

APPENDIX G
Geophysical Survey Report

ULS SERVICES CORPORATION



GEOARKOUT LOCATING Co a tradename



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14 November 2011

David Lauder, PE
Senior Engineer
GeoEngineers, Inc
Spokane, WA

Subject: Field Documentation Report for
Potential Underground Storage Tank (UST) Search
Airport Quickstop Project, Ione, WA

Gentlemen:

This report documents the potential USTs search ULS (Geomarkout) conducted for Geoengineers on 10 and 11 November 2011. Survey areas requested by you are shown on Figure next page.



Google Image Date June2009 (Google Pro Licensed to ULS Geomarkout)

GEOPHYSICAL SURVEY AREA BOUNDARY (Geomarkout 10-11 Nov 2011)

AIRPORT QUICKSTOP, IONE, WA



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IONE, WA
NOV 2011

METHODS

UST Survey:

Methods utilized in performance of this work include: Visual Inspection, Analog Real Time Electromagnetic Induction Metal Detection (EMIMD), Magnetic Location and GPR. EMIMD ground induction and MAG methods are employed to detect broad metal mass surface projection anomalies. Rectangular surface projection anomaly is typically observed over the top of horizontal steel UST's. GPR is utilized to further characterize and / or corroborate EMIMD findings. Observations are real time and marked on ground surface with paint.

FINDINGS

Site Description

Site is composed of multiple parcels which include: small former (inactive) gas station (now store) at the NW corner of HW 31 and Greenhouse, a Restaurant located at the opposite SE corner of intersection, and vacant undeveloped land which includes the open field at the NE corner and areas to the east and south of the restaurant. Survey areas are shown on figure below.

Inactive gas station has typical canopy with two inactive dispensers and a set of ASTs to the West behind the buildings. Historical Underground tanks at this site are reported, however their location is not known for certain. Some reports indicate a potential location near the north – northeast side of gas station. A set of photos from the site dated approximately 1993-94 are attached and may show a UST pad and vent risers near the SE corner of the gas station lot (out toward road from dispenser). Analysis of the photos is difficult and the certainty of USTs in the photos is not known. There are no obvious surface features of USTs such as fill collars, vent risers, or surface slumping at the site today..

Unsubstantiated verbal report of former USTs near the SW corner of the restaurant across HW 31 (southeast of gas station) is noted. Apparently this location may have been an office for a heavy equipment construction company in the past. There are no obvious surface features of USTs such as fill collars, vent risers, or surface slumping.

EM Instrument Survey Results

General EM response conditions are very good. Very low EM ambient (noise) conditions exist allowing optimum detection with very high (max) EMIMD gain settings and low instrument scan elevation. EM Induction Metal Detection observations reveal one small sized EM Induction Surface Projection anomaly in the open field at the NE corner of HW 31 and Greenhouse, near the reported hand dug well. **(Refer to Figures Below)**. No other EM Or Magnetic Anomalies are observed.



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GPR Survey Results

GPR response conditions are fair to good. High contrast refraction band data is good down to approx 8 to 10 feet. GRP scan across the single anomaly observed in NE corner hw 31 and Greenhouse reveal some narrow parabolic response suggesting further existence of a metallic feature below the surface. Depth is estimated at approximately 2 to 4 feet.

GPR is also utilized to determine if former reported UST excavation location can be determined. Transects Are run near both the south and NE corners of the Quickstop gas station and near the SW corner of the restaurant Across HW 31 where USTs are reported to exist over there.

GPR profiles in these areas show some lateral contrast between potential back fill and disturbed zones against non-disturbed zones. Angular or dipping GPR bands are noted on profile and mark boundary between potential undisturbed and disturbed zones that maybe be associated with former excavations. Profiles are shown Below.

CONCLUSIONS and LIMITATIONS

Physical surface observations show no obvious indications or expressions of USTS other than the existing AST System at the gas station. EMIMD , MAG and GPR data reveal small isolated metal anomaly in the open field near the “ hand – dug “ well. There is no indication of building having been in this area and buried anomaly may Associated with unknown debris.

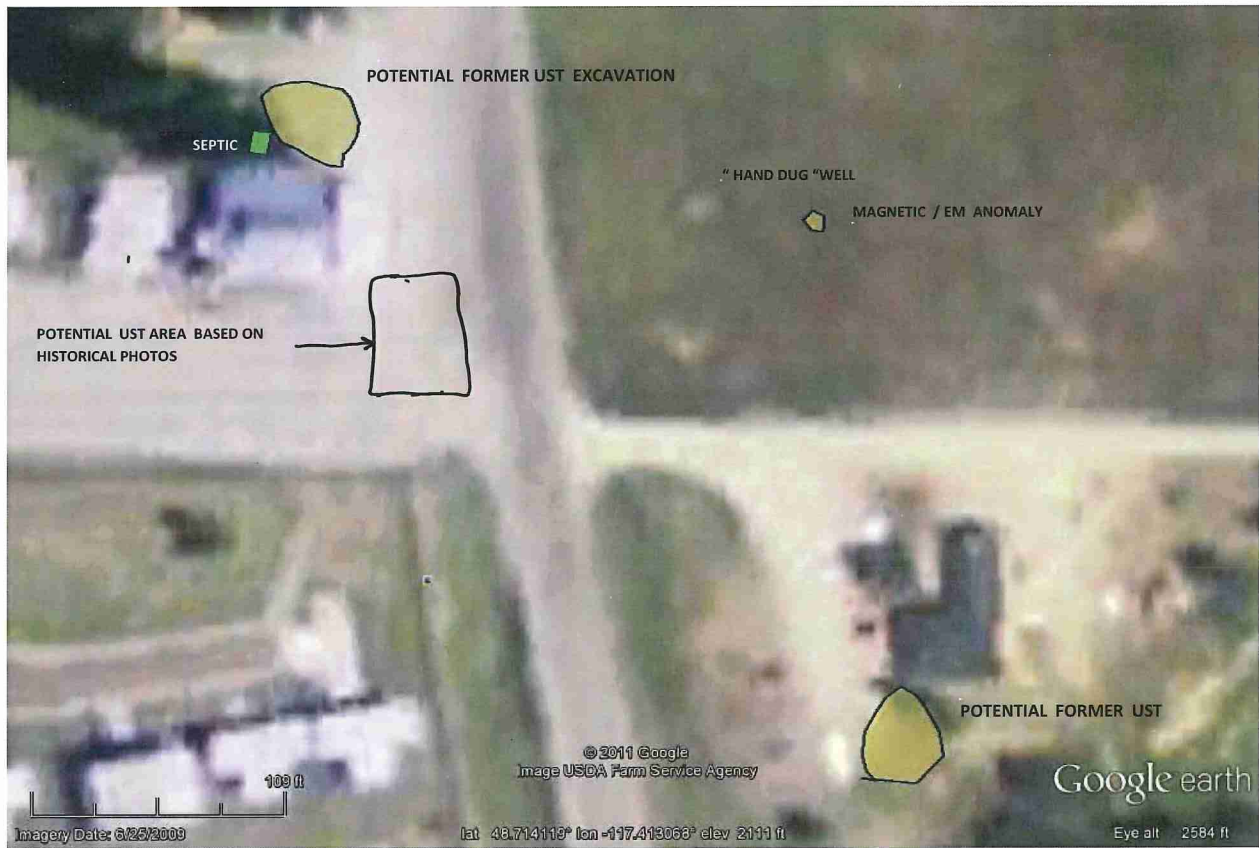
Former UST near location near the existing gas station is not known. The existing building has been enlarged along the south and north sides. GPR survey shows some soil disturbance on both sides. USTs may have existed near the building or perhaps near the SE corner of site.

Former USTs may have been associated with past operations near the existing restaurant at SE corner HW 31 and Greenhouse. GPR surveys some soil disturbance near the SW corner of existing building.

As in any type of survey or investigation to determine characteristics below grade, careful excavation may be needed to determine the exact nature. This survey work was performed to industry standards. Multiple methods and sweeps as well as visual site inspections are employed. It is advisable to exhaust all other sources of information to determine the nature of this site as related to UST usage and to determine utility location in the event any further intrusive or sampling work begins.



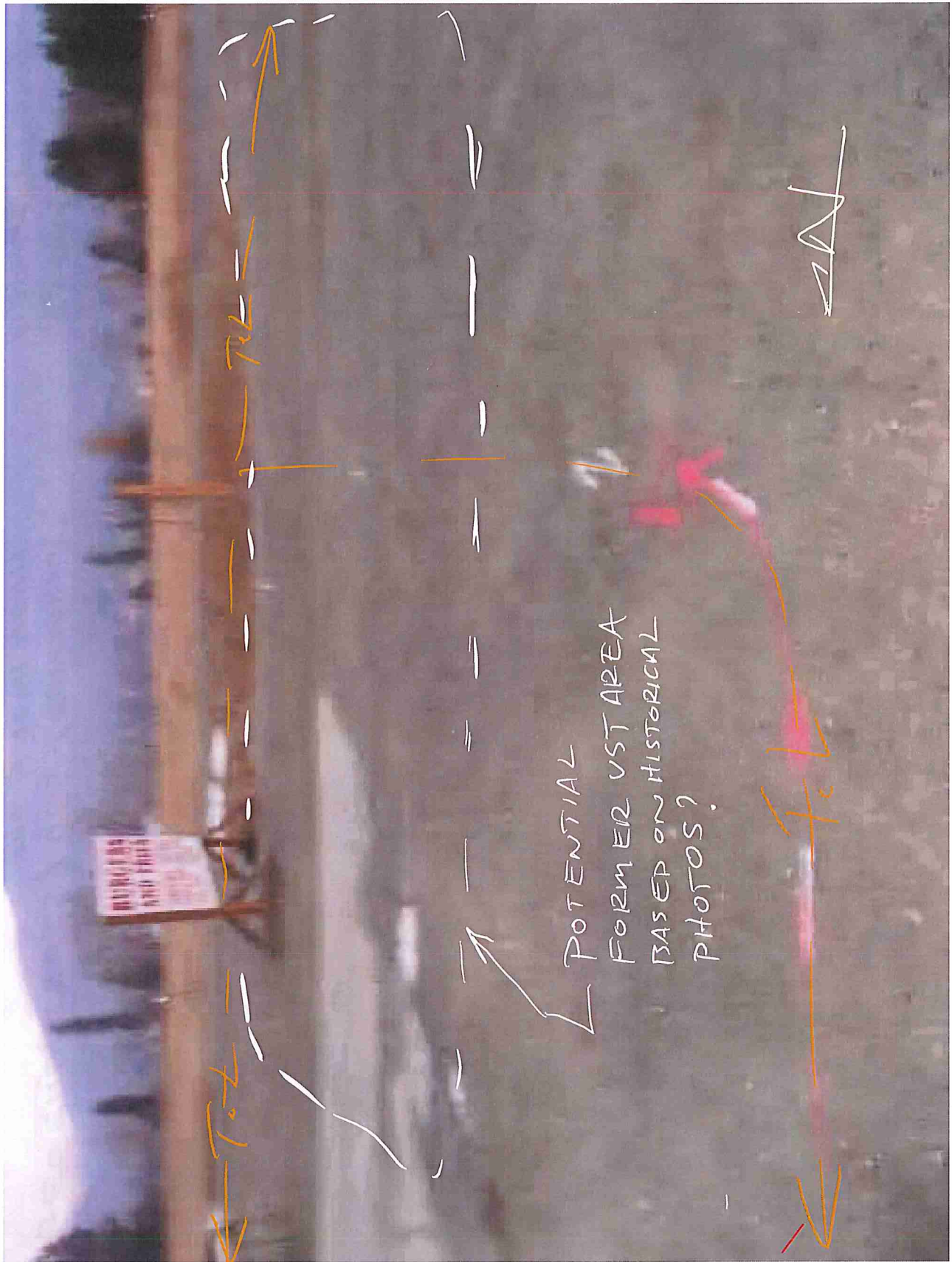
Tom HATTEN 1946 Luscombe
 &
 SPOKANE 93-94?



Google Image Date June2009 (Google Pro Licensed to ULS Geomarkout)

Potential Former UST Excavation Boundaries (approximate)

AIRPORT QUICKSTOP, IONE, WA



DANGER TO PEDESTRIANS

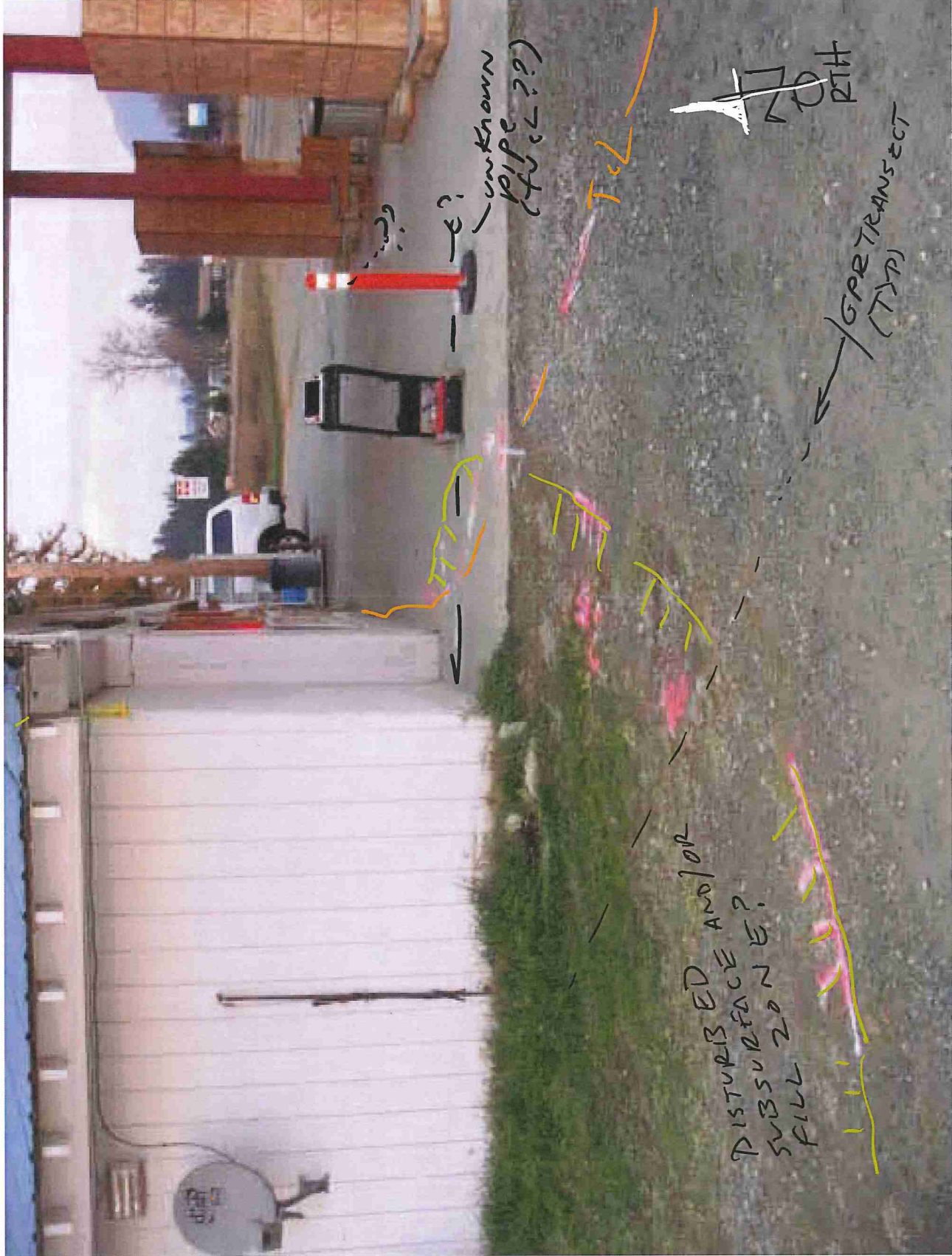
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POTENTIAL
FORMER VST AREA
BASED ON HISTORICAL
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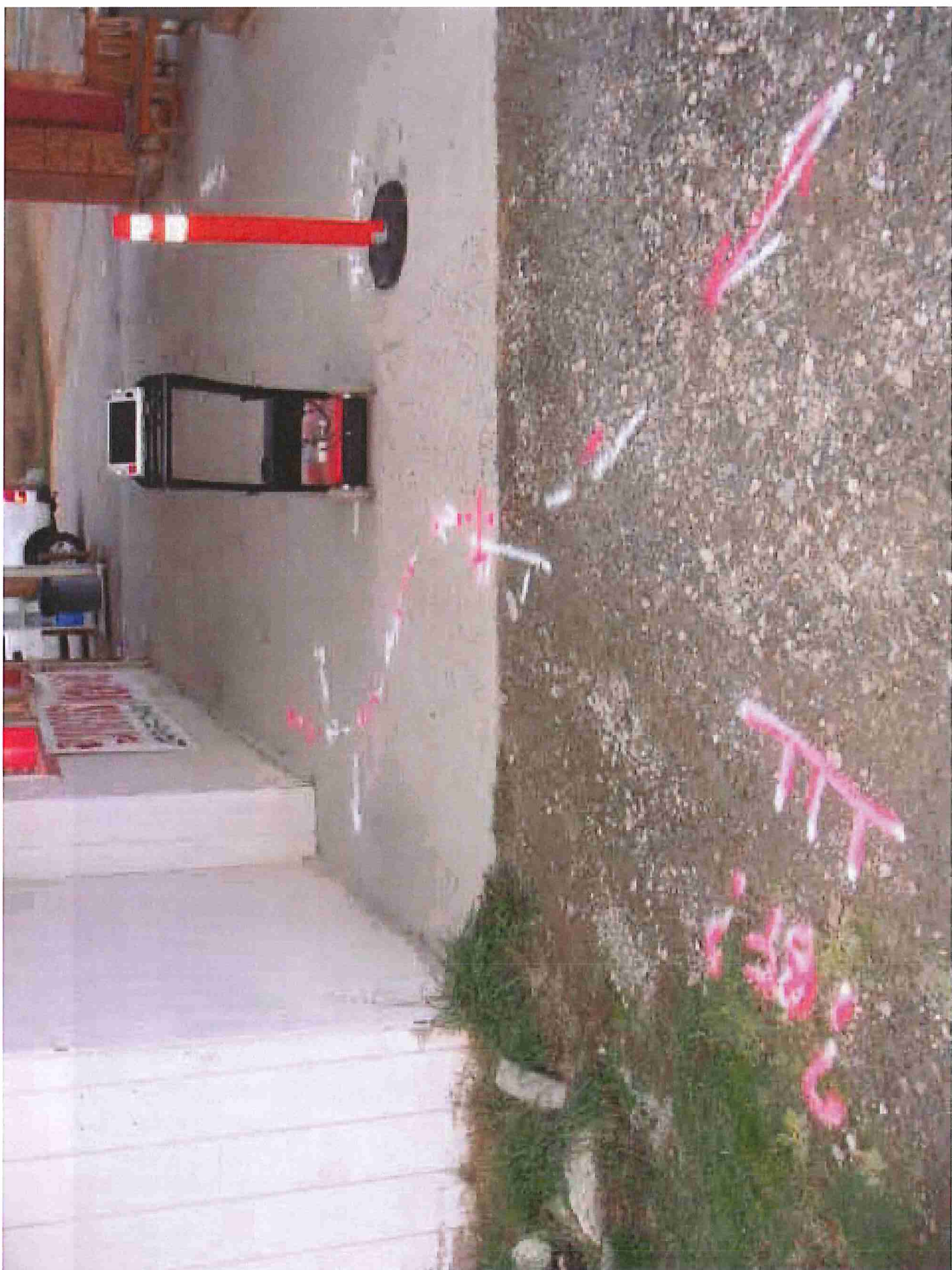
DISTURBED AND/OR
SUBSURFACE
FILL ZONE?

unknown
pipe (4\"/>

GPR TRANSECT
(T1-D)

GEO ENGINEERS / ULS GEOMARKOUT
mwb 10-11 NOV11

GEOPHYSICAL SURVEY
AIRPORT BUICKSTOP FAVE/INT









OPEN

NEW SECTION BLDG
ADDED
ON

get

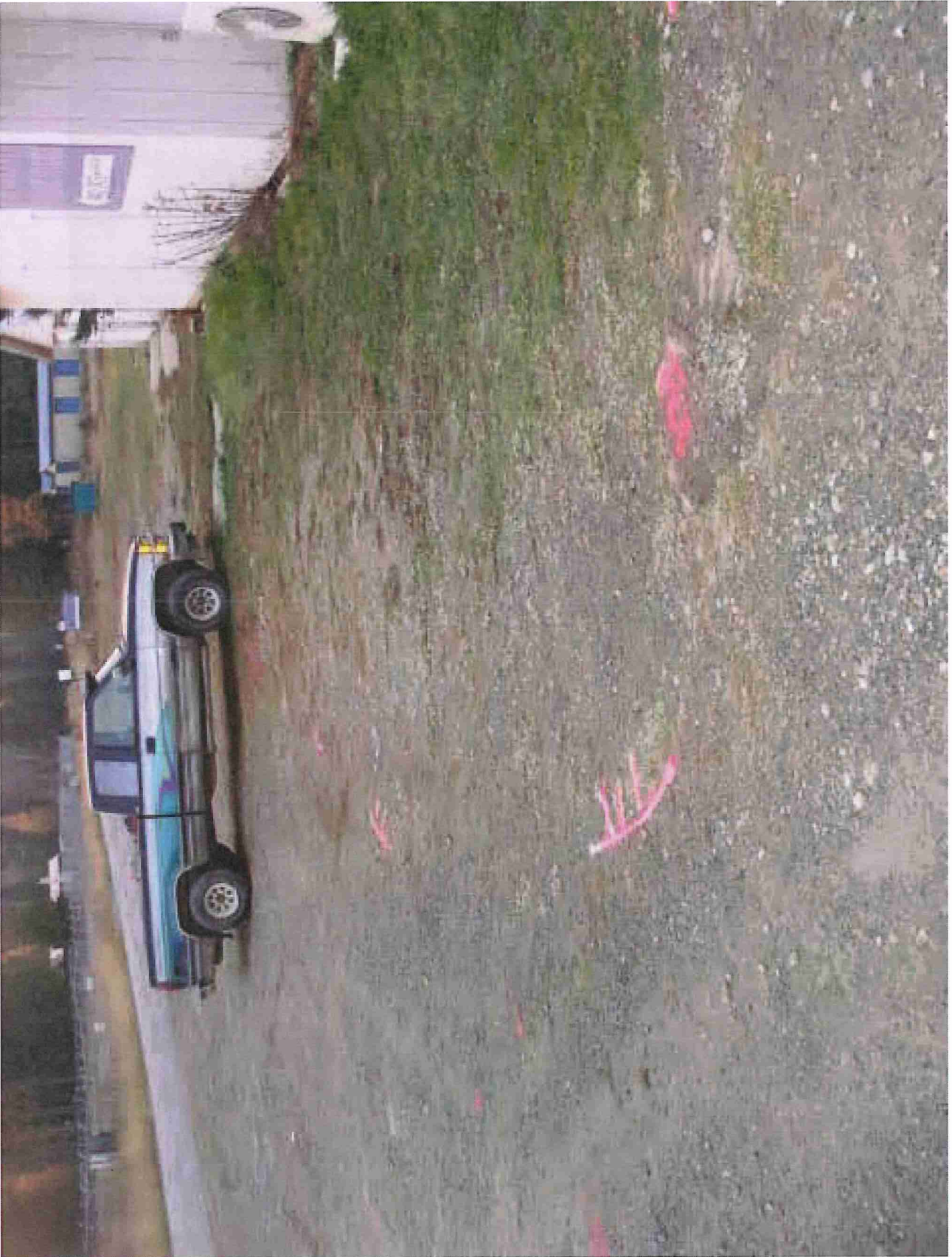
22



Tree Stump

Telephone

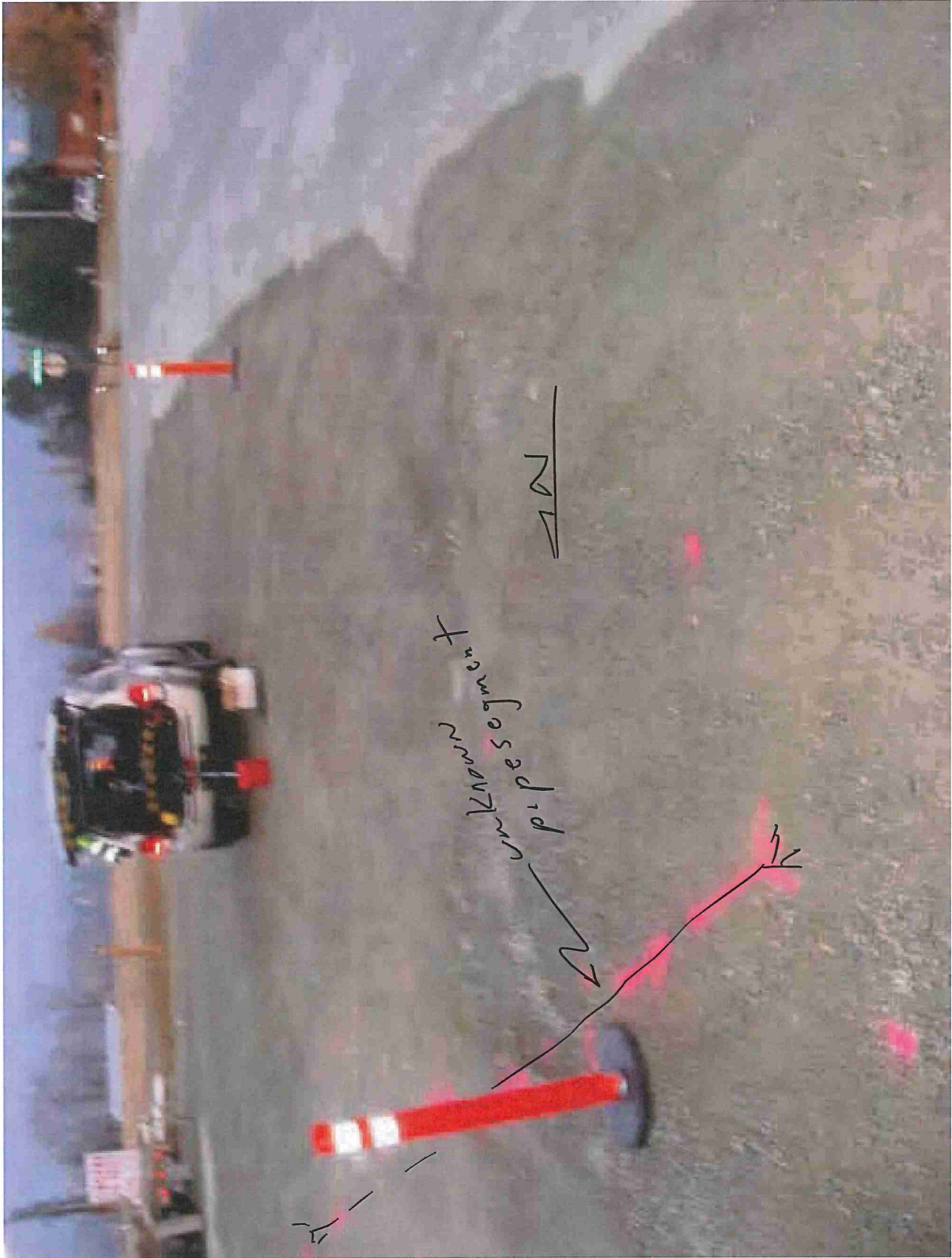
North









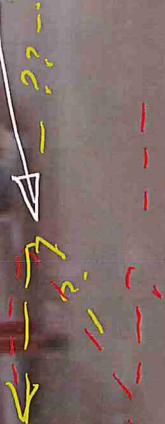




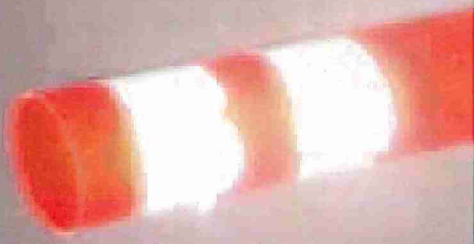


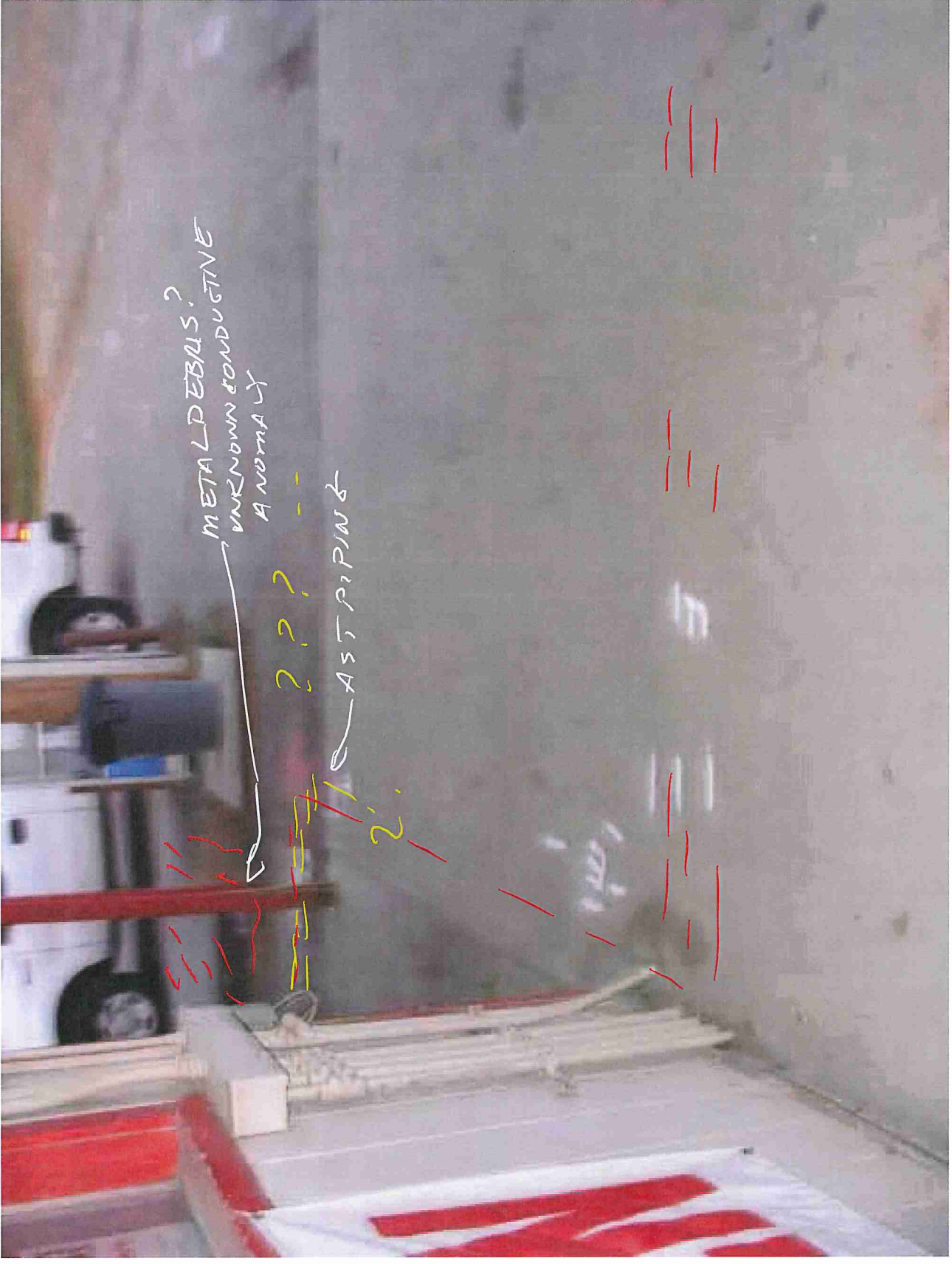


AST PIPING



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METAL DEBRIS?
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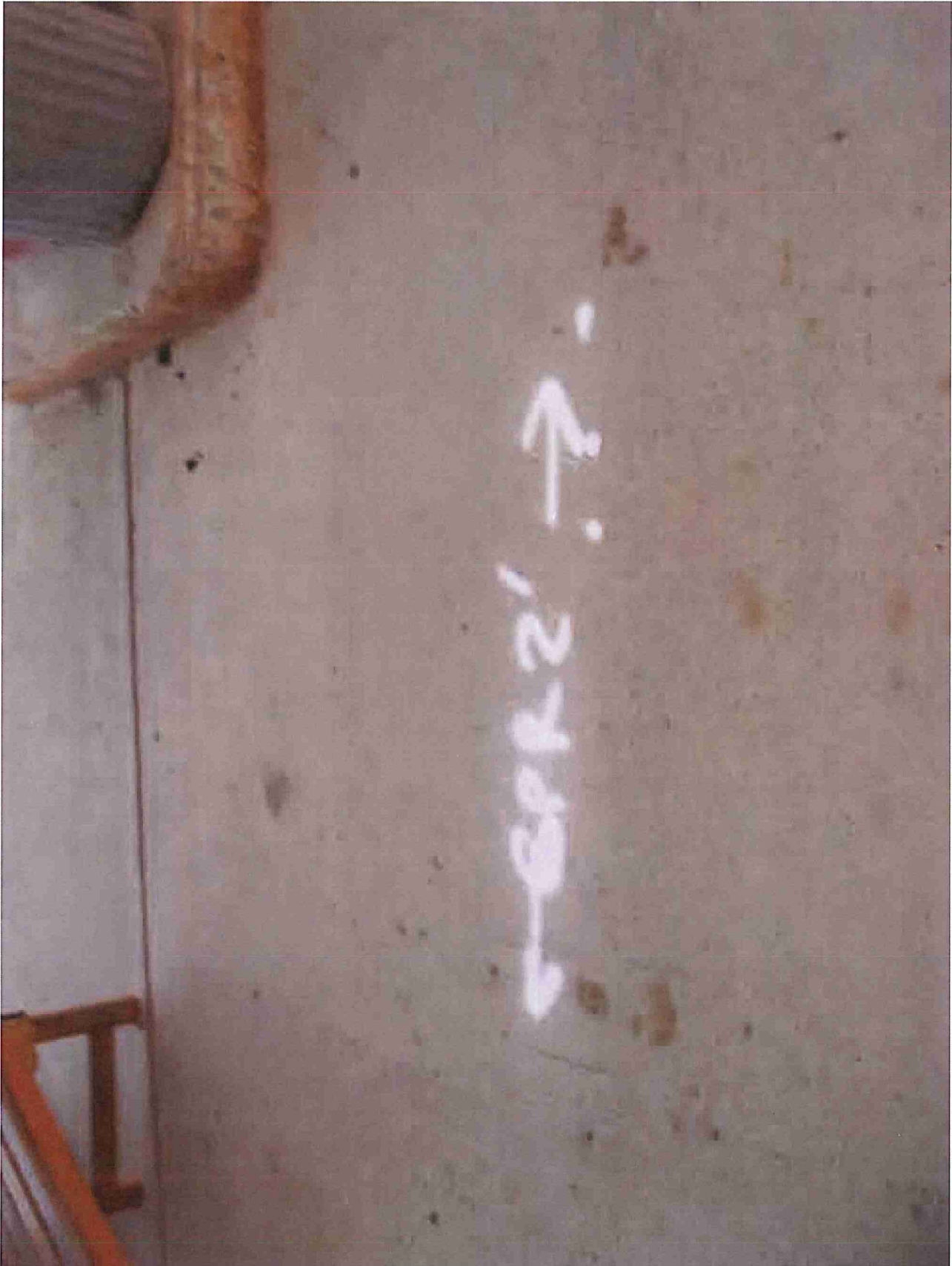
AST PIPING

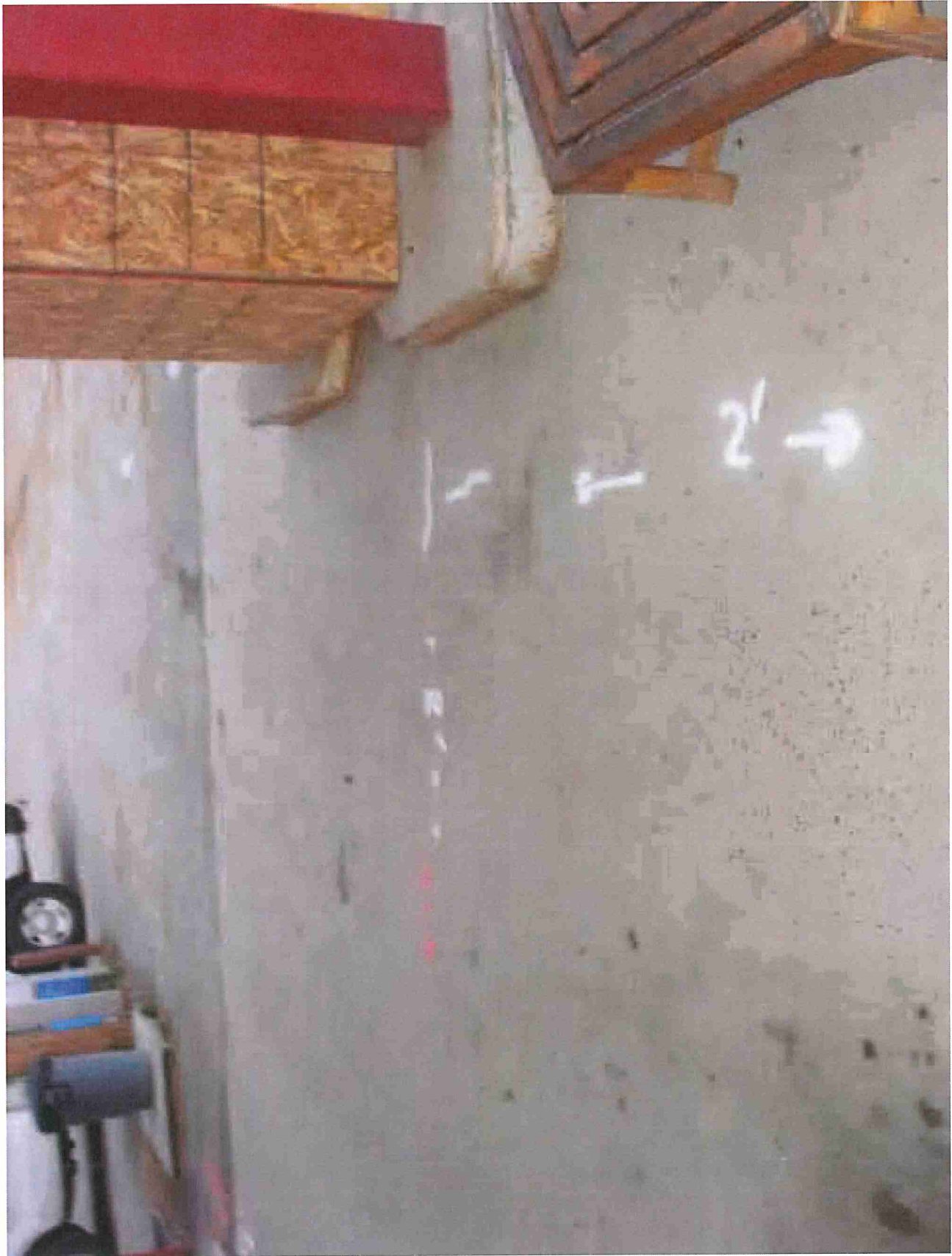
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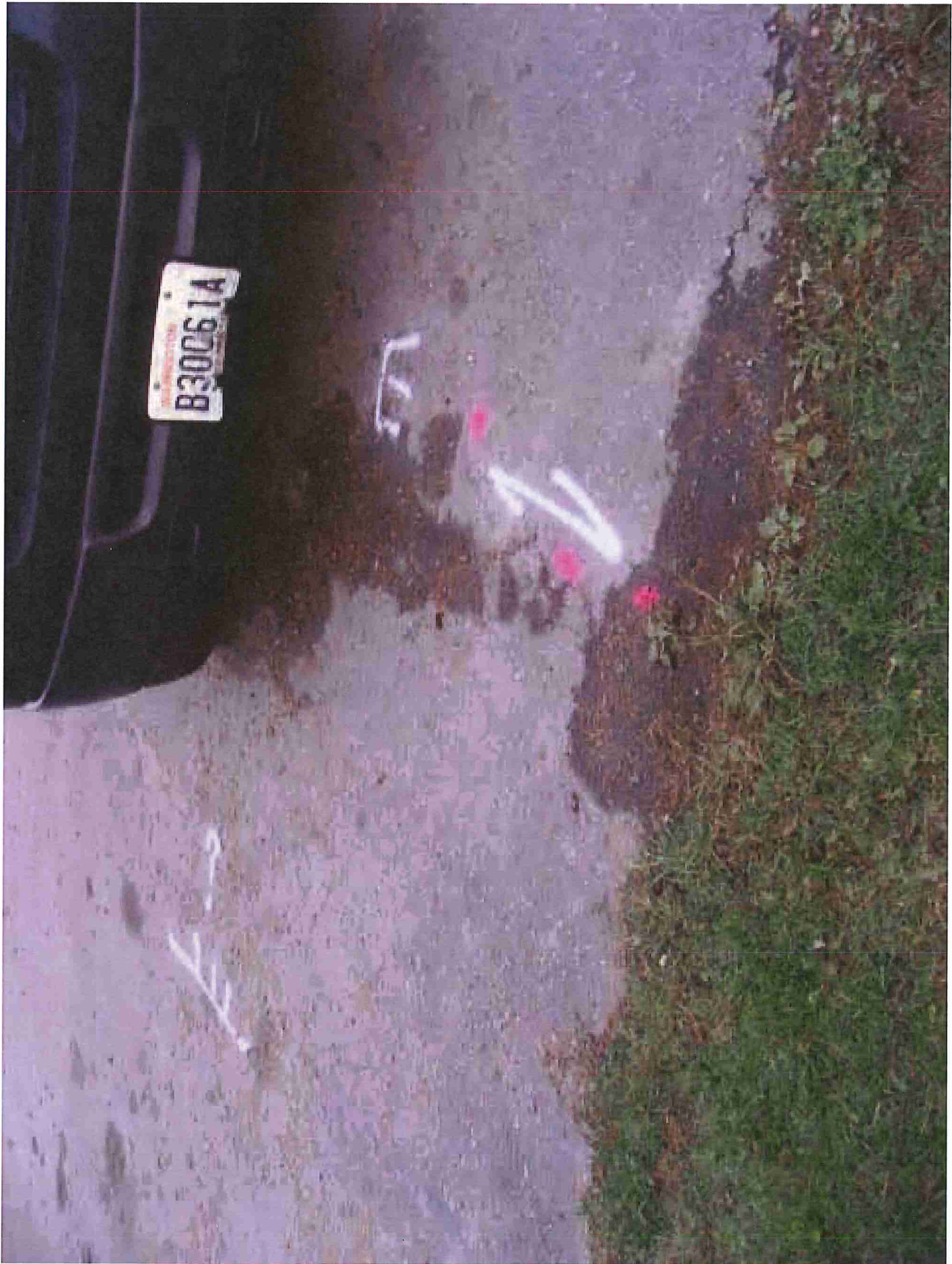
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SEPTIC

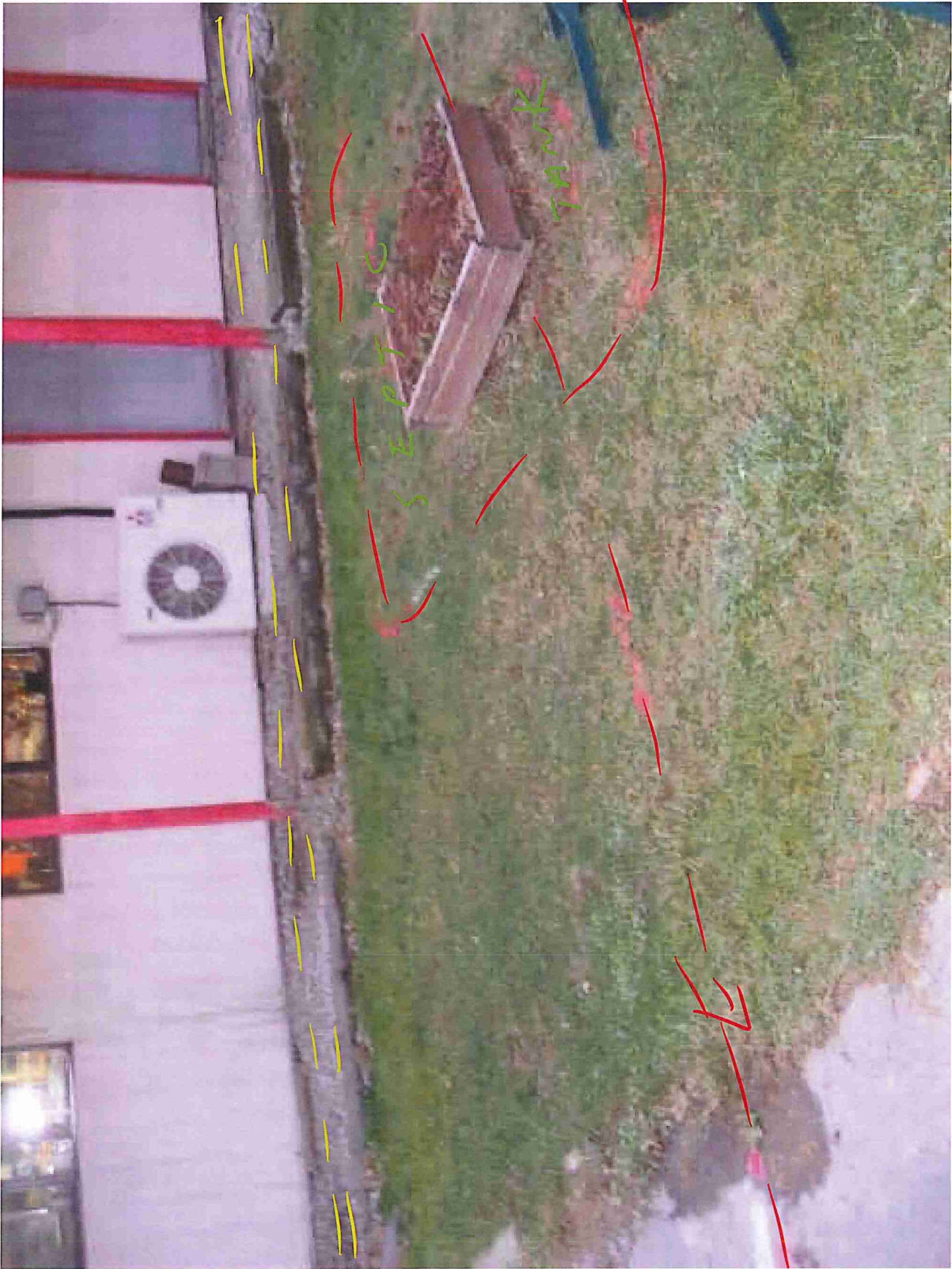
METAL
ANOMALY

ET-150

ET-150



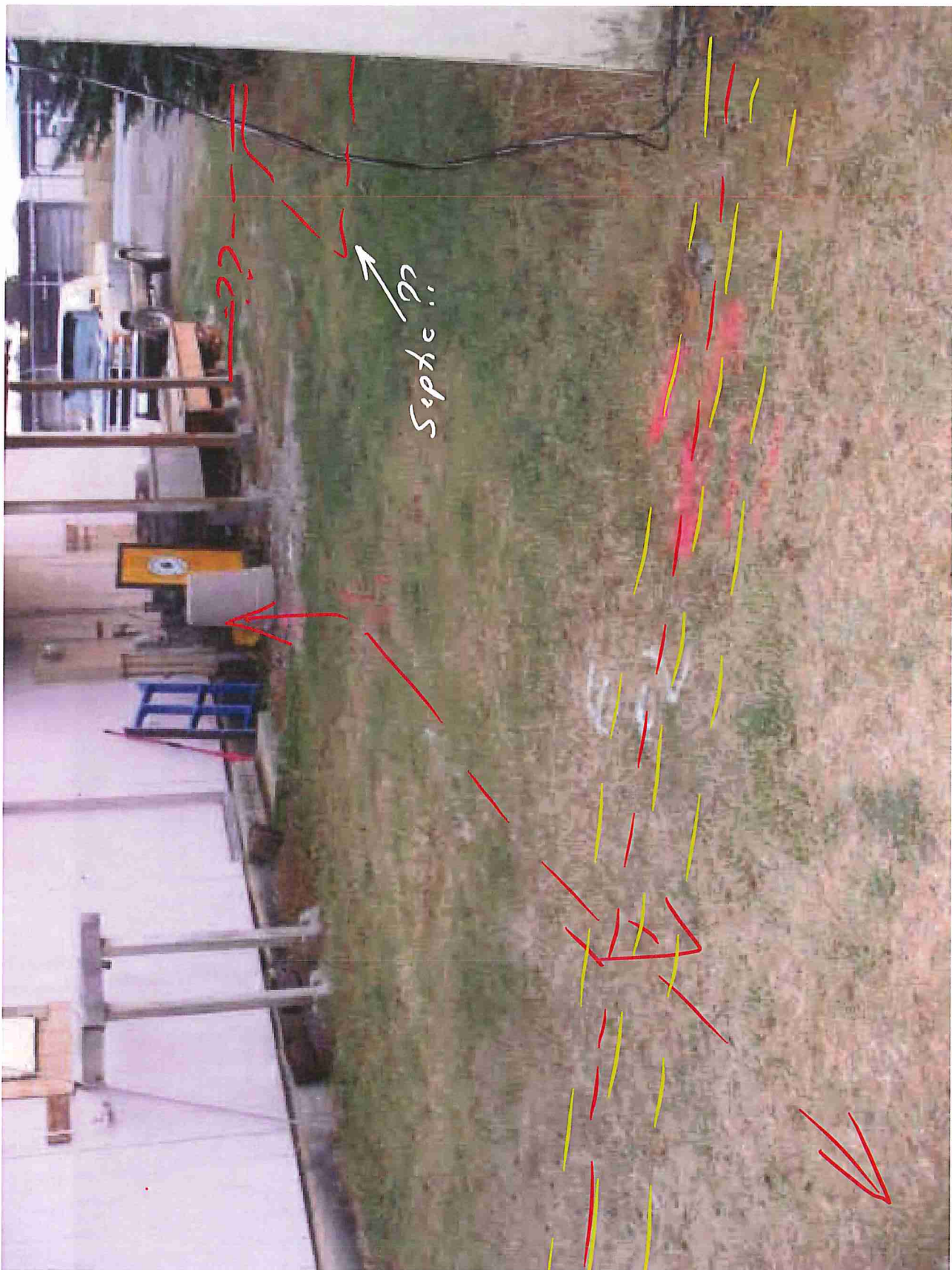










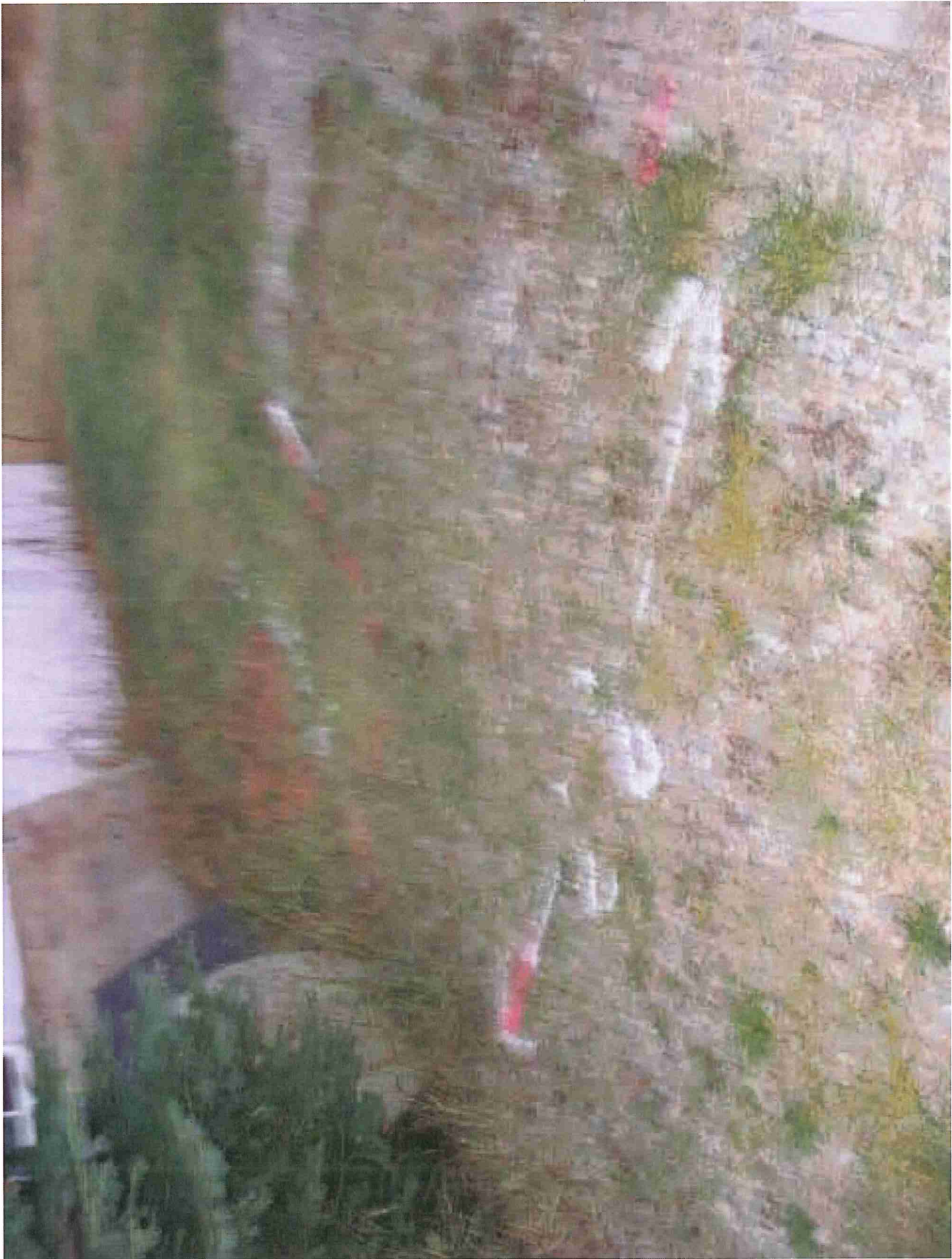






North

SEPTIC

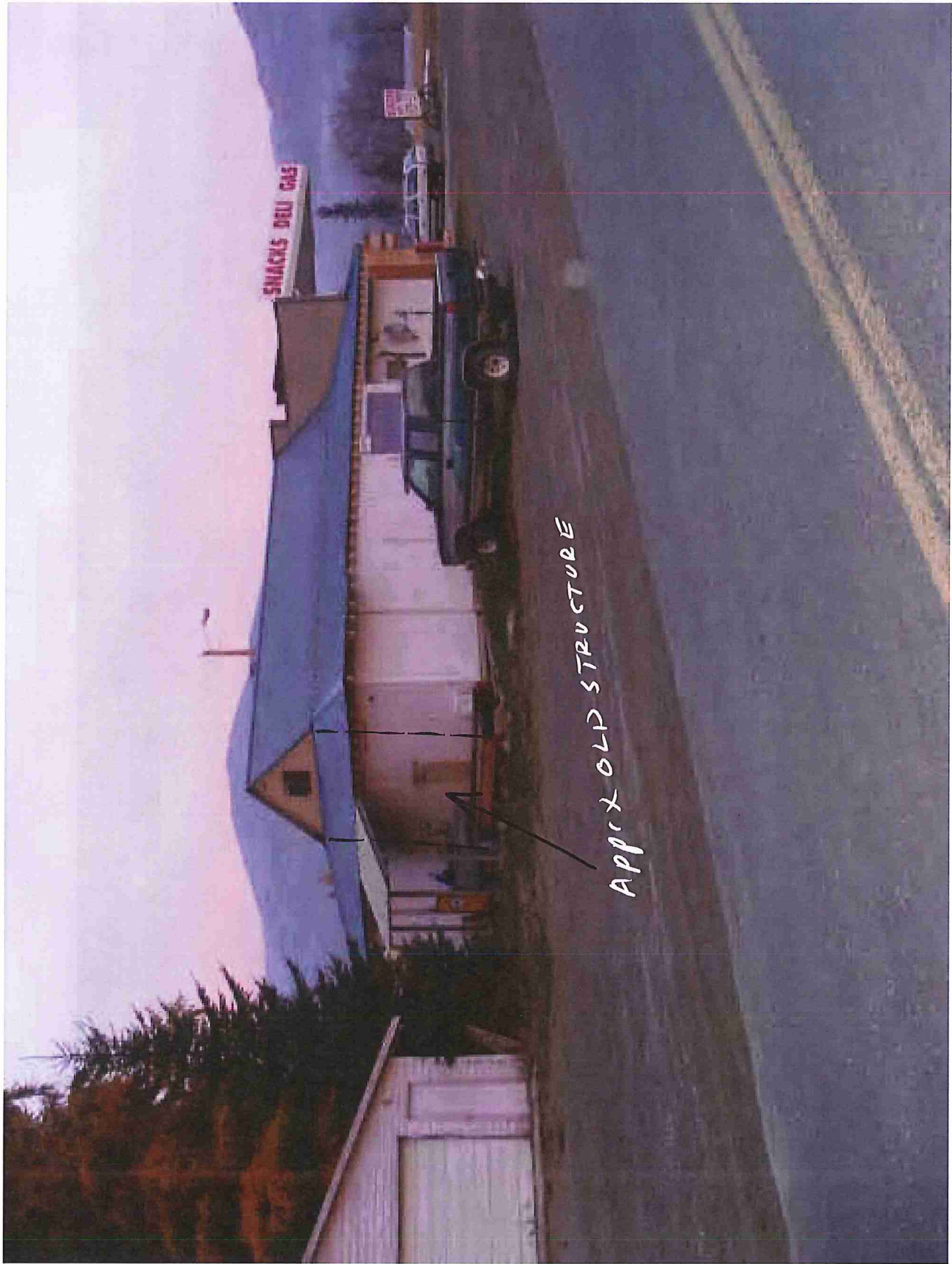




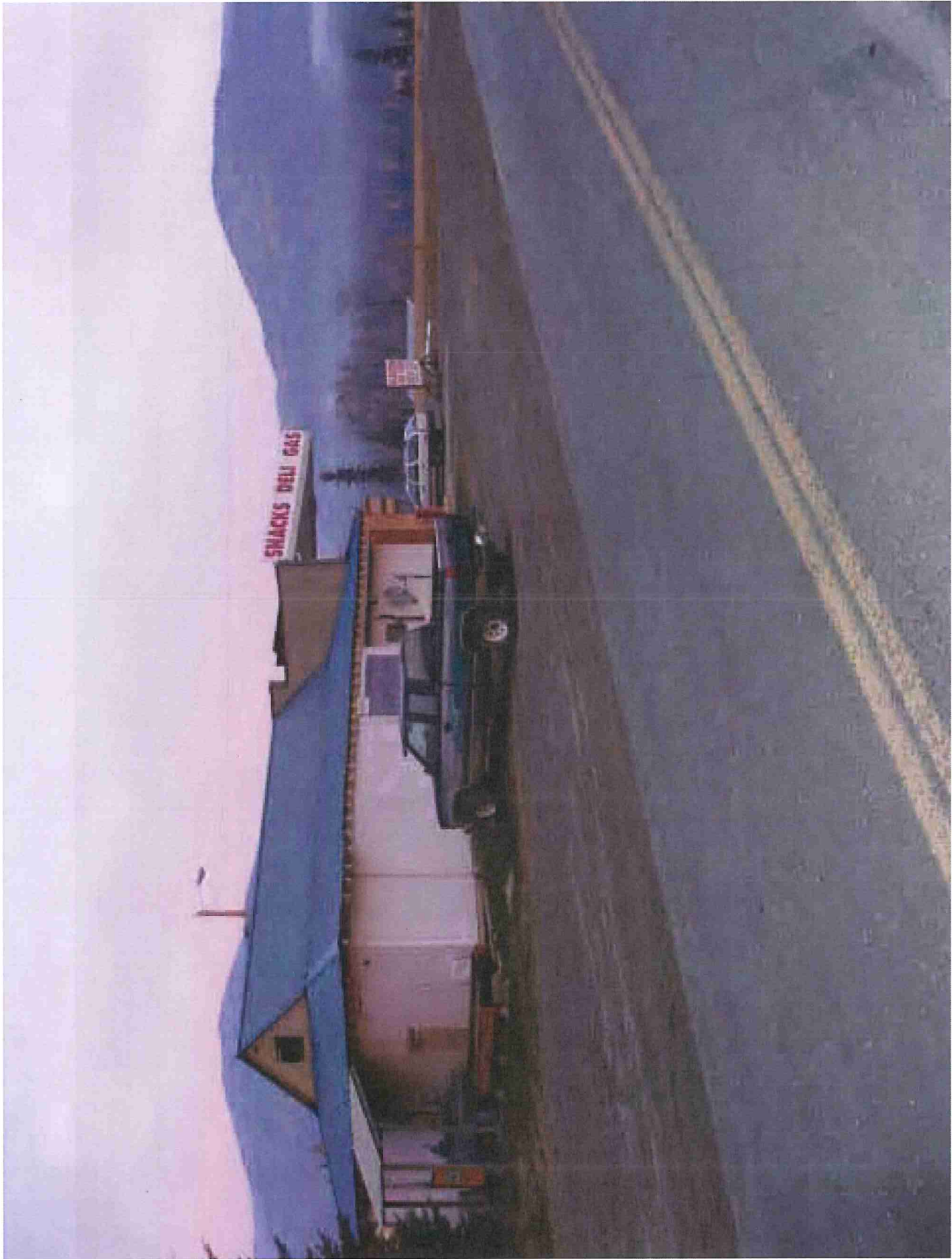








APPRX OLD STRUCTURE

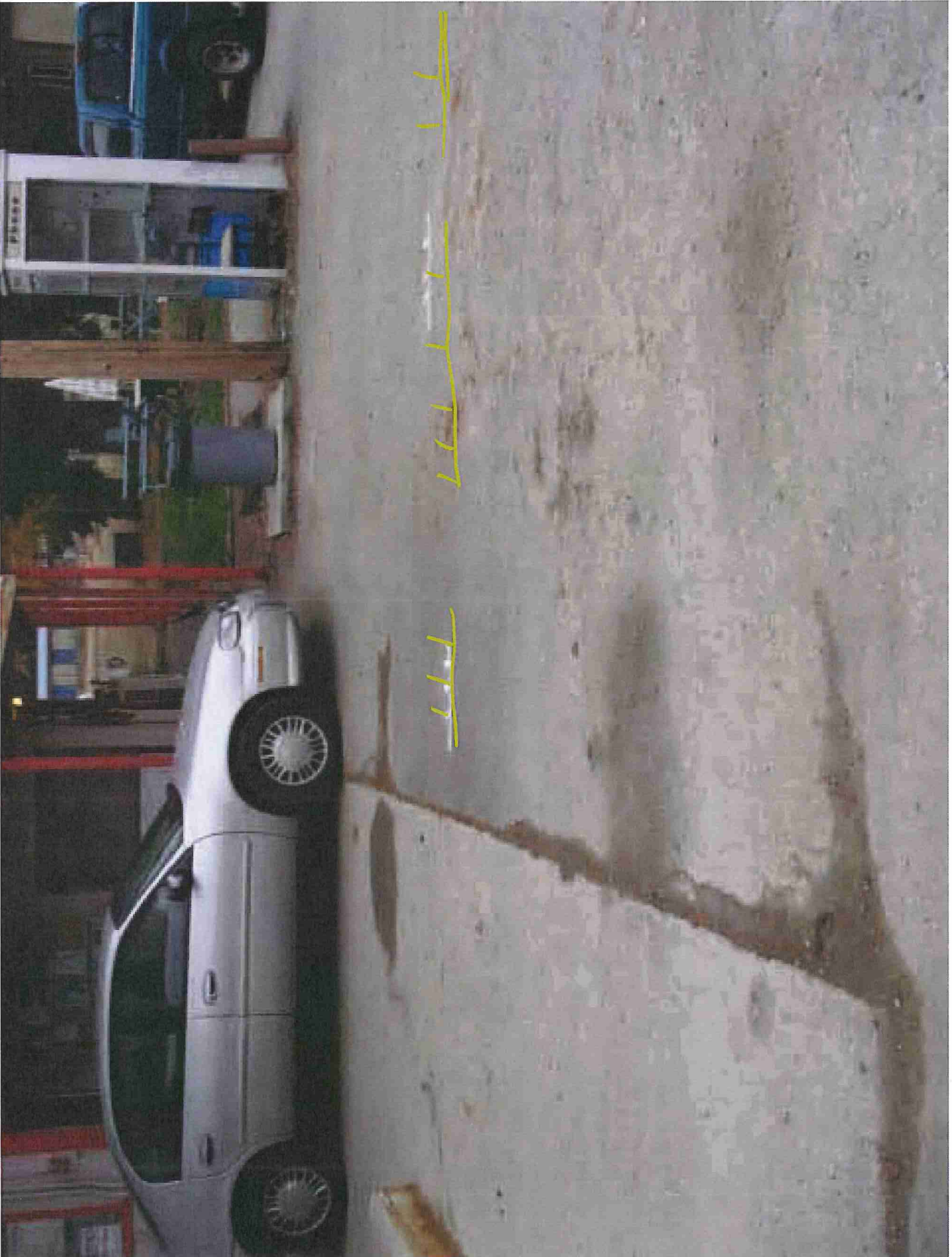




SNACKS DELI GAS

RESTROOMS



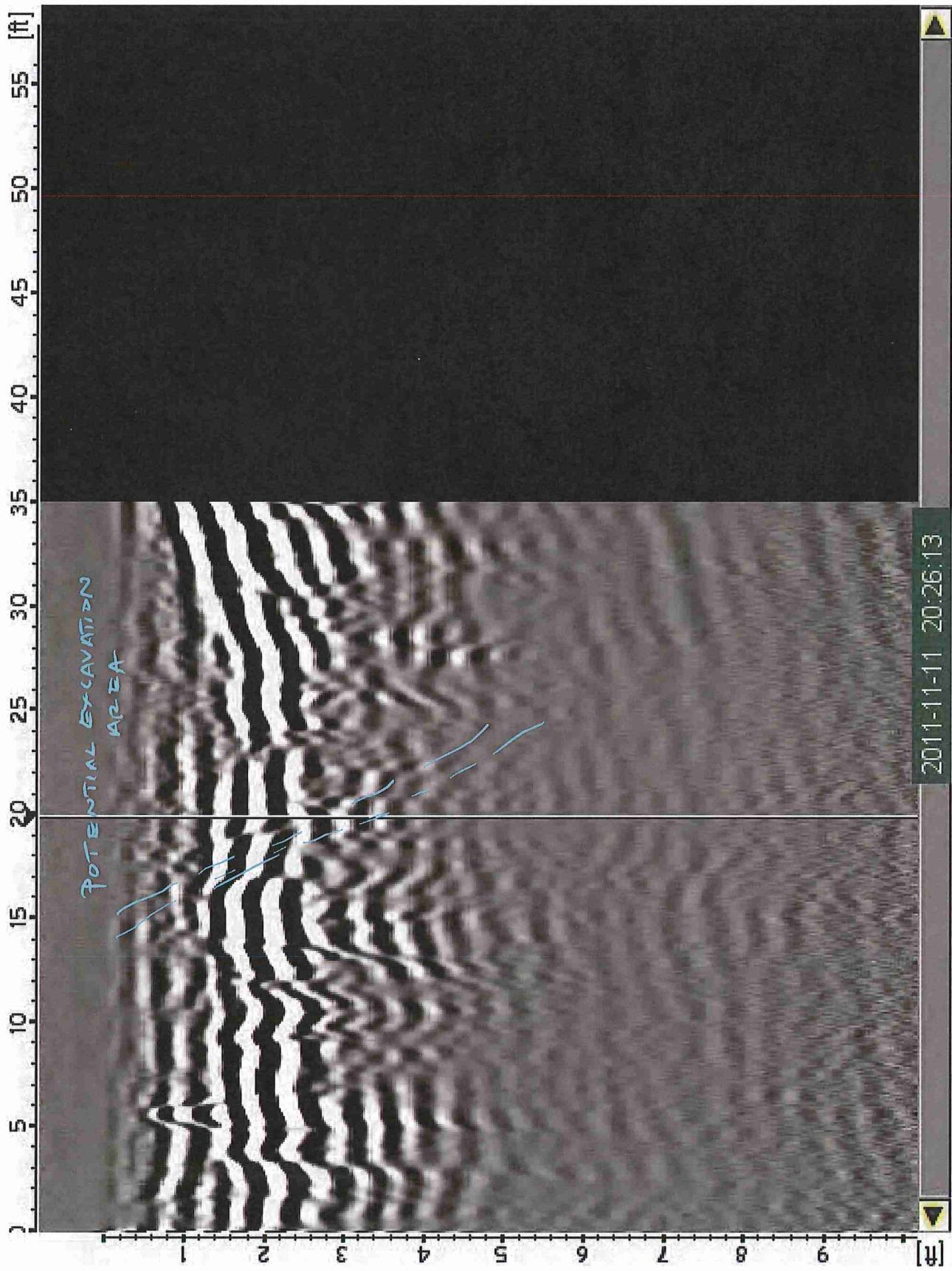






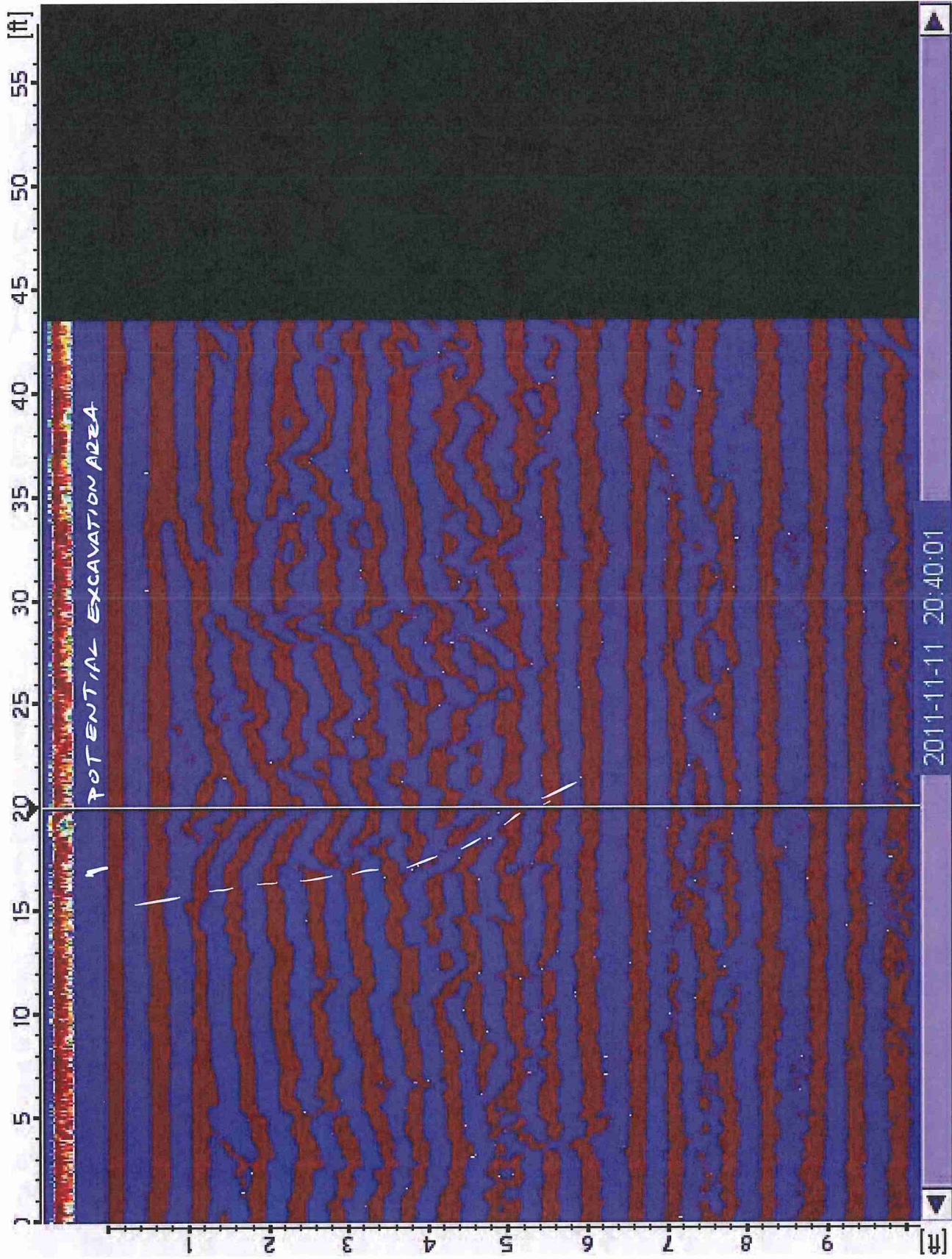






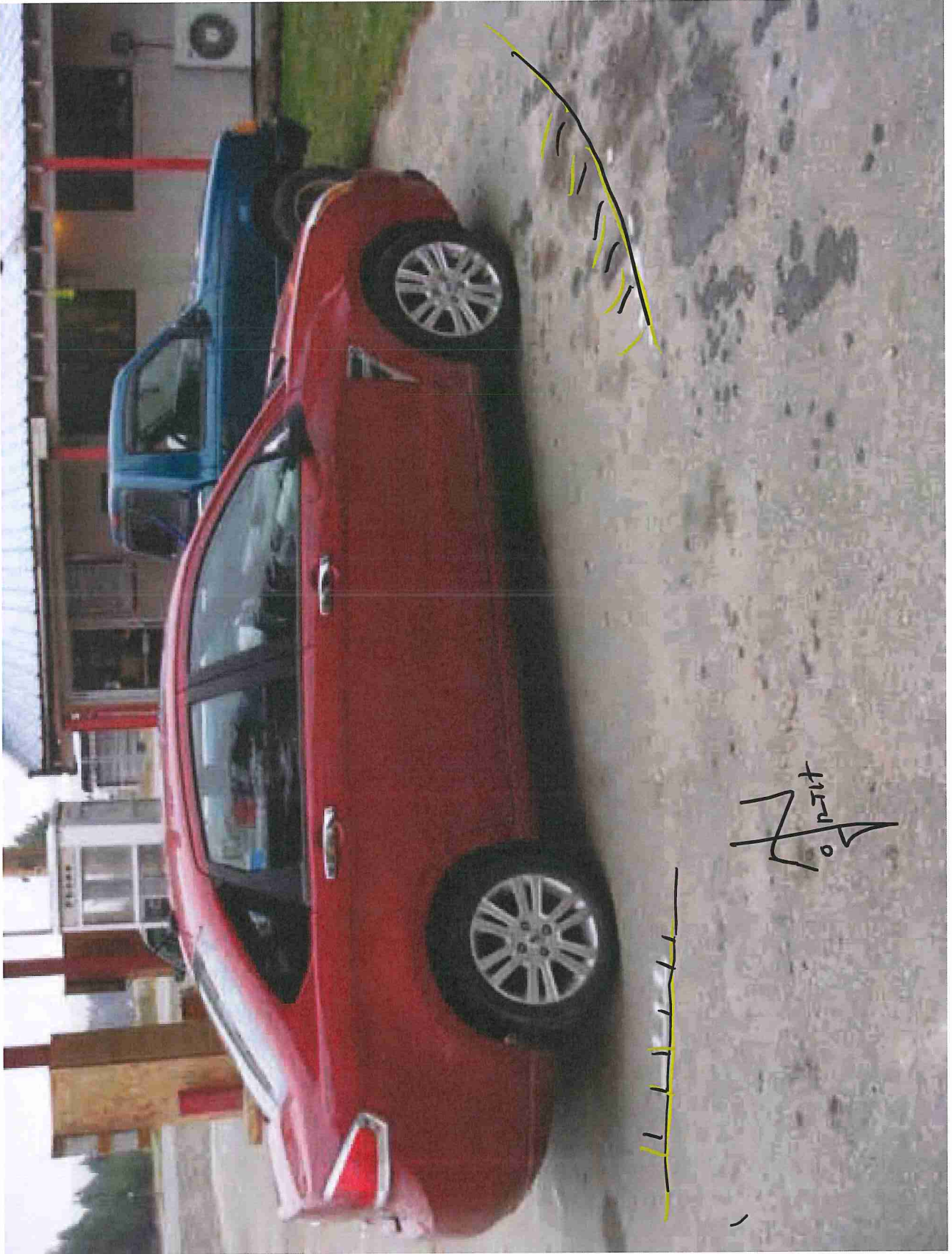
GPR PROFILE NE GAS STATION
 GEOMARKOUT mwb 11NOV11

BUICKSTOP JONE, WA



GRIZ TRANSECT NE GAS STATION
 GEO MARKOUT NOV 11 2011
 QUICKSTOP, ION E/MT









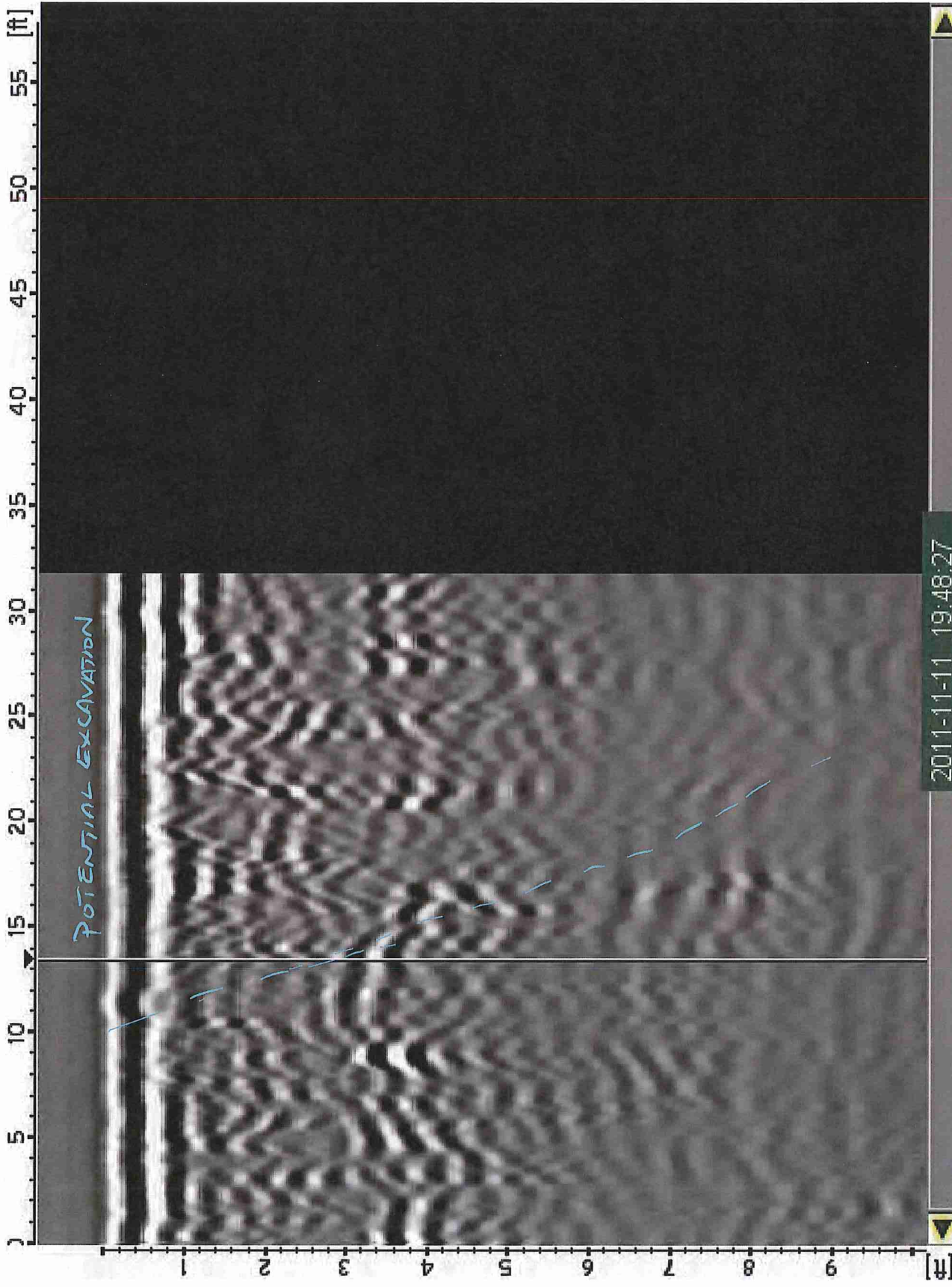
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POTENTIAL FORMER UST EXCAVATION

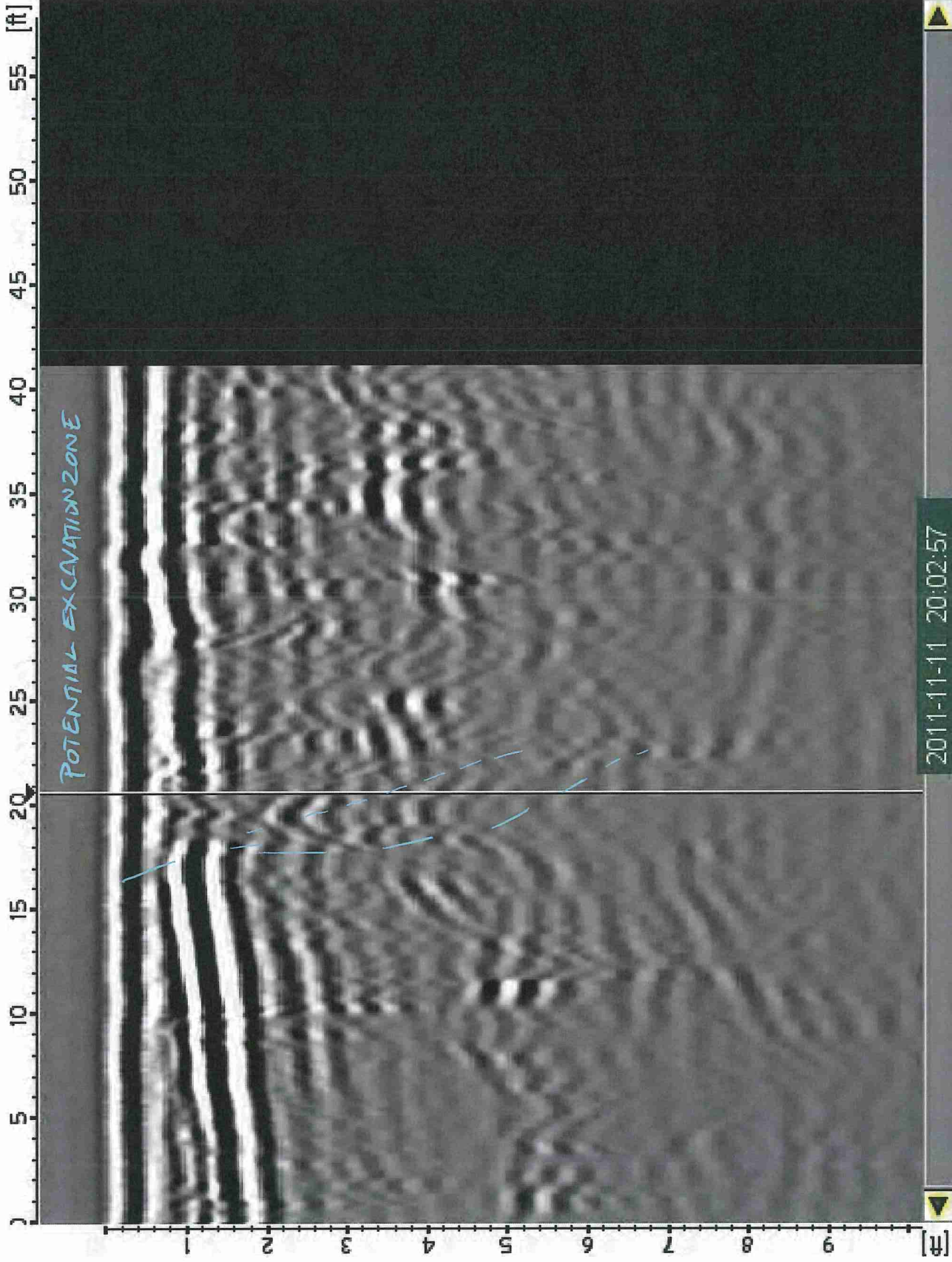


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GP12 PROFILE SW CABIN RESTURANT (POTENTIAL FARMER UST EXCAVATION)
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 JON E WA



GPR PROFILE SW CABIN RESTURANT (POTENTIAL FARMER USE EXCAVATION)
 660 MARICOUT 11 NOV 11
 ION E, WA











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The scope of this search work does not include utility survey work for drilling or excavation clearance purposes. 811 One-call is required and Hand tooling or air vac methods are advised especially in areas of high utility congestion or where non-conductive utilities are reported.

If you have any questions regarding this report please contact me at (619) 562-0972.

Sincerely,

Geomarkout
ULS SERVICES CORPORATION

Michael W. Benedict
President
Site Representative

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