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August 24, 2017

Mr. Keith Nowell, PG, CHG
Alameda County Department of Environmental Health
Local Oversight Program for Hazardous Materials Releases
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: Work Plan for Well Redevelopment and Sampling
Dreyer's Grand Ice Cream
5929 College Avenue
Oakland, California

Dear Mr. Nowell:

Under my authorization, Haley & Aldrich, Inc. (Haley & Aldrich) has prepared the attached *Work Plan for Well Redevelopment and Sampling* on behalf of Nestlé USA, Inc. (Nestlé), describing proposed field work to be conducted at the request of Alameda County Department of Environmental Health (ACDEH) at the subject property. The scope of work described herein was discussed and agreed upon at a meeting between Nestlé, Haley & Aldrich, and ACDEH on August 3, 2017. Please contact me (information is below) or Michael Calhoun at Haley & Aldrich at 510-879-4554 if you have any questions.

I have read and acknowledge the content, recommendations, and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's Geotracker website.

Sincerely,



Sven Vetter
Corporate Environmental Sustainability Manager
Nestlé USA, Inc.
585-330-3110

WORK PLAN FOR WELL REDEVELOPMENT AND SAMPLING
DREYER'S GRAND ICE CREAM
5929 COLLEGE AVENUE
OAKLAND, CALIFORNIA

by Haley & Aldrich, Inc.
Oakland, California

for Nestlé USA
Glendale, California

File No. 130654-002
August 2017





HALEY & ALDRICH, INC.
1956 Webster Street
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24 August 2017
File No. 130654-002

Alameda County Health Care Services
Department of Environmental Health
Local Oversight Program for Hazardous Materials Releases
1131 Harbor Bay Parkway
Alameda, CA 94502

Attention: Mr. Keith Nowell, PG, CHG

Subject: Work Plan for Well Redevelopment and Sampling
Dreyer's Grand Ice Cream
5929 College Avenue
Oakland, California

Dear Mr. Nowell:

On behalf of Nestlé USA, Inc. (Nestlé), Haley & Aldrich, Inc. (Haley & Aldrich) has prepared this Work Plan for Well Redevelopment and Sampling (Work Plan) for the Dreyer's Grand Ice Cream Site (Site) located in Oakland, California. The work plan has been prepared in response to the 26 May 2016 letter from Alameda County Health Care Services, Department of Environmental Health (ACDEH), and associated email dated 3 October 2014.

Introduction

SITE SETTING AND HISTORY

The Site is located at 5929 College Avenue, in Oakland, California, approximately 0.25 miles north of California Highway 24 and approximately 0.25 miles south of the Berkeley City limits (Figure 1). The property is occupied by a large building (the Dreyers facility) and two large asphalt covered parking areas, with small landscaping areas near the perimeter of the property. The two-acre property is bounded by Claremont Avenue to the northwest, College Avenue to the east, and Chabot Road to the south, and slopes gently to the southwest with an elevation of approximately 190 feet above mean sea level. The land use in the area is residential and commercial; the commercial properties are concentrated along College Avenue.

Between December 1989 and February 1990, seven underground fuel and waste oil storage tanks¹ and approximately 500 to 550 cubic yards of impacted soil were removed from the Site (CET Environmental Services [CET], 1995); the locations and former contents of each tank are shown in Figure 2. Since then, multiple soil and groundwater investigations have been conducted (e.g. ATT, 1992 and 1993; CET 1999). As part of these investigations, groundwater monitoring wells MW1, MW2, and MW3 were installed in July 1991 (ATT, 1992). Three additional wells, MW4, MW5, and MW6, were installed in August 1993 (CET, 1995). The approximate locations of all Site monitoring wells are shown in Figure 2; well construction information is provided in Table 1. All wells were routinely monitored (either monthly or quarterly) from their installation until the last recorded sampling event in June 1999 (CET, 1999).

SITE GEOLOGY AND HYDROGEOLOGY

The Site is within an upland portion of the Oakland sub-area in the East Bay Plain, a northwest trending alluvial plane bounded by San Pablo Bay to the north, the Franciscan bedrock of the Oakland hills to the east, the Niles Cone Groundwater Basin to the south and San Francisco Bay to the west (Figuers, 1998). The Oakland sub-area contains a sequence of alluvial fans, up to 700 feet thick, overlying Franciscan bedrock (Figuers, 1998). Groundwater yields are low in this upland area due to low recharge potential (RWQCB, 1999). Harwood Creek runs in an engineered drainage beneath College Avenue east of the Site, and south of the Site along Chabot Road (Sowers, 2000).

Boring logs from previous investigations have indicated the Site is generally underlain by fine-grained soils (silt and clay) to at least 30 feet below ground surface (bgs), with occasional saturated lenses of sand and/or gravel present at depths below 10 feet (bgs).

Depth to water in groundwater monitoring wells has historically ranged from between 6 to 14 feet bgs (CET, 1999). The direction of the horizontal hydraulic gradient has often been shown as towards the southwest and west, but has also reported to have been to the northwest (ATT, 1992; CET, 1999). Groundwater monitoring results from a nearby upgradient fuel release site at 5930 College Avenue also indicate a predominantly southerly hydraulic gradient, with occasional westerly and northwesterly direction (GGTR, 2016).

Well Redevelopment and Sampling

ACDEH has requested that the six on-Site groundwater monitoring wells be redeveloped and sampled, and that the data be uploaded to the web-based environmental data management systems maintained by the State of California Water Resources Control Board (GeoTracker) and the ACDEH File Transfer Protocol (FTP) website (ACDEH, 2016). The sections below describe the methods to be used to complete the scope of work.

¹ One 1,000-gallon and one 8,000-gallon gasoline tank; one 2,000-gallon and two 4,000-gallon diesel tanks; and two 1,000-gallon waste oil tanks.

FIELD PREPARATION

Prior to the well redevelopment, Haley & Aldrich will perform a Site visit to locate the existing monitoring wells, assess their present condition, including well box integrity, and measure total depth inside the casing. Haley & Aldrich will coordinate the work with Nestlé and contract with the field sampling, laboratory, and waste disposal subcontractors.

WELL REDEVELOPMENT

Haley & Aldrich will subcontract with Field Solutions, Inc. (FSI) to perform the well redevelopment. Each well will be redeveloped using surge and purge methods. First, the screen interval of each well will be surged with a surge block, and a bailer will be used to remove suspended sediment. The well will then be purged using a bailer or submersible pump while monitoring water quality parameters (temperature, pH, specific conductivity, oxidation-reduction potential [ORP], and dissolved oxygen). The wells will be purged a minimum of 10 casing volumes, and until water quality parameters stabilize², and the groundwater is visibly clear. A down-well camera will be deployed to identify any obstructions encountered in the wells during redevelopment.

WELL SAMPLING

Haley & Aldrich will subcontract with FSI to sample each groundwater monitoring well as follows:

- Each well will be purged using low-flow methods with a peristaltic pump and new, disposable low-density polyethylene tubing.
- Water quality parameters will be monitored with YSI water quality probe (or equivalent) during purging. The wells will be purged until water quality parameters stabilize (see footnote below).
- After purging, groundwater samples will be collected from the pump effluent into appropriately-preserved sample containers. Samples will then be labeled, sealed in plastic bags, and placed in an ice-cooled chest pending shipment to the analytical laboratory under chain of custody procedures.

Quality assurance/quality control (QA/QC) samples, including one blind field duplicate and one equipment blank, will be collected. A laboratory-provided trip blank sample will also be submitted with the sample shipment. Field duplicate samples will be collected using the same methods described above. Equipment blank samples will be collected by pumping laboratory-prepared deionized (DI) water through the pump and tubing into appropriately-preserved sample containers.

LABORATORY ANALYSIS

Groundwater samples will be analyzed by a California-certified analytical laboratory for the following:

² Defined as three successive readings with temperature $\pm 3\%$, pH ± 0.1 , specific conductivity $\pm 3\%$, ORP ± 10 millivolts, and dissolved oxygen $\pm 10\%$.

- Total petroleum hydrocarbons quantified as gasoline (TPHg) and the full list of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method 8260B;
- Total petroleum hydrocarbons quantified as diesel (TPHd) and motor oil (TPHmo) using USEPA Method 8015M; and
- Priority pollutant polycyclic aromatic hydrocarbons (PAHs) using USEPA Method 8270C.

The samples will also be analyzed for the following geochemical parameters to aid in assessing monitored natural attenuation during the development of the Conceptual Site Model (CSM):

- Dissolved oxygen, oxidation-reduction potential, pH and temperature;
- Nitrate and sulfate using USEPA Method 300.0;
- Dissolved iron and manganese using USEPA Method 6010B; and
- Alkalinity using Standard Method 2320B.

WELL SURVEYING

The locations of the groundwater monitoring wells are currently surveyed to a local datum, and the top of casing elevations are surveyed relative to mean sea level. Current Geotracker requirements specify that location and elevation be surveyed relative to the North American Datum of 1983 (NAD83) and the North American Vertical Datum of 1988 (NAVD88), respectively. Haley & Aldrich will subcontract with a California-licensed land surveying company to record the location and elevation of each well in accordance with Geotracker requirements.

DECONTAMINATION AND WASTE MANAGEMENT

Reused downhole equipment (such as the electric sounder and submersible pump) will be decontaminated using a wash of Liquinox® detergent (or equivalent) and distilled water, followed by a distilled water rinse. Decontamination water and purged groundwater will be contained in DOT-rated 55-gallon drums temporarily stored on-site pending profiling and disposal at an appropriate facility.

Reporting and Schedule

After receiving and evaluating the laboratory and survey data, Haley & Aldrich and Nestlé will meet with ACDEH to present the draft CSM and discuss the next steps on the path to Site closure. All reports and associated survey, water level, and laboratory analytical data will be uploaded to GeoTracker; reports will also be uploaded to ACDEH's FTP site. Haley & Aldrich anticipates that the well rehabilitation and sampling will occur in September 2017, pending approval of this Work Plan by ACDEH. The meeting is anticipated to occur in October 2017.

Please feel free to contact any of the undersigned if you have any questions or require additional information.

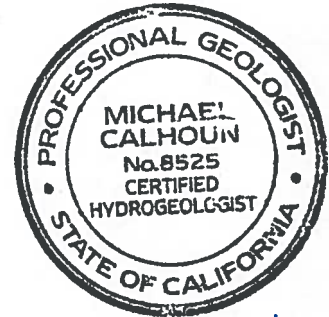
Sincerely yours,
HALEY & ALDRICH, INC.



Tyler Ketron
Staff Scientist



Michael Calhoun, PG, CHG
Senior Project Manager
CA PG #8525, CA PG #976



Exp. 5/31/16



Peter Bennett, PG, CHG
Principal Hydrogeologist
CA PG #7902, CA CHG #921

Enclosures:

- Table 1 – Well Construction Details
- Figure 1 – Site Location
- Figure 2 – Site Layout and Monitoring Well Locations

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References

1. ACDEH, 2016. Notice to Comply, Fuel Leak Case No. RO0000153 and GeoTracker Global ID T0600100466 Dreyer's Grand Ice Cream, 5929 College Avenue, Oakland, CA 94618, May.
2. ACDEH, 2017. Fuel Leak Cast No. RO0000153 and GeoTracker Global ID T0600100466 Dreyer's Grand Ice Cream, 5929 College Avenue, Oakland CA 94618, May.
3. ATT, 1992. Groundwater Investigation, 5929 College Avenue, Oakland, California (ATT Project No. 9126), February.
4. ATT, 1993. First Quarter 1993 Groundwater Monitoring Report and Subsurface Investigation, Dreyer's Grand Ice Cream, 5929 College Avenue, Oakland, California (Project No. 919313), April.
5. CET, 1995. Second Quarter 1995 Groundwater Monitoring Report, Dreyer's Grand Ice Cream, 5929 College Avenue, Oakland, California (CET Project Number 3534-001), August.
6. CET, 1999. Second Quarter 1999 Groundwater Monitoring, Geoprobe Investigation Results and Work Plan for Bioindicator Sampling, November.
7. Figuers, S., 1998. Groundwater Study and Water Supply History of the East Bay Plain, Alameda and Contra Costa Counties, CA, June.
8. Golden Gate Tank Removal, Inc. (GGTR). 2016. Data Gap Investigation Report, Alameda County LOP Case # RO0000377, March.
9. RWQCB, 1999. East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, Alameda and Contra Costa Counties, CA., California Regional Water Quality Control Board, San Francisco Bay Region Groundwater Committee, June.
10. Sowers, 2000. Creek & Watershed Map of Oakland & Berkeley, Oakland Museum of California, ISBN: 1-882140-11-7

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TABLES

TABLE 1
WELL CONSTRUCTION DETAILS
 DREYERS GRAND ICE CREAM
 5929 COLLEGE AVENUE
 OAKLAND, CALIFORNIA

Well ID	Installation Date	Well Diameter (inches)	Well Material	Top of Casing Elevation (feet MSL)	Screen Interval (feet bgs)	Total Well Depth (feet bgs)
MW1	7/16/1991	2	PVC	189.13	10 - 30	30
MW2	7/17/1991	4	PVC	185.76	8 - 28	28
MW3	7/18/1991	4	PVC	185.21	7 - 27	27
MW4	8/20/1993	2	PVC	184.75	7 - 27	27
MW5	8/20/1993	2	PVC	184.75	9 - 29	29
MW6	8/20/1993	4	PVC	187.21	9 - 29	29

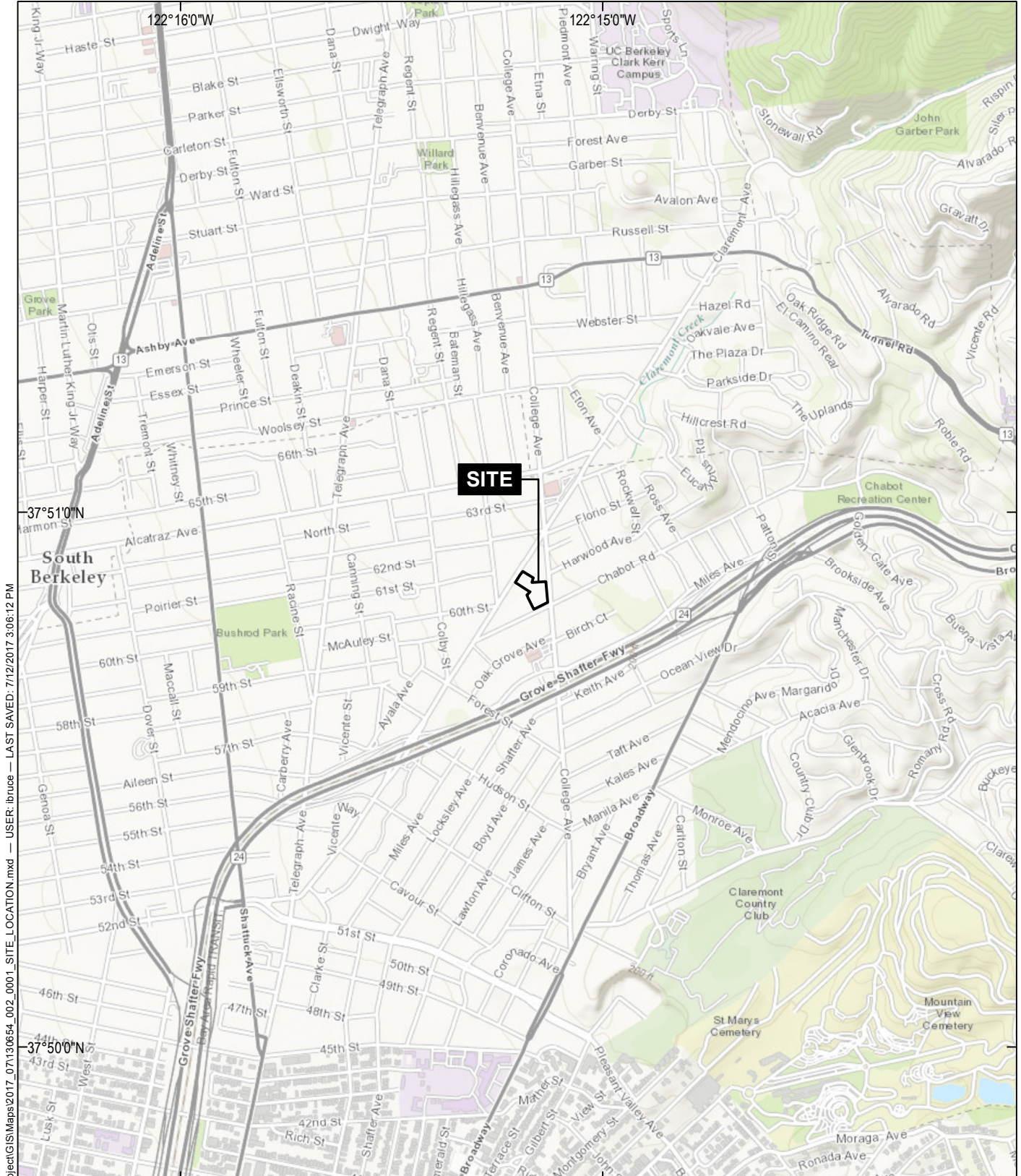
Abbreviations:

bgs = below ground surface

PVC = polyvinyl chloride

MSL = mean sea level

FIGURES



GIS FILE PATH: G:\Nestle\Nestle Dreyer's project\GIS\Maps\2017_071130654_002_0001_SITE_LOCATION.mxd — USER: lbruce — LAST SAVED: 7/12/2017 3:06:12 PM



MAP SOURCE: ESRI
 SITE COORDINATES: 37°50'51"N, 122°15'10"W

**HALEY
 ALDRICH**

NESTLÉ USA, INC.
 DREYER'S GRAND ICE CREAM
 5929 COLLEGE AVENUE
 OAKLAND, CALIFORNIA

SITE LOCATION






APPROXIMATE SCALE: 1 IN = 2000 FT
 JULY 2017

FIGURE 1

GIS FILE PATH: G:\Nestle\Nestle Dreyer's project\GIS\Maps\2017_07\130654_002_0002_SITE_LAYOUT.mxd — USER: lbruce — LAST SAVED: 7/17/2017 1:06:00 PM

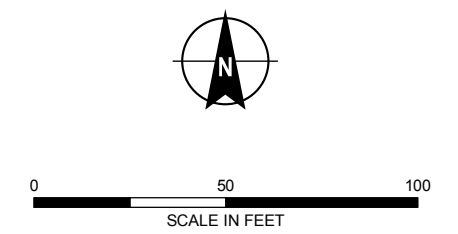


LEGEND

-  GROUNDWATER MONITORING WELL
-  FORMER TANK LOCATION
-  FORMER EXCAVATION LIMITS
-  PARCEL BOUNDARY
-  SITE BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. WELL DATA SOURCE: CET ENVIRONMENTAL SERVICES, PROPOSED WELL AND BORING LOCATIONS MAP, PLATE 3, JULY 1993; CET ENVIRONMENTAL SERVICES, PROPOSED BORING LOCATIONS, PLATE 1, MAY 1999
3. TANK DATA SOURCE: CET ENVIRONMENTAL SERVICES, PROPOSED WELL AND BORING LOCATIONS MAP, PLATE 3, JULY 1993; AQUA TERRA TECHNOLOGIES CONSULTING ENGINEERS & SCIENTISTS, FACILITY AND FORMER TANK LOCATIONS, PLATE 2, FEBRUARY 1990
4. ASSESSOR PARCEL DATA SOURCE: ALAMEDA COUNTY
5. AERIAL IMAGERY SOURCE: ESRI



NESTLÉ USA, INC.
DREYER'S GRAND ICE CREAM
5929 COLLEGE AVENUE
OAKLAND, CALIFORNIA

**SITE LAYOUT AND
MONITORING WELL LOCATIONS**

JULY 2017

FIGURE 2