Atlantic Richfield Company

Chuck Carmel
Remediation Management Project Manager

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August 20, 2014

RECEIVED
By Alameda County Environmental Health at 10:17 am, Aug 22, 2014

Re: Well Abandonment Work Plan Report
Former BP Service Station No. 11104
1716 Webster Street
Alameda, California
ACEH Case #RO0000281

"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

BROADBENT
4820 Business Center Drive, Suite 110
Fairfield, CA 94534
[T] 707-455-7290 [F] 707-863-9046
broadbentinc.com

August 20, 2014 Project No. 06-88-644

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

Attn.: Mr. Chuck Carmel

Re: Well Abandonment Work Plan, former Atlantic Richfield Company Station No.11104, 1716 Webster Street, Alameda, Alameda County, California; ACEH Case# RO0000281

Dear Mr. Carmel:

On behalf of Atlantic Richfield Company (a BP affiliated company), Broadbent & Associates, Inc. (Broadbent) is pleased to present this *Well Abandonment Work Plan* (Work Plan) for Station #11104 located in Alameda, Alameda County, California (Site; Drawing 1).

Background

The Site is a former ARCO station (presently a Union 76 Station) that has had a history of petroleum hydrocarbon impacts to soil and groundwater contamination. The Site has recently been granted Closure by the Alameda County Environmental Health Agency (ACEH). Drilling activities specified herein include abandoning five wells: four monitoring wells (MW-1, MW-2, MW-4, MW-5); and one groundwater recovery well (RW-1). Drawing 2 includes the locations of the monitoring and recovery wells proposed to be abandoned.

Preliminary Activities, Local Permitting and Notification

Prior to the start of field activities, Broadbent will obtain a drilling permit from Alameda County Public Works Agency (ACPWA) and an encroachment permit from the City of Alameda. In addition, Broadbent will prepare a Site Health and Safety Plan (HASP) for the proposed work, clear the Site for subsurface utilities, and provide a minimum 72 hour advance notification to ACPWA prior to initiation of field activities. The utility clearance will include notifying Underground Service Alert (USA) of the pending work a minimum of 48 hours prior to initiating the field investigation and securing the services of a private utility locating company to confirm the absence of underground utilities at each well location. The Site-specific HASP will be prepared for use by personnel implementing the work plan and will be available onsite during work. A safety tailgate meeting will also be conducted daily to review potential hazards and scope of work.

Borehole Clearance

A precautionary drilling technique (i.e., a hand auger, air knife, pressurized water knife and/or high vacuum extraction, etc.) will be utilized through the initial six and half (6.5) feet of the subsurface in each boring to minimize impacts to unknown or abandoned buried utilities.

Well Abandonment

One 2-inch diameter well (MW-2) and one 6-inch diameter well (RW-1) will be over-drilled to total depths ranging between 15.25 and 23 feet below ground surface (ft-bgs) and filled to the surface with grout. Pressure grouting is normally the preferred technique for abandoning wells so close to the USTs and dispenser islands. However, MW-2 and RW-1 were compromised by Site development activities and their integrity (and the effectiveness of pressure-grouting) cannot be assumed. Therefore, over-drilling these wells is proposed. This method will include drilling out all well materials and grouting the resulting boreholes to surface.

Three 2-inch diameter wells (MW-1, MW-4, and MW-5) are proposed to be abandoned by pressure grouting. This method will include tremi-grouting each well casing and applying pressure of 25 psi for a minimum of 5 minutes.

The drilling contractor will then resurface each location to match the surrounding surface area. Informational attachments include: Drawing 1 which depicts the site vicinity map; Drawing 2 that depicts the Site map and monitoring wells. The table below presents monitoring well construction details and proposed abandonment methods.

Name	Proposed Destruction Method	Notes	Well Diameter (in)
RW-1	Over-Drill	Uncertain structural integrity	6
MW-1	Pressure Grout	Near UST	2
MW-2	Over-Drill	Uncertain structural integrity	2
MW-3	Lost	-	2
MW-4	Pressure grout	Across Buena Vista Ave	2
MW-5	Pressure grout	Across Webster St, on Buena Vista	2

It is our understanding that ACEH has assigned responsibility for MW-3 to the current Site owner due it being damaged and lost during activities conducted during Site redevelopment, and it will not be removed during the scope of work detailed by this work plan.

Well Abandonment Report

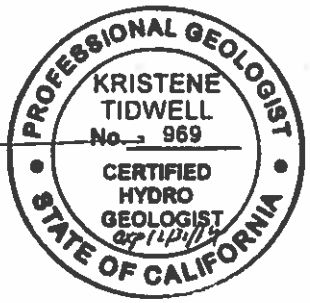
Upon completion of field activities, Broadbent will prepare a Well Abandonment Report. The report will document the results of the field activities, copies of required permit(s), copies of field notes, conclusions and recommendations, as warranted. Deviations from the work plan or data inconsistencies will be discussed in the report.

Schedule

Field work is anticipated to be conducted during late September or early October, 2014.

Please do not hesitate to contact us at (707) 455-7290 if you should have questions or require additional information.

Sincerely,
BROADBENT & ASSOCIATES, INC.



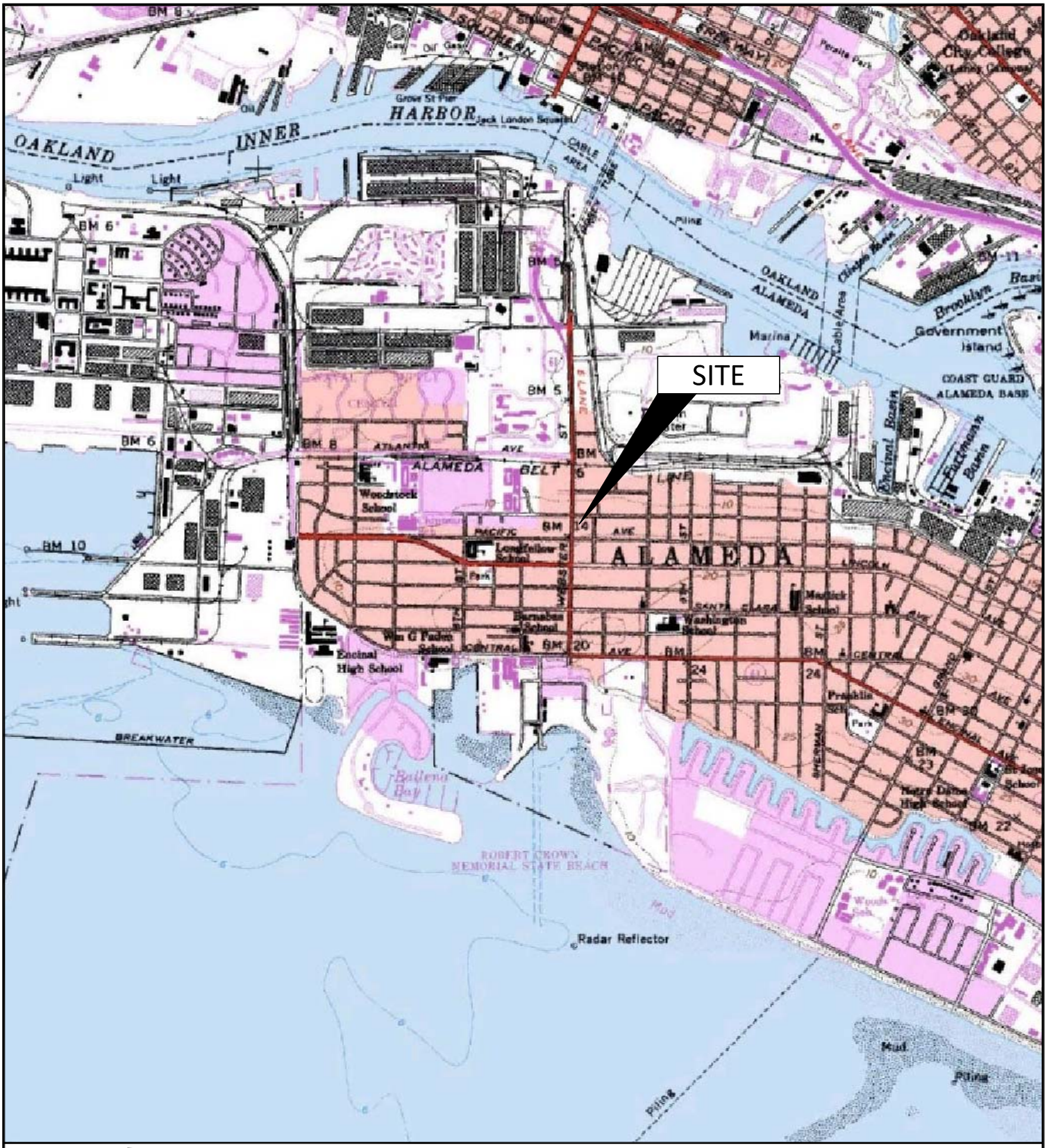
Kristene Tidwell, P.G., C.HG.
Associate Hydrogeologist

Enclosures

Drawing 1 Site Location Map
Drawing 2 Site Wells to be Destroyed and Destruction Methods

cc: Mr. Mark Detterman, Alameda County Environmental Health (submitted via ACEH ftp site)
Mr. Delong Liu, United Petroleum
Electronic copy uploaded to GeoTracker

DRAWINGS



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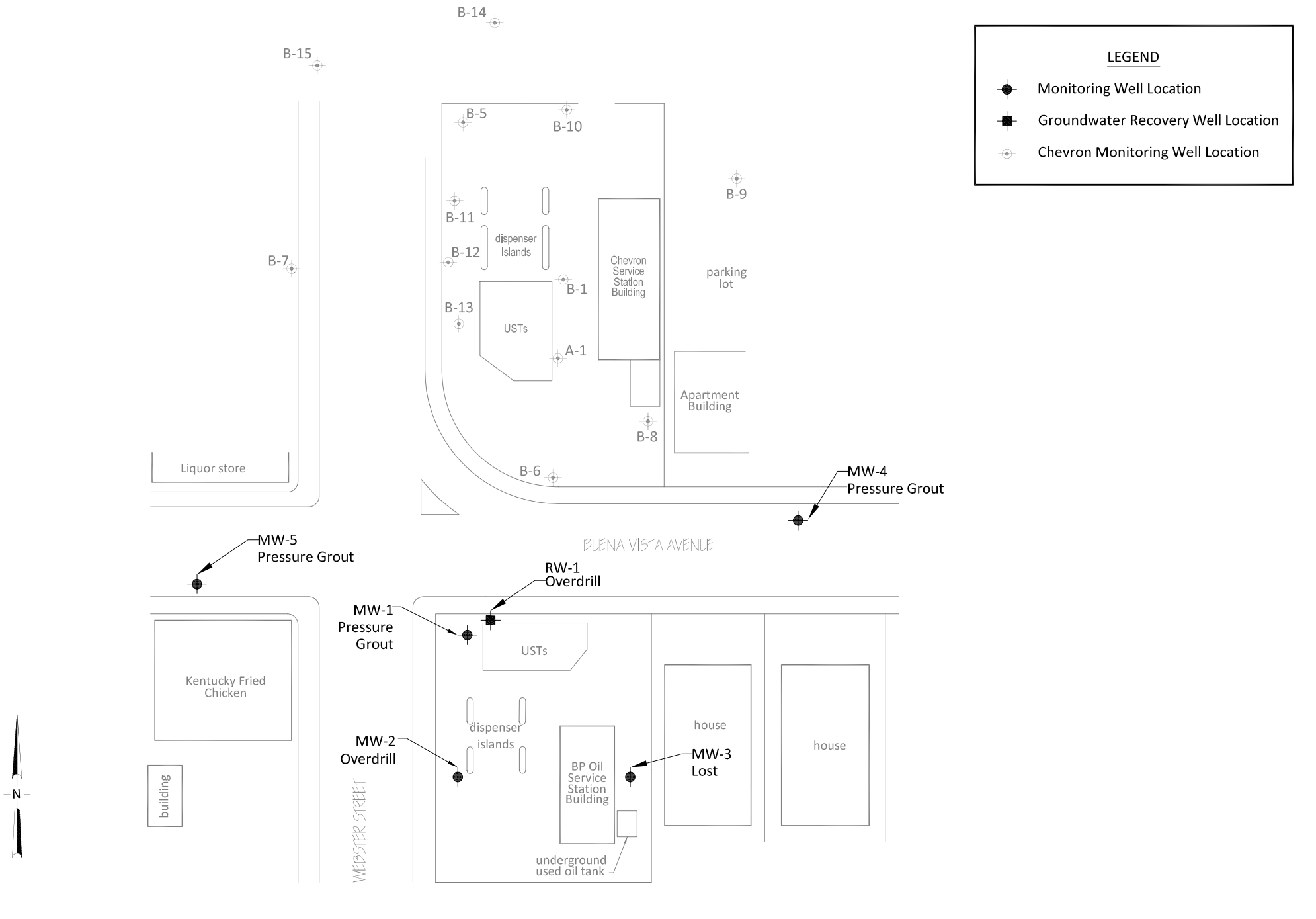
APPROXIMATE SCALE (ft)

IMAGE SOURCE: USGS

BROADBENT 875 Cotting Lane, Suite G Vacaville, California 95688 Project No.: 06-88-644 Date: 3/22/2013	Station #11104 1716 Webster Street Alameda, California	Site Location Map	Drawing 1


LEGEND
Monitoring Well Location
Groundwater Recovery Well Location
Chevron Monitoring Well Location
B-14
B-15
B-5
B-10
B-9
B-11
B-12
B-7
dispenser islands
Chevron Service Station Building
parking lot
B-1
B-13
USTs
A-1
Apartment Building
B-8
Liquor store
B-6
MW-4
Pressure Grout
MW-5
Pressure Grout
BUENA VISTA AVENUE
RW-1
Overdrill
MW-1
Pressure Grout
USTs
Kentucky Fried Chicken
dispenser islands
house
house
MW-2
Overdrill
MW-3
Lost
BP Oil Service Station Building
building
WEBSTER STREET
underground used oil tank
N
0
60
120
SCALE (ft)
BROADBENT
4820 Business Center Drive, Suite 110
Fairfield, CA 94534
Project No.: 06-88-644 Date: 9/20/2014
Station #11104
1716 Webster Street
Alameda, California
Site Wells to be Destroyed and Destruction Methods
Drawing
2