately 27 by 81 ft. Maximum detected concentrations include TPHg at 23,000 mg/kg, benzene at 150 mg/kg, toluene at 490 mg/kg, ethylbenzene at 940 mg/kg, and total xylenes at 2,700 mg/kg in the sample from the southwest sidewall of the excavation at a depth of 12 ft bgs. Product line trenches were generally excavated to 3 ft bgs except in locations of observed contamination. Sample AT-36, northeast of the Station Building, contained concentrations of TPHg at 15,000 mg/kg, benzene at 71 mg/kg, toluene at 710 mg/kg, ethylbenzene at 200 mg/kg, and total xylenes at 1,300 mg/kg. In order to remove the impacted soil, excavation in trenches were extended to a depth of 9.5 ft bgs where contamination was noted. A total of approximately 1,950 cubic yards of soil was removed from the Site during this time and transported to an offsite facility for treatment and/or disposal (GeoStrategies, Inc., 1990).

In September 1991, GeoStrategies, Inc. installed four monitoring wells (A-1 through A-4), one recovery well (AR-1), and three vapor extraction wells (AV-1 through AV-3) at the Site. In January 1992, four additional vapor extraction wells (AV-4 through AV-7) were installed. In June 1992, one downgradient monitoring well (A-5) and one recovery well (AR-2) were additionally installed. These wells were installed to evaluate the vertical and lateral extent of petroleum hydrocarbon contamination at the Site and provide extraction wells for use with interim soil vapor and groundwater remediation systems. Results of these investigations were provided within the *Aquifer Test/Vapor Well Installation Report*



prepared by GeoStrategies, Inc. dated August 27, 1992, and the *Quarterly Monitoring/Well Installation Report* prepared by GeoStrategies, Inc. dated September 25, 1992.

A vapor extraction pilot test was conducted in October 1991. In December 1991, a 4-hr Step followed by a 24-hr constant-rate drawdown aquifer pumping tests were performed. These results were published within the *Aquifer Test/Vapor Well Installation Report* prepared by GeoStrategies, Inc. dated August 27, 1992.

In 1992, Soil Vapor Extraction (SVE) and Groundwater Extraction and Treatment (GWET) systems were installed at the Site. The GWET system consisted of two existing recovery wells (AR-1 and AR-2) and an onsite treatment facility. The GWET system became operational on January 5, 1993. The SVE system consisted of eight vapor extraction wells (AV-1 through AV-7 and A-1) and began SVE system operation on January 7, 1993. In August 1995, both the GWET and SVE systems were shutdown due to low influent concentrations. By that time an estimated total of 334.6 pounds (~54.9 gallons) of Total Purgeable Petroleum Hydrocarbons as Gasoline (TPPHg) had been removed by the SVE system, and 0.81 pounds of TPPH-G had been removed by the GWET system. The systems were decommissioned and removed from the Site in 1997.

On November 20, 1996, a *Case Closure Summary* report was prepared and submitted by Pacific Environmental Group, Inc.. The report stated that "remediation and site assessment are complete." However, Site closure was not approved by the Alameda County Environmental Health (ACEH).

On July 31, 2001, Delta Environmental Consultants, Inc. conducted soil sampling during product line and dispenser removal and upgrade activities. Soil samples were collected beneath the dispensers following their removal (PL-1 through PL-4) and along the product line trenches at depths ranging from 3.6 to 4.8 ft bgs (DP-1 through DP-4). Petroleum hydrocarbon were reported in sample PL-3 (southwest dispenser) at concentrations of 1,400 mg/kg TPHg, 0.32 mg/kg benzene, 15 mg/kg toluene, 15 mg/kg ethylbenzene, and 94 mg/kg total xylenes. At the request of ACEH, UST soil samples were collected on the east side of the current UST pit at approximately three ft bgs (UST-1 and UST-2). Petroleum hydrocarbons were reported in sample UST-1 (close to sample PL-3) at concentrations of 1,400 mg/kg TPHg, 2.4 mg/kg benzene, 31 mg/kg toluene, 17 mg/kg ethylbenzene, and 110 mg/kg total xylenes. Approximately seven cubic yards of soil were excavated in the area of sample PL-3. A confirmation soil sample was collected from the base of the excavation at approximately 9 ft bgs. No soil was excavated immediately adjacent to the locations of the UST samples due to the proximity of the USTs. Approximately 9.8 cubic yards of soil was removed from the Site during product line and dispenser upgrades and transported to an offsite facility for disposal and/or treatment (Delta Environmental Consultants, Inc., 2001).

Groundwater monitoring and sampling of the Site wells began in October 1991. Groundwater monitoring and sampling was discontinued following the Second Quarter 1997. During five consecutive monitoring and sampling events between First Quarter 1996 and Second Quarter 1997, no petroleum hydrocarbon contaminants were detected above the laboratory reporting limits (Pacific Environmental Group, Inc., 1997). As requested by ACEH in their letter dated June 20, 2006 the wells associated with the Site were redeveloped and sampled during the Third Quarter of 2006. Sampling was consistent with results previously reported prior to and following the case closure request, with the exception that monitoring since 2006 has included analysis for fuel oxygenates, methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), di-isopropyl ether (DIPE), tertiary butyl alcohol (TBA), ethanol, and the minor lead-scavenging additives 1,2-dichloroethane (1,2-DCA), and

ethylene dibromide (EDB). Gasoline range organics (GRO), petroleum hydrocarbon constituents, and oxygenates have not been detected in groundwater samples since 1995 in wells A-1, A-2, A-4, and A-5, and since their installation in the remainder wells, with the exception of an MTBE concentration of 22 µg/L in well A-1 (July 17, 2006). Since no detections of MTBE have been observed prior to and after the July 17, 2006 sampling event, it is assumed that the single detection was an anomaly. Fuel additives have not been detected in groundwater samples from wells A-3, A-4, A-5, and AR-2 since sampling for these constituents started. TAME and 1,2-DCA have been observed at maximum detected concentrations of 3.3 and 1.2 µg/L, respectively, in wells A-1, A-2, and AR-1 (Broadbent & Associates Inc. [Broadbent], 2011).

On June 10, 2009, Stratus field personnel observed Resonant Sonic International Drilling advance three soil borings (B-7, B-8, and B-9) on the eastern side of the Station Building around the former UST pits. A total of 12 soil samples were collected from the three borings at depths of 5, 8, 11, and 14 ft bgs, with the deeper two samples (11 and 14 ft bgs) being below the water table. Maximum detected concentrations include GRO at 2,000 mg/kg, benzene at 0.23 mg/kg, toluene at 14 mg/kg, ethylbenzene at 18 mg/kg, and total xylenes at 210 mg/kg (Broadbent, 2009). The maximum detections were from boring B-8 at 11 ft bgs, closest to the back side of the Station Building. Almost no petroleum compounds were detected in the shallower, vadose samples (5 and 8 ft bgs).

On June 15, 2012, Broadbent observed WDC Exploration & Wells installed four soil vapor probes (SG-1A, SG-1B, SG-2A, and SG-2B) between the station building and the former UST location. Soil vapor probes SG-1A and SG-2A were screened between 3.5 and 4 ft bgs, and SG-1B and SG-2B were screened between 5.5 and 6 ft bgs. Soil samples were collected between June 28 and 29, 2012, by Broadbent and analyzed for GRO, benzene, toluene, ethylbenzene, total xylenes (BTEX), MTBE, ETBE, DIPE, TAME, TBA, and ethanol. Maximum detected concentrations include benzene at 2.2 µg/ m<sup>3</sup>, toluene at 11 µg/ m<sup>3</sup>, ethylbenzene at 3.1 µg/ m<sup>3</sup>, TBA at 36 µg/ m<sup>3</sup>, and ethanol at 16 µg/ m<sup>3</sup>. The maximum detected concentrations were well below the environmental screening limits (ESLs). No other analyzed constituents were detected. GRO concentrations were not detected above the laboratory reporting limits; however, the laboratory reporting limits for GRO (38 mg/m<sup>3</sup>) are above the ESLs for residential land use (10 mg/m<sup>3</sup>) and commercial or industrial land use (29 mg/m<sup>3</sup>). Since all of the analyzed constituents were reported well below ESLs, it is assumed that the elevated laboratory reporting limits for GRO concentrations are not a risk for exposure (Broadbent, 2012).

Notes:

\* = Prior to 1992, majority of historical reports were not available and summaries of these activities were found in preceding reports from the Site histories.

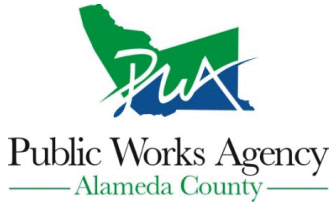
## References

- Alameda County Environmental Health, 20 June 2006. *Fuel Leak Case No. RO0000044 ARCO #2112, 1260 Park Street, Alameda, CA 94501.*
- Applied GeoSystems, Inc., 20 February 1990. *Limited Environmental Site Assessment, ARCO Service Station No. 2112, 1260 Park Street, Alameda, California.*
- Broadbent & Associates, Inc., 29 April 2011. *First Quarter 2011 Ground-Water Monitoring Report, Atlantic Richfield Company Station No. 2112, 1260 Park Street, Alameda, California.*
- Broadbent & Associates, Inc., 10 August 2009. *On-Site Soil Investigation Report, Atlantic Richfield Company Station No. 2112, 1260 Park Street, Alameda, California, ACEHS Case No. RO0000044.*
- Broadbent & Associates, Inc., 7 September 2012. *Vapor Intrusion Assessment Report, Atlantic Richfield Company Station # 2112, 1260 Park Street, Alameda County, California;, ACEHS Case No. RO0000044.*
- Delta Environmental Consultants, Inc., 20 November 2001. *Product Line and Dispenser Island Sampling Results, ARCO Station No. 2112, 1260 Park Street, Alameda, California.*
- GeoStrategies, Inc., 7 November 1990. *Tank Replacement Observation Report, ARCO Service Station No. 2112, 1260 Park Street, Alameda, California.*
- Pacific Environmental Group, Inc., 20 November 1996. *Case Closure Summary, ARCO Service Station No. 2112, 1260 Park Street at Encinal Avenue, Alameda, California.*
- Pacific Environmental Group, Inc., 26 September 1997. *Quarterly Ground-Water Monitoring Report and Remedial System Performance Evaluation – Second Quarter 1997, ARCO Service Station No. 2112, 1260 Park Street at Encinal Avenue, Alameda, California.*

## **APPENDIX C**

### **PERMITS**

# Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street  
Hayward, CA 94544-1395  
Telephone: (510)670-6633 Fax:(510)782-1939

**Application Approved on: 04/02/2014 By jamesy**

**Permit Numbers: W2014-0299 to W2014-0306**  
**Permits Valid from 04/07/2014 to 04/10/2014**

**Application Id:** 1395080038261  
**Site Location:** 1260 Park Street  
**Project Start Date:** 04/07/2014  
**Assigned Inspector:** Contact Steve Miller at (510) 670-5517 or stevem@acpwa.org

**City of Project Site:** Alameda

**Completion Date:** 04/10/2014

**Applicant:** Broadbent & Associates - James Ramos  
875 Cotting Lane, Suite G, Vacaville, CA 95688  
**Property Owner:** Joel Gutierrez  
13411 Imperial Highway, Whittier, CA 90605  
**Client:** Charles Carmel  
P.O. Box 1257, San Ramon, CA 94583  
**Contact:** Kristene Tidwell

**Phone:** 707-455-7290  
**Phone:** --  
**Phone:** --  
**Phone:** 707-455-7290  
**Cell:** 707-430-7133

**Total Due:** \$3044.00  
**Total Amount Paid:** \$3044.00  
**Payer Name : Broadbent & Associates** Paid By: CHECK **PAID IN FULL**

**Works Requesting Permits:**

Remediation Well Destruction-Extraction - 7 Wells  
Driller: Gregg Drilling - Lic #: 485165 - Method: press

**Work Total: \$265.00**

**Specifications**

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2014-0299	04/02/2014	07/06/2014	AV-1	12.00 in.	4.00 in.	1.00 ft	13.00 ft	No Records	No Records	No Records
W2014-0299	04/02/2014	07/06/2014	AV-2	12.00 in.	4.00 in.	1.00 ft	11.50 ft	No Records	No Records	No Records
W2014-0299	04/02/2014	07/06/2014	AV-3	12.00 in.	4.00 in.	1.00 ft	13.00 ft	No Records	No Records	No Records
W2014-0299	04/02/2014	07/06/2014	AV-4	10.00 in.	4.00 in.	1.00 ft	13.00 ft	No Records	No Records	No Records
W2014-0299	04/02/2014	07/06/2014	AV-5	10.00 in.	4.00 in.	1.00 ft	13.00 ft	No Records	No Records	No Records
W2014-0299	04/02/2014	07/06/2014	AV-6	10.00 in.	4.00 in.	1.00 ft	13.00 ft	No Records	No Records	No Records
W2014-0299	04/02/2014	07/06/2014	AV-7	10.00 in.	4.00 in.	1.00 ft	13.00 ft	No Records	No Records	No Records

**Specific Work Permit Conditions**

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Include permit number and site map.

## Alameda County Public Works Agency - Water Resources Well Permit

3. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.
4. Applicant shall contact Steve Miller for an inspection time at (510) 670-5517 or email to [stevem@acpwa.org](mailto:stevem@acpwa.org) at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
5. Remove the Christy box or similar structure. Destroy well by overdrilling & Tremie Grouting with Cement. After the seal has set, backfill the remaining hole with concrete or compacted material to match existing.
6. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
7. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

Well Destruction-Monitoring - 7 Wells

Driller: Gregg Drilling - Lic #: 485165 - Method: press

**Work Total: \$2779.00**

### Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2014-0300	04/02/2014	07/06/2014	A-1	10.00 in.	3.00 in.	1.00 ft	30.00 ft	No Records	No Records	No Records
W2014-0301	04/02/2014	07/06/2014	A-2	10.00 in.	3.00 in.	1.00 ft	30.00 ft	No Records	No Records	No Records
W2014-0302	04/02/2014	07/06/2014	A-3	10.00 in.	3.00 in.	1.00 ft	30.00 ft	No Records	No Records	No Records
W2014-0303	04/02/2014	07/06/2014	A-4	10.00 in.	3.00 in.	1.00 ft	30.00 ft	No Records	No Records	No Records
W2014-0304	04/02/2014	07/06/2014	A-5	8.00 in.	3.00 in.	1.00 ft	30.00 ft	No Records	No Records	No Records
W2014-0305	04/02/2014	07/06/2014	AR-1	12.00 in.	4.00 in.	1.00 ft	30.00 ft	No Records	No Records	No Records
W2014-0306	04/02/2014	07/06/2014	AR-2	12.00 in.	4.00 in.	1.00 ft	30.00 ft	No Records	No Records	No Records

### Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.
2. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

## Alameda County Public Works Agency - Water Resources Well Permit

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Include permit number and site map.
4. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.
5. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost and liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.
6. Applicant shall contact Steve Miller for an inspection time at (510) 670-5517 or email to [stevem@acpwa.org](mailto:stevem@acpwa.org) at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
7. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.
8. Remove the Christy box or similar structure.

Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil.

After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

9. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
-

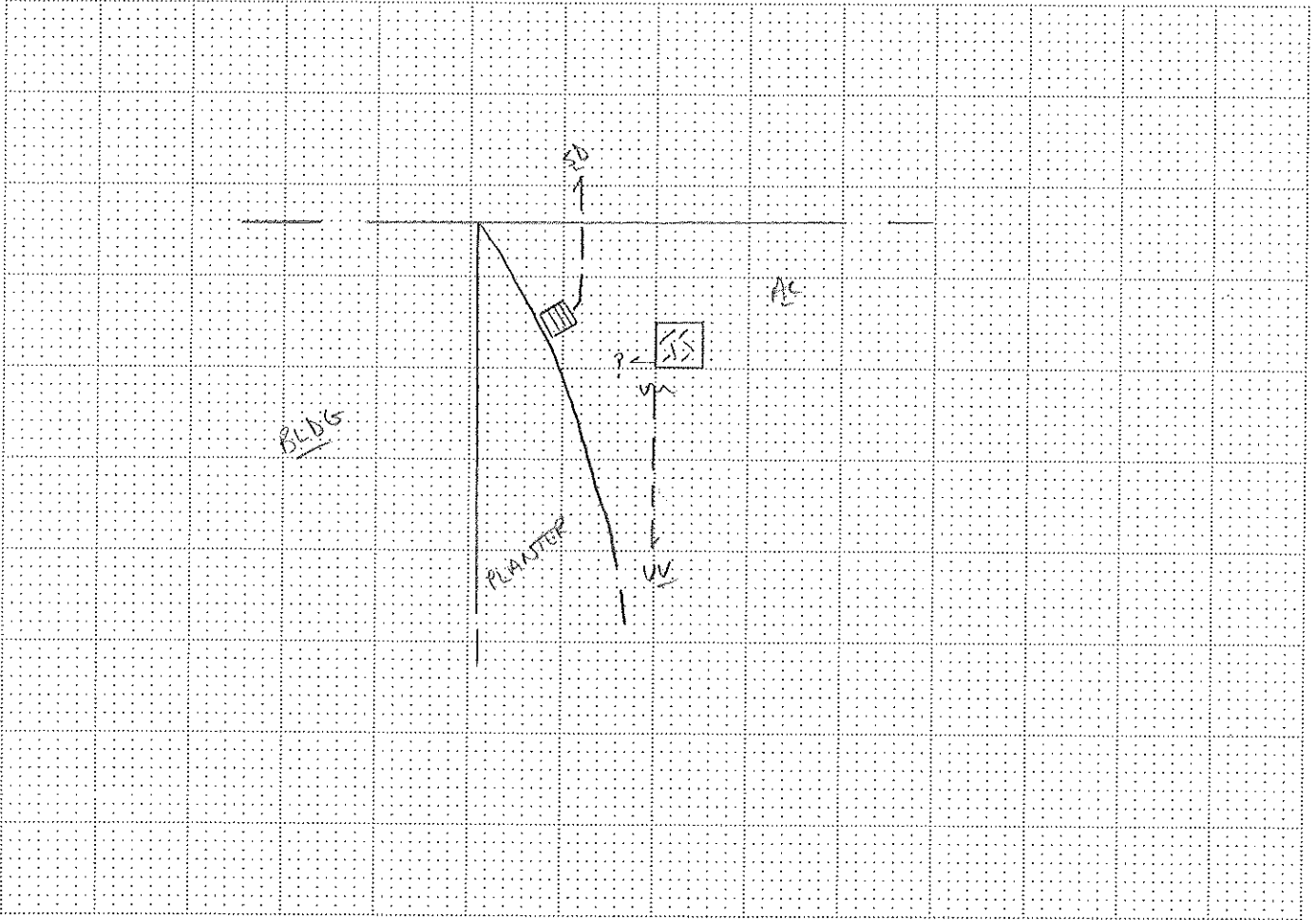
**APPENDIX D**

UTILITY CLEARANCE SURVEY



PERSONNEL: DJK TWB  
 JOB: 14-1034.25 DATE: 4-4-14

CLIENT: BROADBENT  
 LOCATION: ALAMEDA  
 BORING: AR-2



Scale: 1" = 10'

EXPLANATION

NOTES

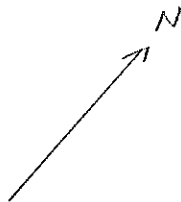
- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment


- |   |   |   |
|---|---|---|
| Equipment:                                      | Procedure:  | Surface Conditions:                     |
| <input checked="" type="checkbox"/> GPR (Radar) | <input type="checkbox"/> EMC (Conduction)           | <input type="checkbox"/> Wet            |
| <input checked="" type="checkbox"/> RD 4000     | <input checked="" type="checkbox"/> EMI (Induction) | <input checked="" type="checkbox"/> Dry |
| <input checked="" type="checkbox"/> M Scope     | <input checked="" type="checkbox"/> Ambient         | <input type="checkbox"/> other          |
| <input type="checkbox"/> other                  | <input checked="" type="checkbox"/> GPR             |   |

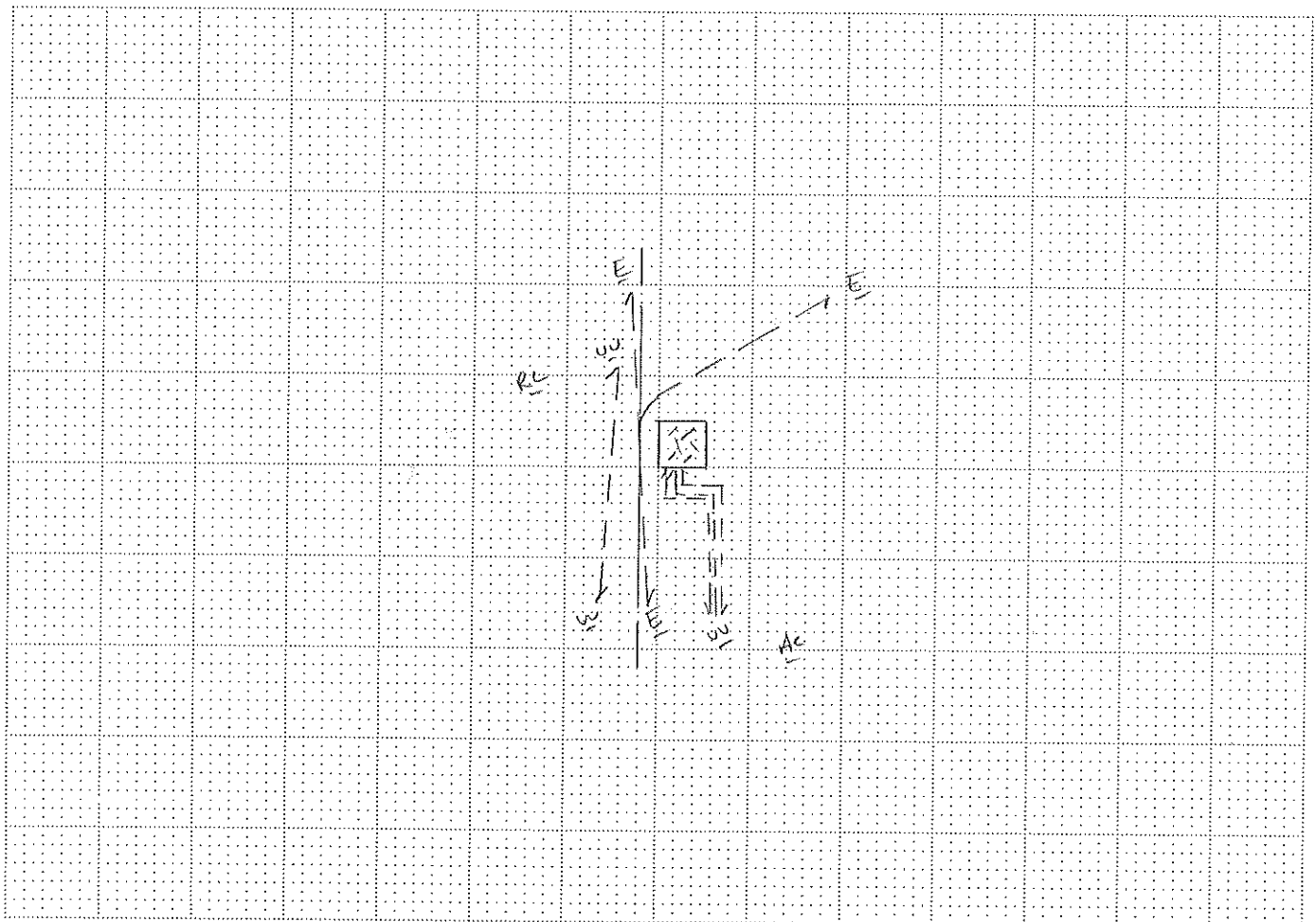
- Utilities
- T (Telephone, Comm.)
  - E (Electric)
  - NG (Natural Gas)
  - CA (Compressed Air)
  - STM (Steam)
  - SS (Sanitary Sewer)
  - SD (Storm Drain)
  - W (Water)
  - FS (Fire Suppression)
  - UU (Undifferentiated Utility)

- Surface
- RC (Reinforced Concrete)
  - AC (Asphalt)
  - C (Concrete)
  - Soil
  - Gravel
  - other

REMARKS





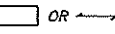
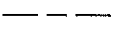


PERSONNEL: DJK TwB		CLIENT: BROADBENT
JOB: 14-1034.25	DATE: 4-4-14	LOCATION: ALAMEDA
		BORING: AV-7



Scale: 1" = 10'

**EXPLANATION**

-  Original Boring Location
-  Final Boring Location
-  Existing Well Location
-  GPR Traverse
-  Localized GPR Anomaly
-  Utility Alignment

Utilities

- T (Telephone, Comm.)
- E (Electric)
- NG (Natural Gas)
- CA (Compressed Air)
- STM (Steam)
- SS (Sanitary Sewer)
- SD (Storm Drain)
- W (Water)
- FS (Fire Suppression)
- UU (Undifferentiated Utility)

Surface

- RC (Reinforced Concrete)
- AC (Asphalt)
- C (Concrete)
- Soil
- Gravel
- other

**NOTES**

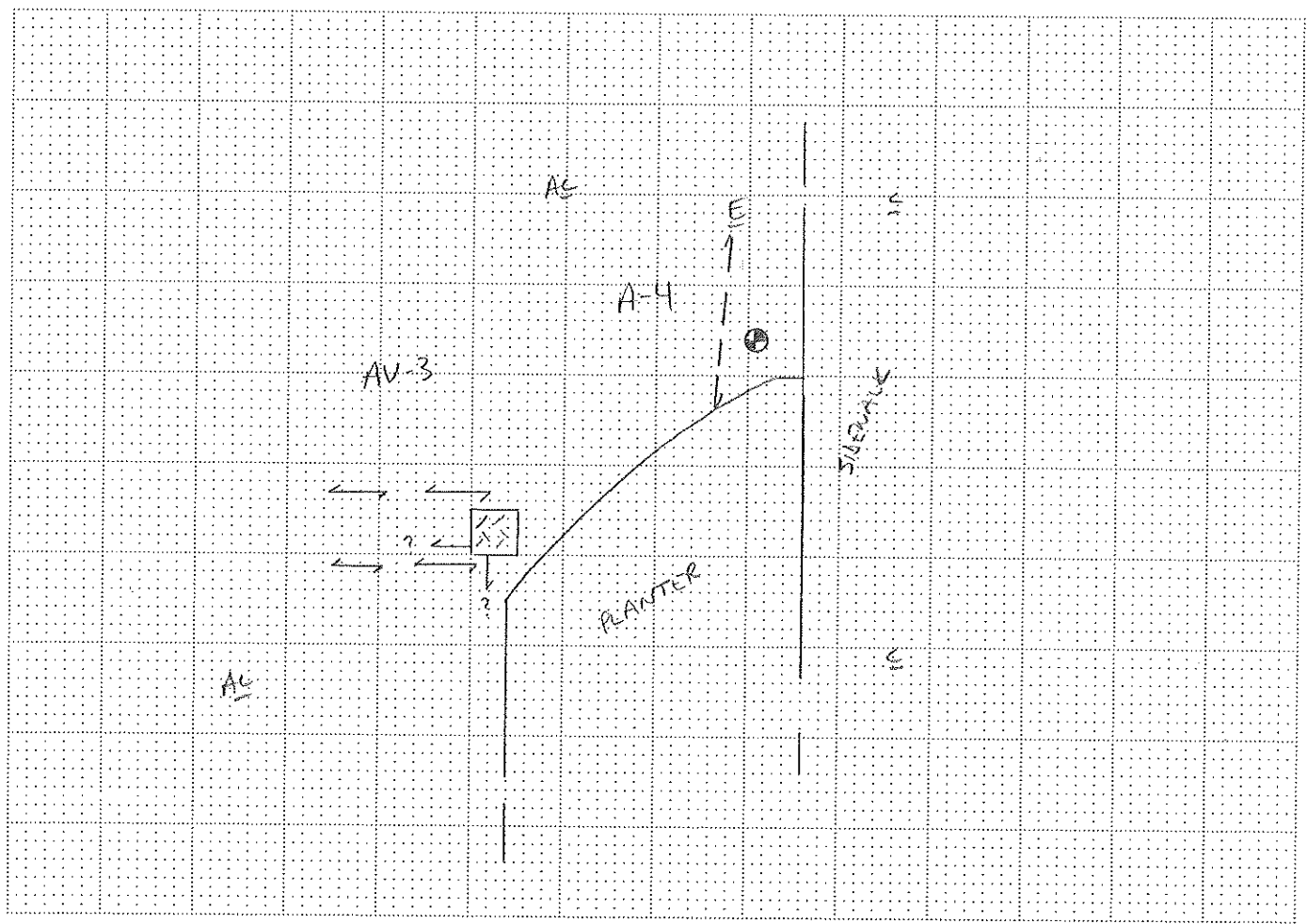
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| <input checked="" type="checkbox"/> RD 4000     | <input checked="" type="checkbox"/> EMI (Induction) | <input checked="" type="checkbox"/> Dry |
| <input checked="" type="checkbox"/> M Scope     | <input checked="" type="checkbox"/> Ambient         | - other                                 |
| - other   | <input checked="" type="checkbox"/> GPR             |   |

**REMARKS**



PERSONNEL: DJK TWB  
 JOB: 14-1034.25 DATE: 4-4-14

CLIENT: BROADBENT  
 LOCATION: ALAMEDA  
 BORING: AV-3 & A-4



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

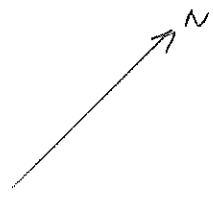
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- T (Telephone, Comm.)
  - ✓ E (Electric)
  - NG (Natural Gas)
  - CA (Compressed Air)
  - STM (Steam)
  - SS (Sanitary Sewer)
  - SD (Storm Drain)
  - W (Water)
  - FS (Fire Suppression)
  - UU (Undifferentiated Utility)

- Surface
- RC (Reinforced Concrete)
  - ✓ AC (Asphalt)
  - C (Concrete)
  - Soil
  - Gravel
  - other

NOTES

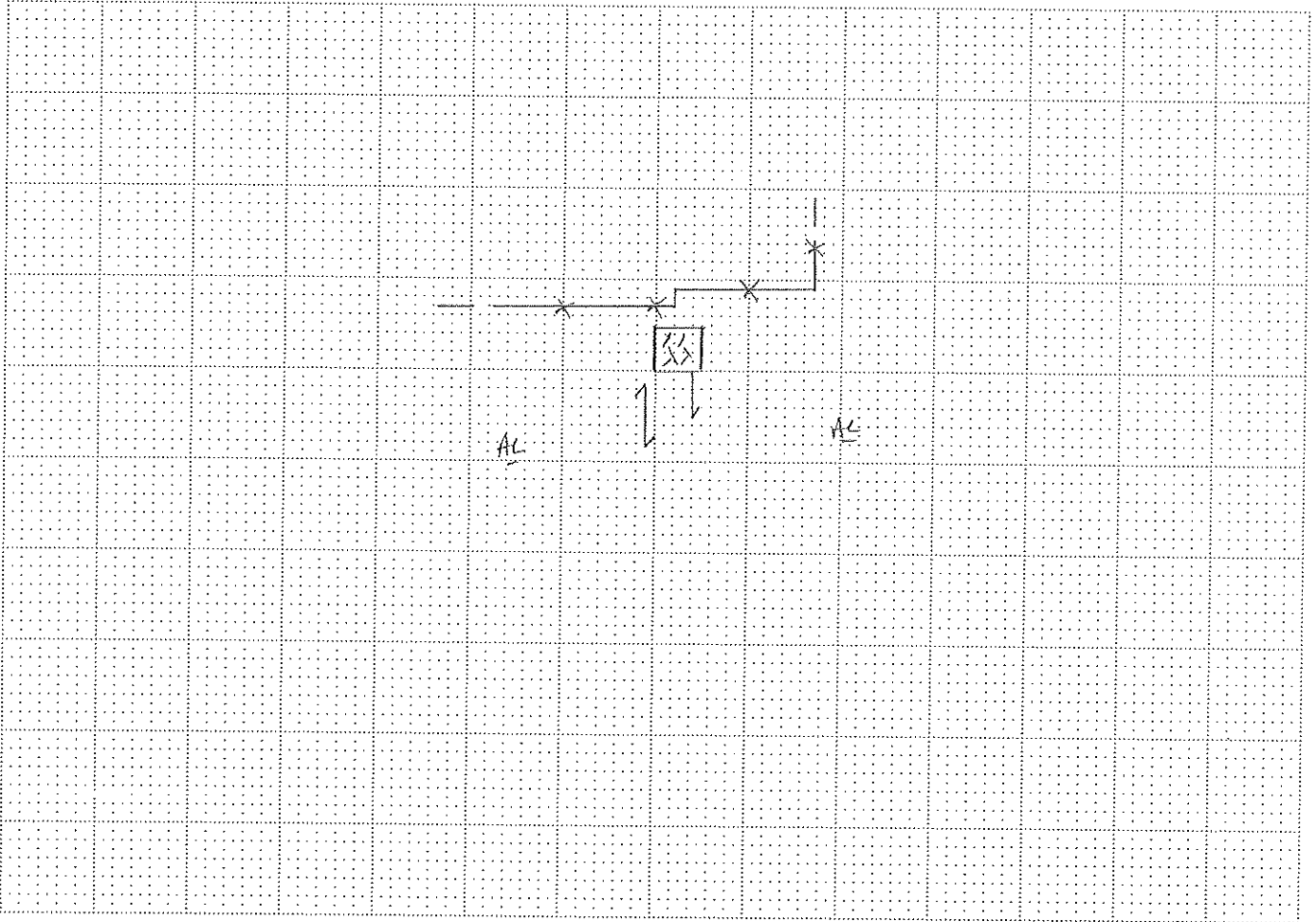
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| ✓ RD 4000         | ✓ EMI (Induction)  | ✓ Dry                      |
| ✓ M Scope         | - Ambient          | - other                    |
| - other           | ✓ GPR              |                            |

REMARKS



PERSONNEL: DJK TWB  
 JOB: 14-1034.25 DATE: 4-4-14

CLIENT: BROADBENT  
 LOCATION: ALAMEDA  
 BORING: AV-4



Scale: 1" = 10'

**EXPLANATION**

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

Utilities

- T (Telephone, Comm.)
- E (Electric)
- NG (Natural Gas)
- CA (Compressed Air)
- STM (Steam)
- SS (Sanitary Sewer)
- SD (Storm Drain)
- W (Water)
- FS (Fire Suppression)
- UU (Undifferentiated Utility)

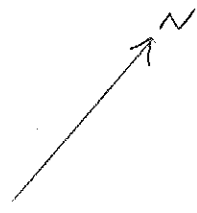
Surface

- RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- C (Concrete)
- Soil
- Gravel
- other

**NOTES**

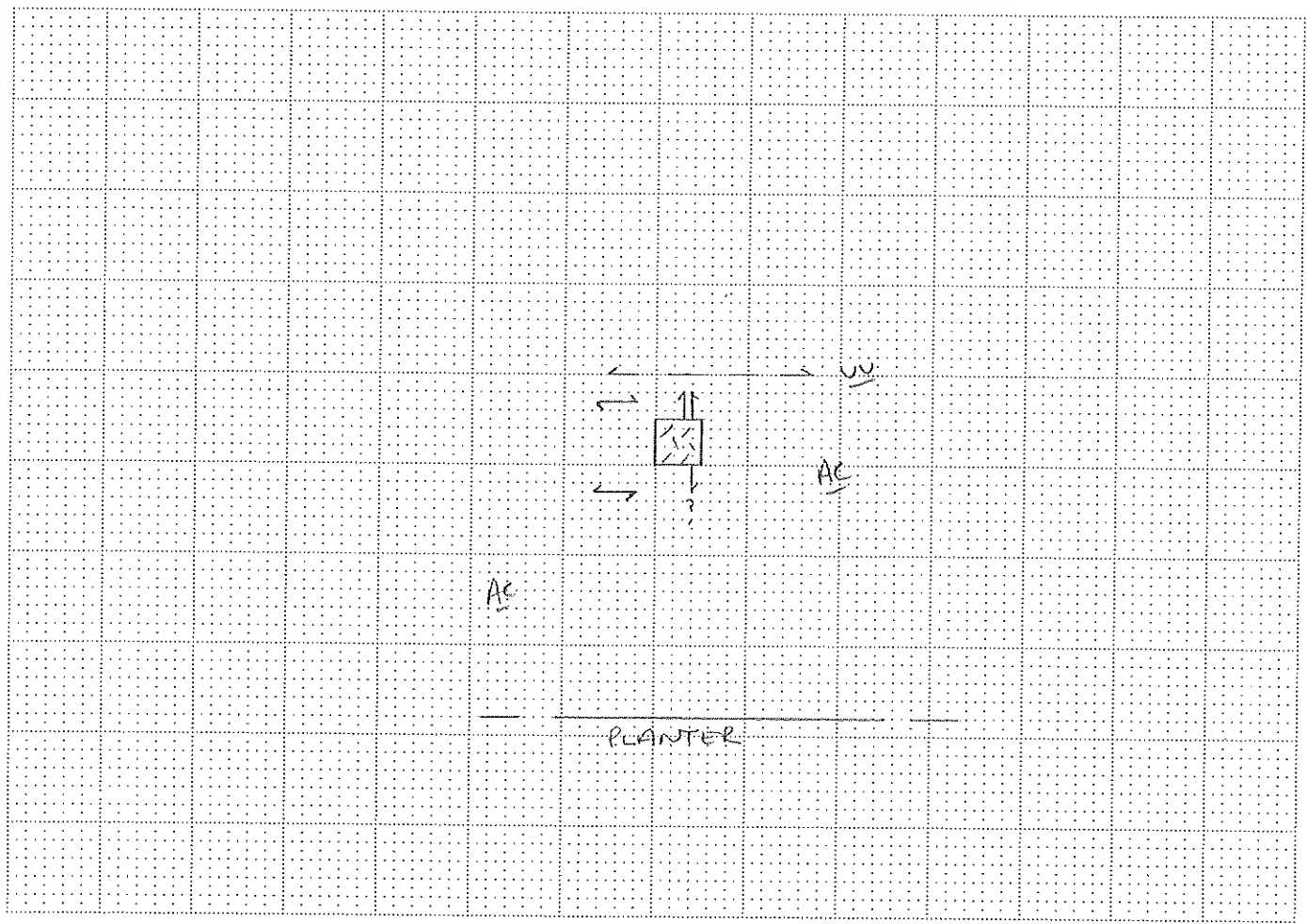
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|---------------|--------------------|---------------------|
| Equipment:    | Procedure:         | Surface Conditions: |
| ✓ GPR (Radar) | - EMC (Conduction) | - Wet               |
| ✓ RD 4000     | ✓ EMI (Induction)  | ✓ Dry               |
| - M Scope     | - Ambient          | - other             |
| - other       | ✓ GPR              |                     |

**REMARKS**



PERSONNEL: DJK TWB  
 JOB: 14-1034.25 DATE: 4-4-14

CLIENT: BROADBENT  
 LOCATION: ALAMEDA  
 BORING: AR-1



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

Utilities

- T (Telephone, Comm.)
- E (Electric)
- NG (Natural Gas)
- CA (Compressed Air)
- STM (Steam)
- SS (Sanitary Sewer)
- SD (Storm Drain)
- W (Water)
- FS (Fire Suppression)
- UU (Undifferentiated Utility)

Surface


- RC (Reinforced Concrete)
- AC (Asphalt)
- C (Concrete)
- Soil
- Gravel
- other

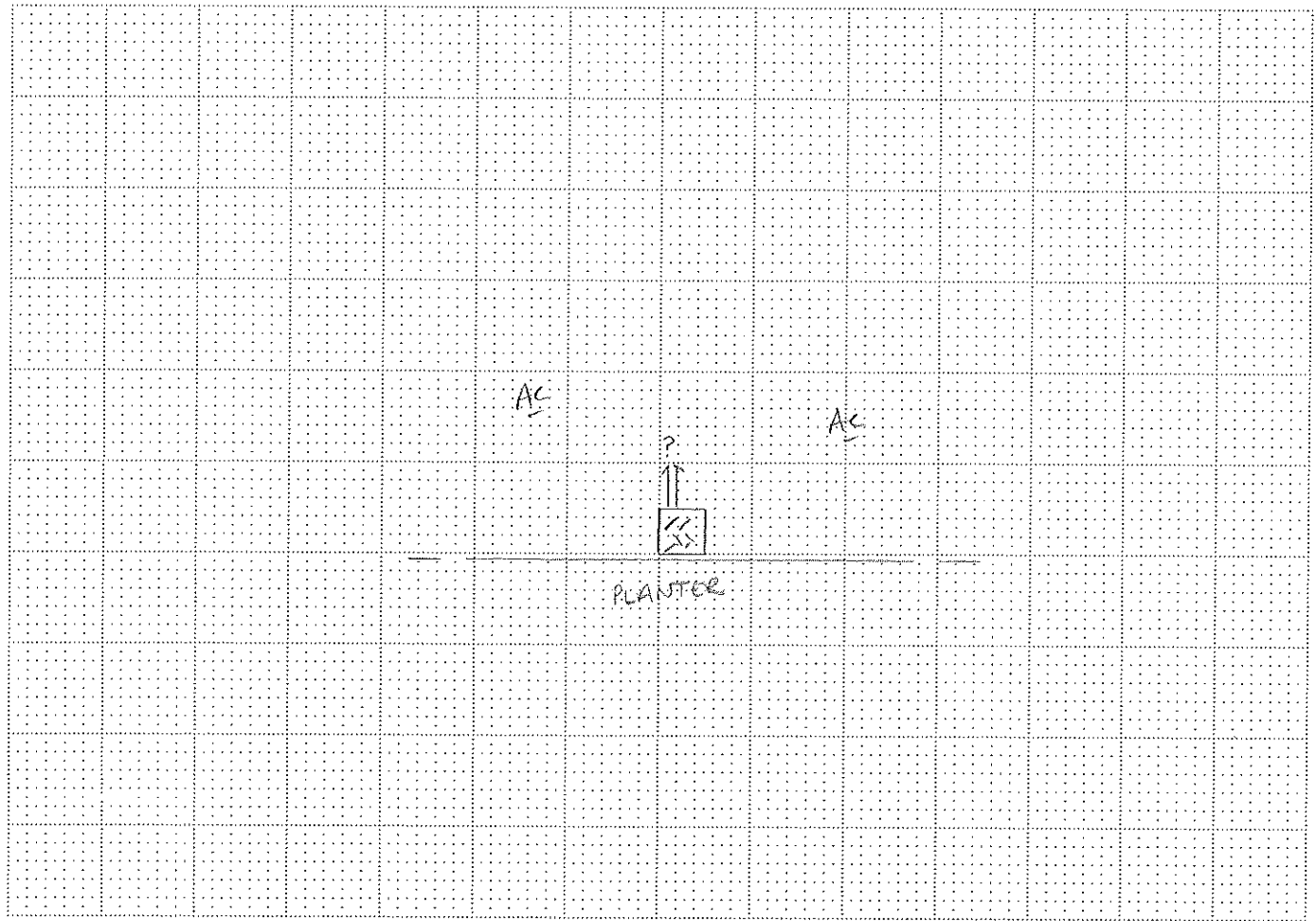
NOTES

- |   |   |   |
|---|---|---|
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| <input checked="" type="checkbox"/> RD 4000     | <input checked="" type="checkbox"/> EMI (Induction) | <input checked="" type="checkbox"/> Dry |
| <input checked="" type="checkbox"/> M Scope     | <input type="checkbox"/> Ambient                    | <input type="checkbox"/> other          |
| <input type="checkbox"/> other                  | <input checked="" type="checkbox"/> GPR             |   |

REMARKS





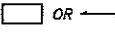
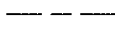


PERSONNEL: DJK TWB		CLIENT: BROADBENT
JOB: 14-1034.25	DATE: 4-4-14	LOCATION: ALAMEDA
		BORING: AV-5



Scale: 1" = 10'

**EXPLANATION**

-  Original Boring Location
-  Final Boring Location
-  Existing Well Location
-  GPR Traverse
-  Localized GPR Anomaly
-  Utility Alignment

Utilities

- T (Telephone, Comm.)
- E (Electric)
- NG (Natural Gas)
- CA (Compressed Air)
- STM (Steam)
- SS (Sanitary Sewer)
- SD (Storm Drain)
- W (Water)
- FS (Fire Supression)
- UU (Undifferentiated Utility)

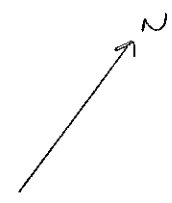
Surface

- RC (Reinforced Concrete)
- AC (Asphalt)
- C (Concrete)
- Soil
- Gravel
- other

**NOTES**

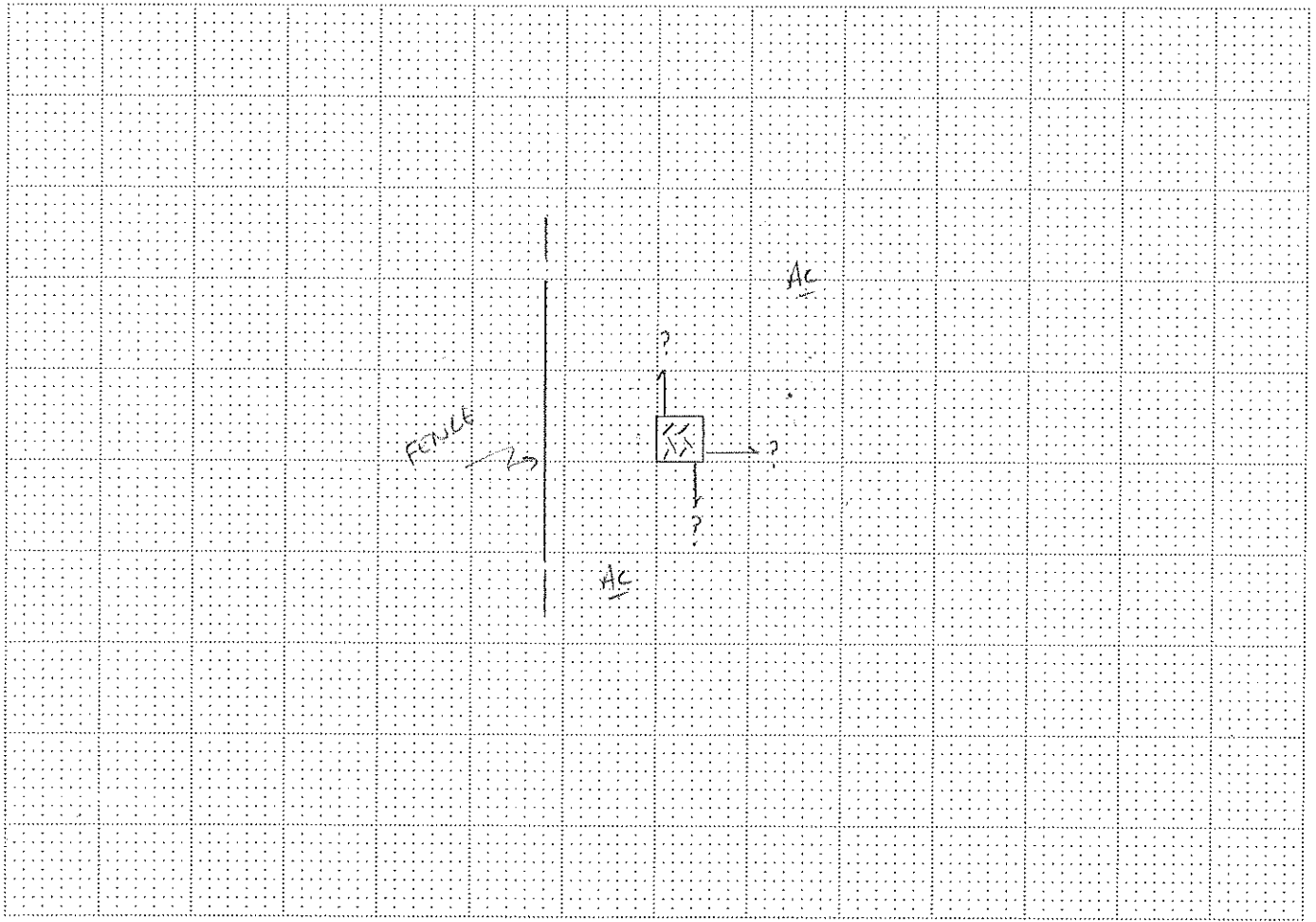
- |   |   |   |
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| <input checked="" type="checkbox"/> RD 4000     | <input checked="" type="checkbox"/> EMI (Induction) | <input checked="" type="checkbox"/> Dry |
| <input checked="" type="checkbox"/> M Scope     | <input checked="" type="checkbox"/> Ambient         | <input type="checkbox"/> other          |
| <input type="checkbox"/> other                  | <input checked="" type="checkbox"/> GPR             |   |

**REMARKS**



PERSONNEL: DJK TWB  
 JOB: 14-1034.25 DATE: 4-4-14

CLIENT: BROADBENT  
 LOCATION: ALAMEDA  
 BORING: AV-1



Scale: 1" = 10'

EXPLANATION

NOTES

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

- |   |   |   |
|---|---|---|
| Equipment:                                      | Procedure:  | Surface Conditions:                     |
| <input checked="" type="checkbox"/> GPR (Radar) | <input type="checkbox"/> EMC (Conduction)           | <input type="checkbox"/> Wet            |
| <input checked="" type="checkbox"/> RD 4000     | <input checked="" type="checkbox"/> EMI (Induction) | <input checked="" type="checkbox"/> Dry |
| <input checked="" type="checkbox"/> M Scope     | <input checked="" type="checkbox"/> Ambient         | <input type="checkbox"/> other          |
| <input type="checkbox"/> other                  | <input checked="" type="checkbox"/> GPR             |   |

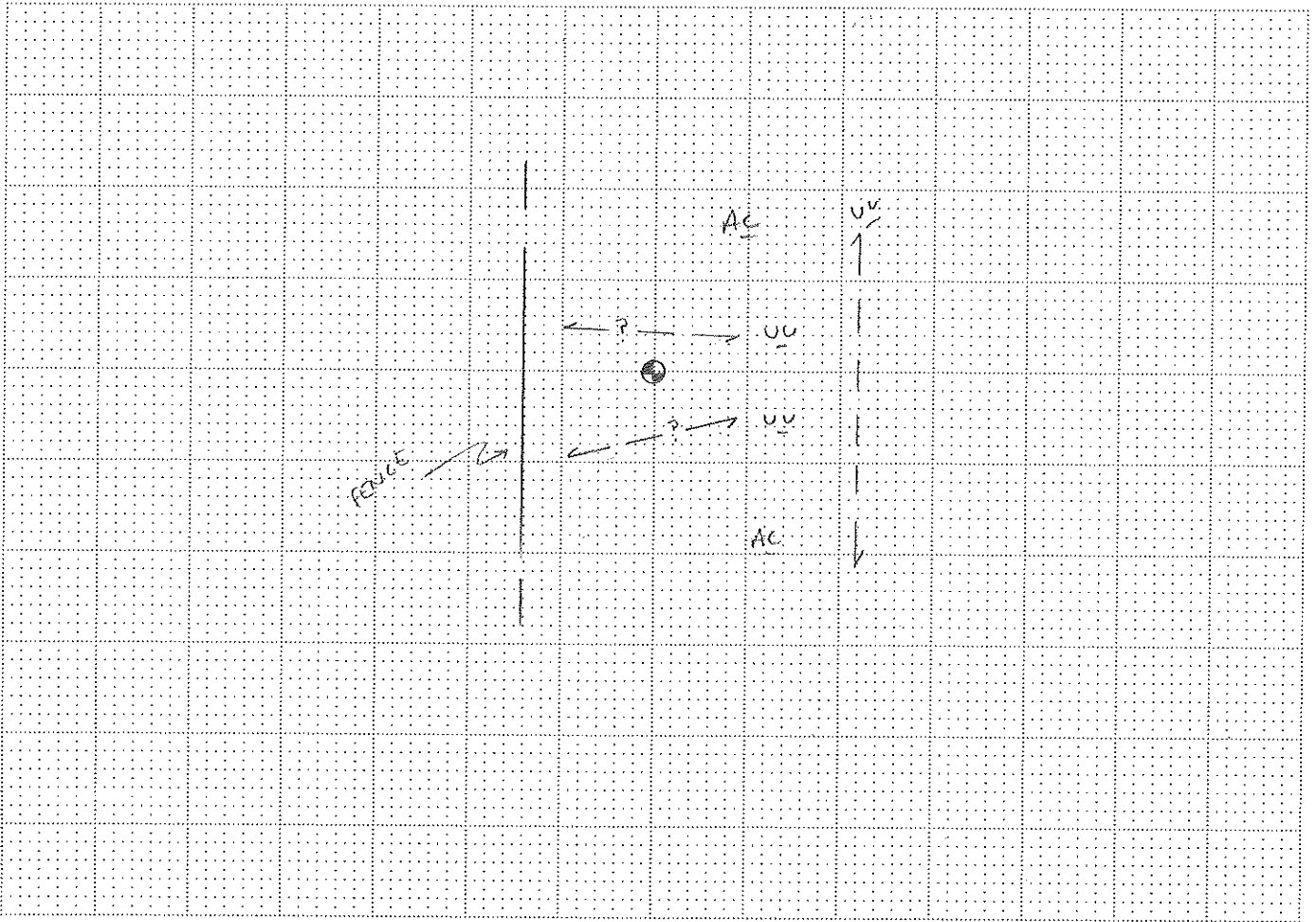
- Utilities
- |   |  |
|---|--|
| <input type="checkbox"/> T (Telephone, Comm.) | <input type="checkbox"/> SS (Sanitary Sewer)           |
| <input type="checkbox"/> E (Electric)         | <input type="checkbox"/> SD (Storm Drain)              |
| <input type="checkbox"/> NG (Natural Gas)     | <input type="checkbox"/> W (Water)                     |
| <input type="checkbox"/> CA (Compressed Air)  | <input type="checkbox"/> FS (Fire Suppression)         |
| <input type="checkbox"/> STM (Steam)          | <input type="checkbox"/> UU (Undifferentiated Utility) |
- Surface
- |   |                                 |
|---|---------------------------------|
| <input type="checkbox"/> RC (Reinforced Concrete) | <input type="checkbox"/> Soil   |
| <input checked="" type="checkbox"/> AC (Asphalt)  | <input type="checkbox"/> Gravel |
| <input type="checkbox"/> C (Concrete)             | <input type="checkbox"/> other  |

REMARKS



PERSONNEL: DJK TWB  
 JOB: 14-1034.25 DATE: 4-4-14

CLIENT: BROADBENT  
 LOCATION: ALAMEDA  
 BORING: A-2



Scale: 1" = 10'

EXPLANATION

NOTES

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

- | Equipment:                                      | Procedure:  | Surface Conditions:                     |
|---|---|---|
| <input checked="" type="checkbox"/> GPR (Radar) | <input type="checkbox"/> EMC (Conduction)           | <input type="checkbox"/> Wet            |
| <input type="checkbox"/> RD 4000                | <input checked="" type="checkbox"/> EMI (Induction) | <input checked="" type="checkbox"/> Dry |
| <input checked="" type="checkbox"/> M Scope     | <input type="checkbox"/> Ambient                    | <input type="checkbox"/> other          |
| <input type="checkbox"/> other                  | <input checked="" type="checkbox"/> GPR             |   |

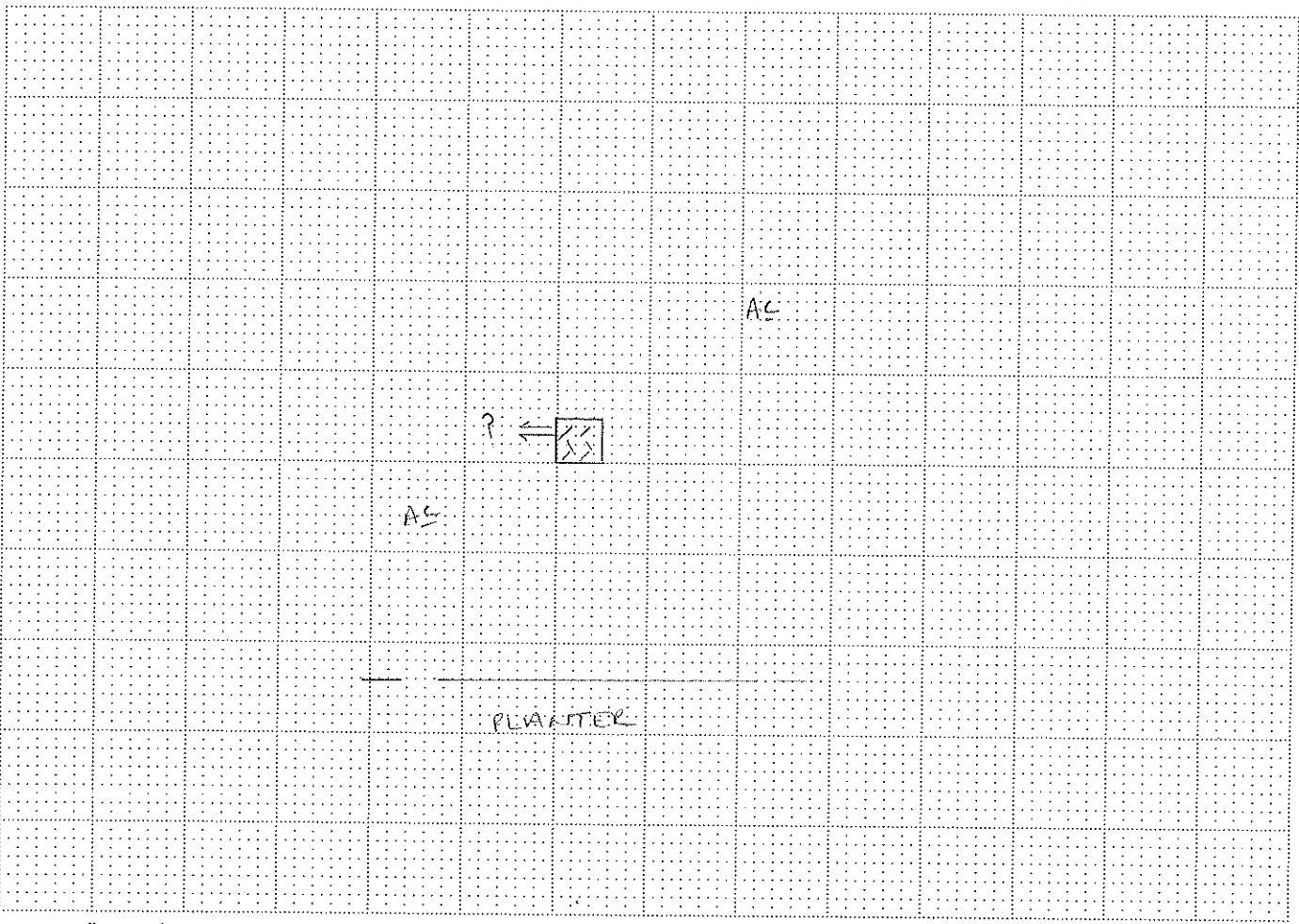
- Utilities
- T (Telephone, Comm.)
  - E (Electric)
  - NG (Natural Gas)
  - CA (Compressed Air)
  - STM (Steam)
  - SS (Sanitary Sewer)
  - SD (Storm Drain)
  - W (Water)
  - FS (Fire Supression)
  - UU (Undifferentiated Utility)
- Surface
- RC (Reinforced Concrete)
  - AC (Asphalt)
  - C (Concrete)
  - Soil
  - Gravel
  - other

REMARKS



PERSONNEL: DJK TWB  
 JOB: 14-1034,25      DATE: 4-4-14

CLIENT: BROADBENT  
 LOCATION: ALAMEDA  
 BORING: AV-2



Scale: 1" = 10'

**EXPLANATION**

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

Utilities

- T (Telephone, Comm.)
- E (Electric)
- NG (Natural Gas)
- CA (Compressed Air)
- STM (Steam)
- SS (Sanitary Sewer)
- SD (Storm Drain)
- W (Water)
- FS (Fire Suppression)
- UU (Undifferentiated Utility)

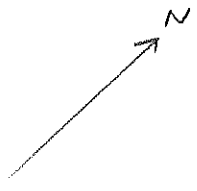
Surface

- RC (Reinforced Concrete)
- AC (Asphalt)
- C (Concrete)
- Soil
- Gravel
- other

**NOTES**

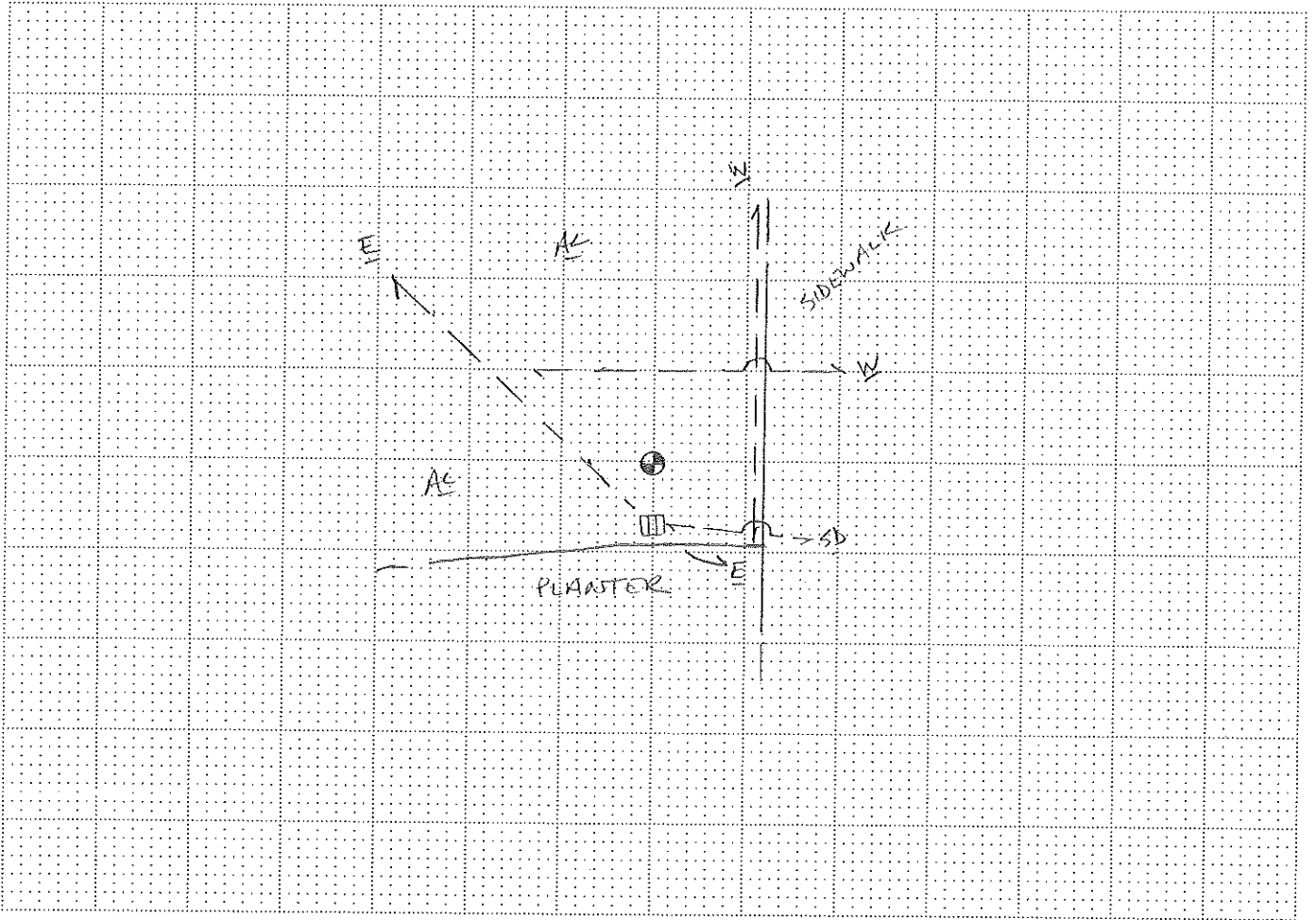
- |   |   |   |
|---|---|---|
| Equipment:                                      | Procedure:  | Surface Conditions:                     |
| <input checked="" type="checkbox"/> GPR (Radar) | <input type="checkbox"/> EMC (Conduction)           | <input checked="" type="checkbox"/> Wet |
| <input checked="" type="checkbox"/> RD 4000     | <input checked="" type="checkbox"/> EMI (Induction) | <input checked="" type="checkbox"/> Dry |
| <input checked="" type="checkbox"/> M Scope     | <input type="checkbox"/> Ambient                    | <input type="checkbox"/> other          |
| <input type="checkbox"/> other                  | <input checked="" type="checkbox"/> GPR             |   |

**REMARKS**



PERSONNEL: *BJK TWB*  
 JOB: *14-1034.25* | DATE: *4-4-14*

CLIENT: *BROADBENT*  
 LOCATION: *ALAMEDA*  
 BORING: *A-3*



Scale: 1" = 10'

**EXPLANATION**

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

Utilities

- T (Telephone, Comm.)
- ✓ E (Electric)
- NG (Natural Gas)
- CA (Compressed Air)
- STM (Steam)
- SS (Sanitary Sewer)
- ✓ SD (Storm Drain)
- ✓ W (Water)
- FS (Fire Suppression)
- UU (Undifferentiated Utility)

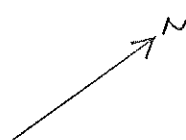
Surface

- RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- C (Concrete)
- Soil
- Gravel
- other

**NOTES**

- |                   |                    |                            |
|-------------------|--------------------|----------------------------|
| <u>Equipment:</u> | <u>Procedure:</u>  | <u>Surface Conditions:</u> |
| ✓ GPR (Radar)     | - EMC (Conduction) | - Wet                      |
| ✓ RD 4000         | ✓ EMI (Induction)  | ✓ Dry                      |
| ✓ M Scope         | ✓ Ambient          | - other                    |
| - other           | ✓ GPR              |                            |

**REMARKS**



PERSONNEL: DJK TWB

CLIENT: BROADBENT

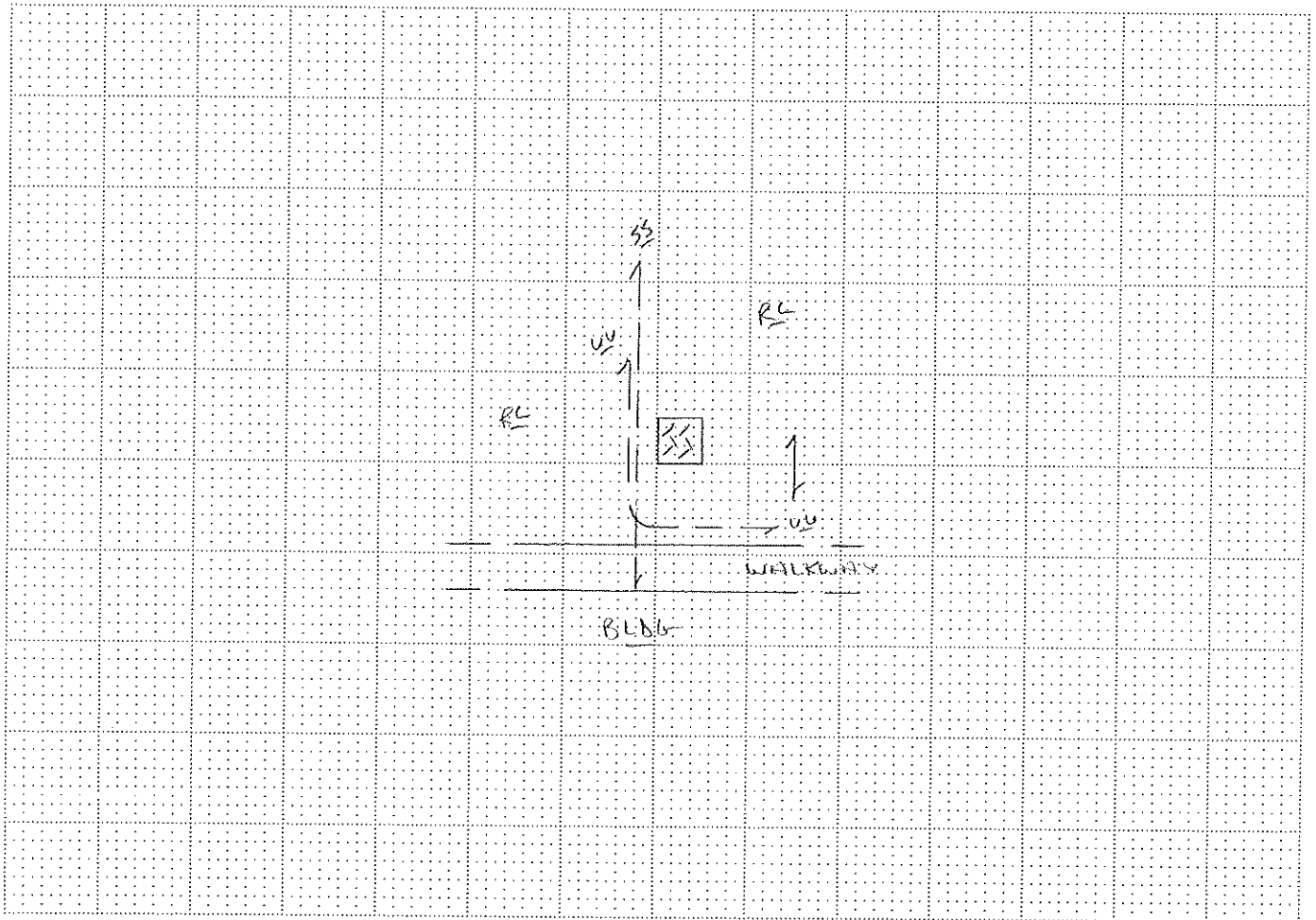
JOB: 14-1034.25

DATE: 4-4-14

LOCATION: ALAMEDA



BORING: AV-6



Scale: 1" = 10'

EXPLANATION

NOTES

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

- |   |   |   |
|---|---|---|
| <b>Equipment:</b>                               | <b>Procedure:</b>                                   | <b>Surface Conditions:</b>              |
| <input checked="" type="checkbox"/> GPR (Radar) | <input type="checkbox"/> EMC (Conduction)           | <input type="checkbox"/> Wet            |
| <input checked="" type="checkbox"/> RD 4000     | <input checked="" type="checkbox"/> EMI (Induction) | <input checked="" type="checkbox"/> Dry |
| <input type="checkbox"/> M Scope                | <input type="checkbox"/> Ambient                    | <input type="checkbox"/> other          |
| <input type="checkbox"/> other                  | <input checked="" type="checkbox"/> GPR             |   |

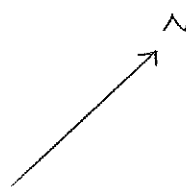
Utilities

- |   |   |
|---|---|
| <input type="checkbox"/> T (Telephone, Comm.) | <input checked="" type="checkbox"/> SS (Sanitary Sewer)           |
| <input type="checkbox"/> E (Electric)         | <input type="checkbox"/> SD (Storm Drain)                         |
| <input type="checkbox"/> NG (Natural Gas)     | <input type="checkbox"/> W (Water)                                |
| <input type="checkbox"/> CA (Compressed Air)  | <input type="checkbox"/> FS (Fire Suppression)                    |
| <input type="checkbox"/> STM (Steam)          | <input checked="" type="checkbox"/> UU (Undifferentiated Utility) |

Surface

- |  |                                 |
|--|---------------------------------|
| <input checked="" type="checkbox"/> RC (Reinforced Concrete) | <input type="checkbox"/> Soil   |
| <input type="checkbox"/> AC (Asphalt)                        | <input type="checkbox"/> Gravel |
| <input type="checkbox"/> C (Concrete)                        | <input type="checkbox"/> other  |

REMARKS



PERSONNEL: DJK TWB

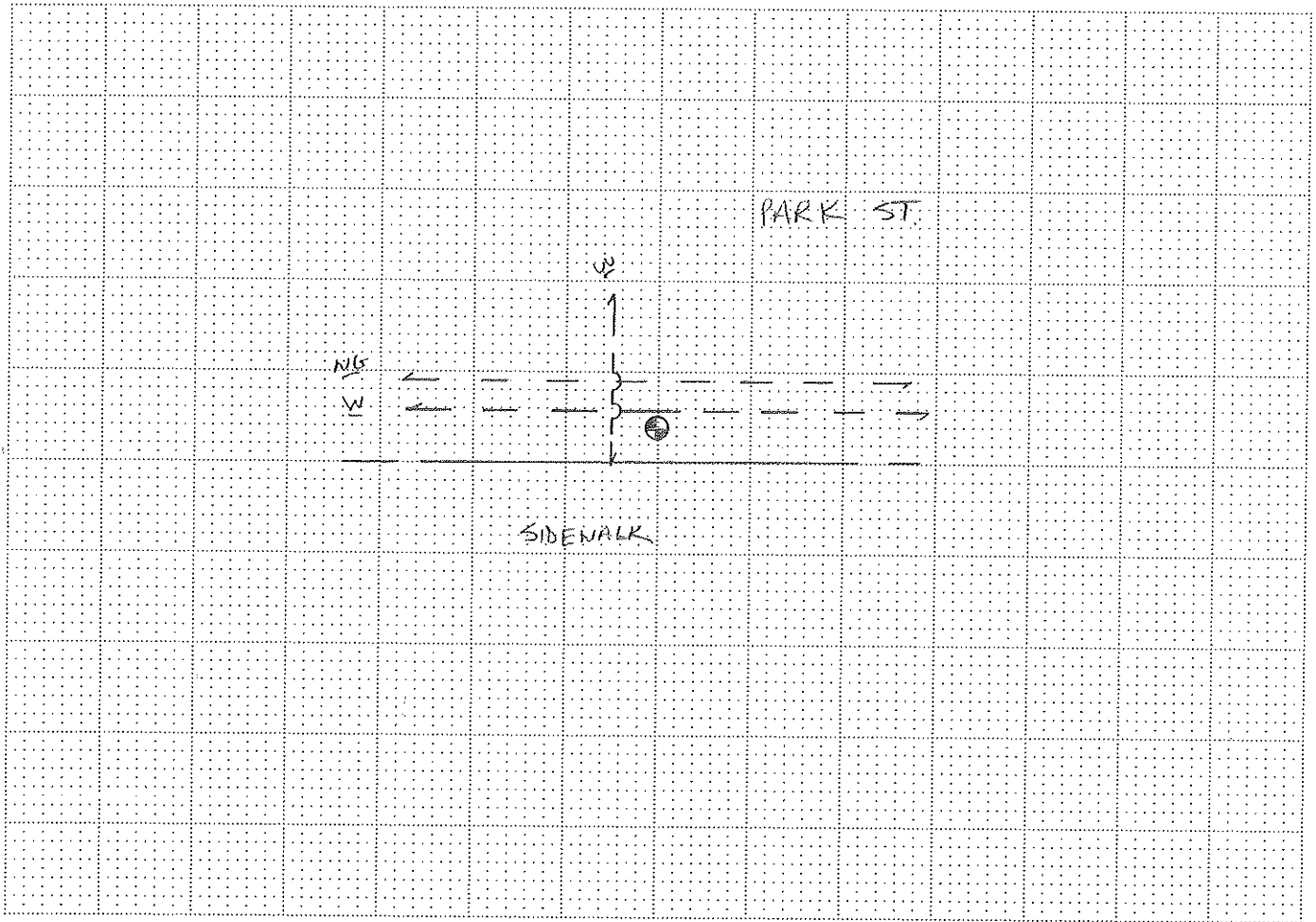
CLIENT: BROADBENT

JOB: 14-1034.25

DATE: 4-4-14

LOCATION: ALAMEDA

BORING: A-5



Scale: 1" = 10'

### EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

#### Utilities

- T (Telephone, Comm.)
- E (Electric)
- ✓ NG (Natural Gas)
- CA (Compressed Air)
- STM (Steam)
- SS (Sanitary Sewer)
- SD (Storm Drain)
- ✓ W (Water)
- FS (Fire Suppression)
- ✓ UU (Undifferentiated Utility)

#### Surface

- RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- C (Concrete)
- Soil
- Gravel
- other

### NOTES

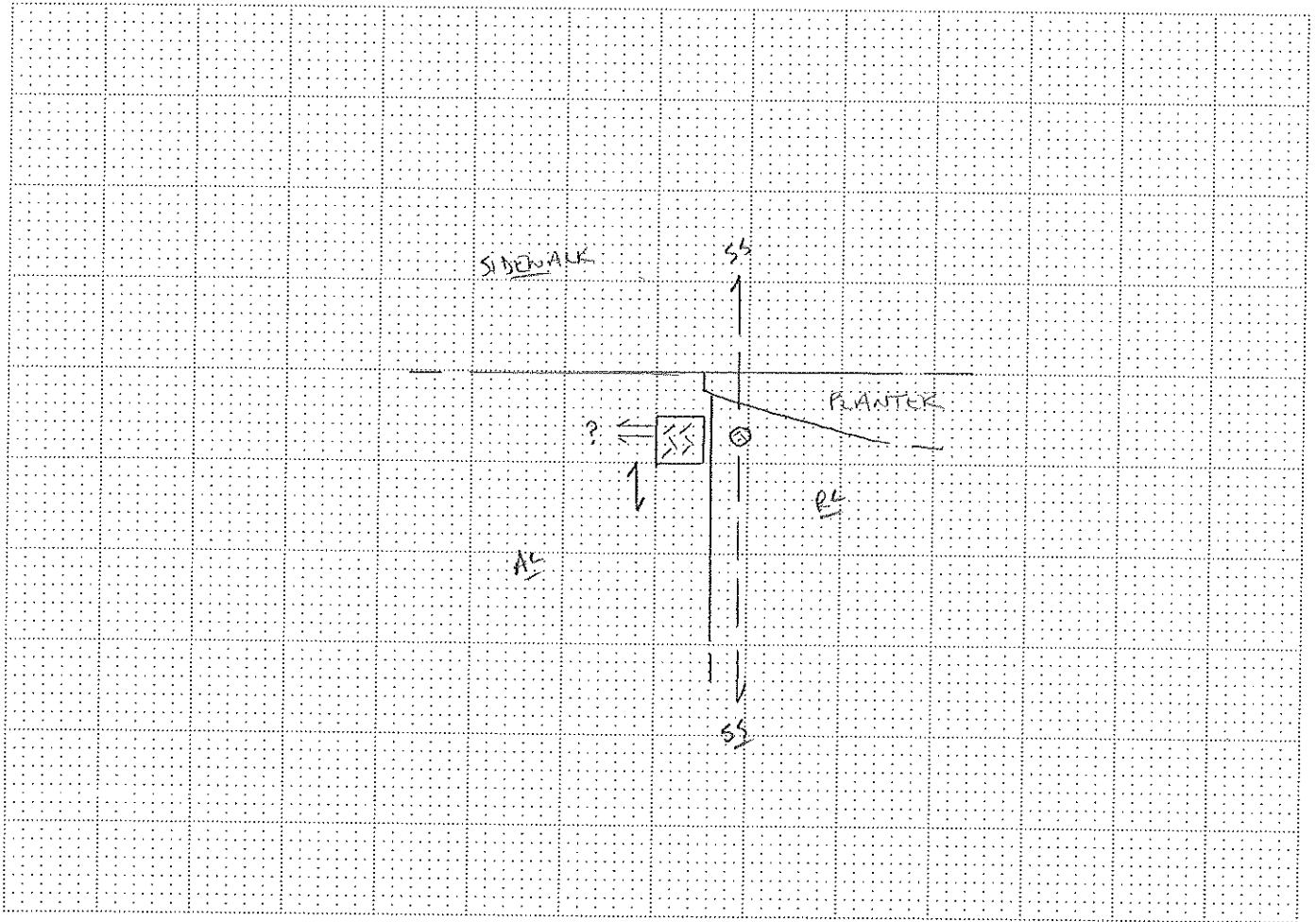
- | Equipment:    | Procedure:         | Surface Conditions: |
|---------------|--------------------|---------------------|
| ✓ GPR (Radar) | - EMC (Conduction) | - Wet               |
| - RD 4000     | ✓ EMI (Induction)  | ✓ Dry               |
| ✓ M Scope     | - Ambient          | - other             |
| - other       | ✓ GPR              |                     |

### REMARKS



PERSONNEL: DJK TWB  
 JOB: 14-1034.25 DATE: 4-4-14

CLIENT: BROADBENT  
 LOCATION: ALAMEDA  
 BORING: A-1



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- Localized GPR Anomaly
- Utility Alignment

Utilities

- T (Telephone, Comm.)
- E (Electric)
- NG (Natural Gas)
- CA (Compressed Air)
- STM (Steam)
- ✓ SS (Sanitary Sewer)
- SD (Storm Drain)
- W (Water)
- FS (Fire Supression)
- UU (Undifferentiated Utility)

Surface

- RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- C (Concrete)
- Soil
- Gravel
- other

NOTES

- |               |                    |                     |
|---------------|--------------------|---------------------|
| Equipment:    | Procedure:         | Surface Conditions: |
| ✓ GPR (Radar) | - EMC (Conduction) | - Wet               |
| ✓ RD 4000     | ✓ EMI (Induction)  | ✓ Dry               |
| ✓ M Scope     | ✓ Ambient          | - other             |
| - other       | ✓ GPR              |                     |

REMARKS

