Work Plan to Install
One Ground-Water Monitoring Well and
Conduct Quarterly Monitoring
Former Ransome Property
Yerba Buena Project Site
Emeryville, California

September 15, 1992
1649.07

Prepared for:

Catellus Development Corporation
201 Mission Street
San Francisco, California

LEVINE·FRICKE

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ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

September 15, 1992 LF 1649.07

Ms. Susan Hugo
Alameda County Health Care Services Agency
80 Swan Way, Suite 200
Oakland, California 94621

Subject: Work Plan to Install One Ground-Water Monitoring Well and Conduct Quarterly Monitoring, Former Ransome Property, Emeryville, California

Dear Susan:

Enclosed is a Work Plan to install one ground-water monitoring well and conduct quarterly monitoring at the former Ransome Property ("the Property") located at the Yerba Buena Project Site in Emeryville, California. This Work Plan has been prepared on behalf of Catellus Development Corporation in accordance with recommendations presented in the report entitled "Ground-Water Investigations, Former Ransome Property, Yerba Buena Project Site," prepared by Levine•Fricke and dated August 4, 1992.

The Work Plan describes the proposed investigation activities and outlines the quarterly monitoring program to be implemented for the Property beginning with the fourth quarter of 1992 (October through December 1992), pending receipt of written approval of the Work Plan from the Alameda Health Care Services Agency. The objective of the quarterly sampling program is to monitor the possible future impact of petroleum-affected soil on shallow ground water beneath the Property. Following one year of quarterly monitoring, data for the Site will be re-evaluated to assess whether a semiannual monitoring program is appropriate for the Site.

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Please call me if you have any questions or comments regarding this Work Plan.

Sincerely,

Jenifer Beatty

Jenifer Beatty
Project Hydrogeologist

cc: Lester Feldman, RWQCB
Ric Notini, Catellus
Pat Cashman, Catellus
Don Marini, Catellus
Kimberly Brandt, Catellus

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**WORK PLAN TO INSTALL ONE MONITORING WELL AND CONDUCT QUARTERLY MONITORING, FORMER RANSOME COMPANY PROPERTY YERBA BUENA PROJECT SITE EMERYVILLE, CALIFORNIA**

## 1.0 INTRODUCTION

This Work Plan describes the tasks necessary to install one additional ground-water monitoring well and conduct quarterly ground-water monitoring at the former Ransome Property ("the Property"; Figure 1) at the Yerba Buena Project Site in Emeryville, California. This Work Order was prepared in accordance with recommendations presented in the August 4, 1992 report entitled "Ground-Water Investigations, Former Ransome Property, Yerba Buena Project Site," prepared by Levine·Fricke on behalf of Catellus Development Corporation ("Catellus") in response to a request from the Alameda Health Care Services Agency (ACHA) and Bay Area Regional Water Quality Control Board (RWQCB).

One shallow ground-water monitoring well (LF-29) will be installed near former well W-1 to evaluate the concentrations of petroleum compounds, if any, in the vicinity of underground storage tanks (USTs) formerly located in this area and removed by Ransome in 1989. A quarterly monitoring program will be implemented at the Property beginning with the fourth quarter of 1992 (October through December 1992). Existing monitoring wells LF-16, LF-24, LF-25, LF-26, LF-27, and LF-28, and proposed well LF-29 (Figure 2) will be monitored quarterly for one year. Following one year of quarterly monitoring, data for the Property will be re-evaluated to assess whether a semiannual monitoring program may be appropriate for the Property.

## 2.0 BACKGROUND AND PREVIOUS INVESTIGATIONS

The Ransome Construction Company ("Ransome") operated a former asphalt batch plant at the Property for more than 50 years. An initial investigation of the Property was included in a Phase I investigation of the Yerba Buena Project Site performed by Levine·Fricke (Levine·Fricke, 1990a). The Property yard contained seven structures, including an office, a machine/maintenance shop, four sheds, a steam-cleaning shed, and a lavatory. Four USTs, one waste-oil tank that was

partially underground, and an aboveground liquid asphalt oil tank were located on the Property at the time of the Phase I investigation. Oil stains on soil and site surfaces were observed across the Property, especially in the machine shop area, in the vicinity of the oil storage shed, near the waste-oil tank, and near the liquid asphalt oil tank. The USTs were removed in December 1989 by Kennedy/Jenks/Chilton, at which time petroleum hydrocarbon staining of the underlying soil was observed and reported.

Additional environmental investigations at the Property were conducted by Ransome and by Aqua Resources Inc. (ARI), who was working on behalf of Ransome (ARI, 1991). These investigations indicated the presence of petroleum hydrocarbon compounds and associated constituents in the soil.

ARI installed three ground-water monitoring wells (W-1, W-2, and W-3) in November 1990 (Figure 2). The reported depth to ground water was approximately 8.5 feet to 11 feet below ground surface (bgs) and the shallow ground-water flow direction was reportedly toward the southwest (ARI, 1991). Chemical analytical results of ground-water samples collected from two wells (W-1 and W-2) indicated the presence of total petroleum hydrocarbons (TPH) as gasoline (TPHg) at concentrations up to 0.460 parts per million (ppm), benzene at concentrations up to 0.270 ppm, and toluene, ethylbenzene, and total xylenes, each at concentrations up to 0.260 ppm. Concentrations of oil and TPH as diesel (TPHd) ranged from 0.400 ppm to 1.7 ppm and 0.082 ppm to 1.9 ppm, respectively.

ARI initiated soil removal activities at the Property at Ransome's request, including the excavation of petroleum-affected soil on site. ARI's work also included transporting diesel- and oil-affected soils off site for treatment and disposal. Gasoline-affected soils were left on site for possible aeration and reuse as backfill in excavations.

In the March 9, 1991 "Right-of-Entry Permit Agreement (Environmental Remediation)" (referred to hereafter as "the Agreement"), Ransome entered into a cleanup program under Catellus's oversight to clean up the Property to levels approved by the ACHA in its letter dated February 4, 1991.

Contrary to its commitment in the Agreement, Ransome directed ARI to stop work at the Property in September 1991 after completing only a small portion of the soil remediation. In October 1991, Levine·Fricke, on behalf of Catellus, continued on-site soil removal activities in accordance with the January 16, 1991 Work Plan prepared by ARI and approved by the

ACHA. Approximately 25,000 cubic yards of TPH-affected soil are currently stockpiled on the Property. Completed excavations have been backfilled with imported clean fill or excavated soil successfully aerated to concentrations below backfill criteria established by the ACHA.

In May 1992, Levine·Fricke directed the installation of five shallow ground-water monitoring wells in accordance with the April 15, 1992 Work Plan verbally approved by the RWQCB and the ACHA in a meeting on February 13, 1992. Based on analytical results of samples collected from wells installed by Levine·Fricke in May 1992, shallow ground water at the Property does not appear to be significantly affected by petroleum hydrocarbons originating from the Property. No gasoline was detected in any of the on-site wells sampled. Benzene was detected at concentrations of 0.0004 ppm in two of the five wells, and toluene was detected in four wells at a concentration of 0.002 ppm or less. Oil and grease was detected in two of the on-site wells at a concentration of 5.6 ppm or less. A more detailed discussion of the results is presented in the August 4, 1992 report (Levine·Fricke, 1992b).

Based on the ground-water quality results discussed above, Levine·Fricke recommended in the August 4, 1992 report that a quarterly monitoring program be implemented at the Property to monitor the possible future impacts of petroleum-affected soils on shallow ground water. In a meeting on June 22, 1992, with Mr. Lester Feldman of the RWQCB and Mr. Dennis Byrne of the ACHA, Mr. Feldman recommended that Catellus install an additional well near former well W-1. The proposed investigation activities to conduct this work are described below.

## 3.0 WELL INSTALLATION AND DEVELOPMENT

Ground-water monitoring well LF-29 is proposed for installation in the vicinity (downgradient) of the former gasoline USTs, near former well W-1. The proposed location for the monitoring well is shown on Figure 2. Field methods to be used during installation and development are presented below.

### Borehole Drilling

Before drilling begins, the appropriate permits will be obtained from the Alameda County Flood Control and Water Conservation District, Zone 7.

Drilling activities will be conducted under the supervision of a California Registered Geologist. All downhole drilling and sampling equipment will be steam cleaned before use. The borehole for the monitoring well will be drilled by a licensed well drilling contractor using a truck-mounted drilling rig equipped with 8-inch outside-diameter hollow-stem augers. The anticipated total depth of the borehole is 20 to 25 feet bgs. The depth to first ground water encountered during drilling conducted in May 1992 ranged between 12 and 16 feet bgs.

Soil Sampling

Soil samples will be collected for lithologic description by driving a brass-tube-lined split-spoon sampler ahead of the auger into undisturbed soil. The lower-most sample from the split-spoon sampler will be field screened with a hand-held organic vapor meter (OVM). Soils will be described using the Unified Soil Classification System. Lithologic descriptions and OVM measurements will be recorded in the field on borehole log forms.

Well Construction

The monitoring well will be constructed of flush-threaded, 2-inch-diameter polyvinyl chloride (PVC) casing with factory-made slotted well screen. The length of slotted and PVC casings will be based on sediments observed during drilling. Based on the existing water-level and lithologic data for the Site, we anticipate the length of well screen will be 10 feet, with 0.02-inch wide slots.

The well casing will be placed in the completed borehole through the hollow-stem auger. A filter pack consisting of appropriately graded sand will be poured into the annular space between the hollow-stem auger and the slotted PVC well casing as the auger is gradually removed from the borehole. The filter pack will extend approximately 2 feet above the top of the slotted PVC casing. Prehydrated bentonite slurry will be placed above the sand pack to isolate the perforated interval from material above and prevent the entrance of grout into the sand pack. A cement-bentonite grout will then be placed above the bentonite to the land surface to seal the remainder of the borehole interval from surface-water infiltration. The well will be completed above grade with a locking cap and a steel field monument set in concrete to protect the well from surface water and damage.

The elevation of the newly installed monitoring well will be surveyed to the nearest 0.01-foot by a licensed surveyor.

Well Development

Well LF-29 will be developed after installation by purging the well to remove sediment from around the screened interval and enhance hydraulic communication with the surrounding formation. The well will be purged using a centrifugal pump or clean Teflon bailer. Approximately 10 well casing volumes of ground water will be removed from the well during well development. Parameters such as pH, temperature, specific conductance, quantity, and clarity of water withdrawn will be measured and recorded during this process.

Reporting

A report describing well installation activities will be prepared following the completion of field work. It is anticipated that this report can be combined with the first quarterly report, scheduled for submittal to the ACHA by January 31, 1993.

## 4.0 PERIODIC MONITORING

The following section outlines quarterly ground-water monitoring and reporting activities to be conducted for the Property.

### 4.1 Quarterly Monitoring

A quarterly ground-water monitoring program will be initiated beginning with the fourth quarter of 1992 (October through December 1992). The monitoring program will consist of collecting water-level measurements and ground-water samples for chemical analysis from existing wells LF-16, LF-24, LF-25, LF-26, LF-27, and LF-28, and proposed well LF-29 on a quarterly basis (Figure 2).

Ground-water samples will be submitted to a state-certified laboratory for analysis of TPHg and TPHd using modified EPA Method 8015, for oil using Standard Method 5520, and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8020. A schedule for sampling and analysis is presented in Table 1.

## 4.2 Ground-Water Sampling Methodology

### Water-Level Measurements

The top of the well casings of each existing well at the Property has been surveyed relative to mean sea level by a state-licensed land surveyor, and the proposed well will be surveyed following well installation. Depth to water will be measured in all wells to be sampled using an electric water-level sounding probe to the nearest 0.01 foot, relative to the top of the PVC well casing. These data will be presented on tables and figures included in the quarterly reports, discussed in Section 4.3.

### Sampling Procedures

Approximately three to five well casing volumes of water will be removed from each well before a water sample is collected. If a well cannot sustain a yield (i.e., well pumps dry), it will be allowed to recover to 80 percent of the original, static water level. A ground-water sample will then be collected after the well has recovered to 80 percent of the original water level or within two hours of pumping the well dry.

The wells will be purged using a submersible or centrifugal pump. Specific conductance, pH, and temperature will be measured during this purging process to aid in evaluating overall ground-water quality. These parameters will be recorded in the field on water-quality sampling forms. Samples will be collected after these parameters have stabilized to within 15 percent of previous measurements.

Samples will be collected using a clean Teflon bailer. Samples collected for TPHg/BTEX analyses will be placed into laboratory-supplied, 40-milliliter glass vials preserved with hydrochloric acid. The glass vials will be filled to capacity, capped, and checked for trapped air bubbles. If an air bubble is observed, the vial will be discarded and a new vial filled with additional water from the well. Samples collected for TPHd and oil analyses will be poured into laboratory supplied 1-liter amber bottles. Samples will be placed in an ice-chilled cooler immediately after collection for transportation to a state-certified laboratory for appropriate chemical analysis.

Additionally, for quality control/quality assurance measures, a duplicate sample and a field blank will be collected and submitted to the laboratory. The duplicate sample will be included with the other ground-water samples and submitted for analyses for TPHg/BTEX using modified EPA Methods 8015/8020. The field blank sample will be held (i.e., not analyzed) pending the results of the ground-water samples collected from the wells.

### 4.3 Quarterly Reporting

Reports will be prepared and submitted quarterly to the ACHA and the RWQCB in accordance with the proposed schedule outlined in Table 1. These reports will include a summary of work completed since the previous quarterly report and work projected to be completed during the next quarter. These reports will include the following:

- a discussion of water-quality and ground-water elevation data collected at the Site during the quarterly period
- a site plan showing locations of all wells
- ground-water elevation maps and ground-water quality maps for data collected during the quarterly period
- tables presenting well construction and ground-water elevation data, and chemical analysis results
- tables summarizing historical ground-water quality data for the Site.

At the end of one year, hydrogeologic data for the Property will be re-evaluated to review the trend in water-quality data for the Site during the previous year and to assess whether a semiannual monitoring program may be appropriate for the Property.

## 5.0 SCHEDULE

Table 1 presents a quarterly monitoring schedule, detailing sampling periods, wells to be sampled, analyses to be performed, and submittal due dates.

It is anticipated that periodic monitoring will begin in the fourth quarter of 1992 (October through December 1992), pending receipt of written approval of the Work Plan from the ACHA. It is anticipated that monitoring well LF-29 will be installed before the first round of ground-water samples is collected, and the report of well installation activities can be combined with the first quarterly report.

**REFERENCES**

Aqua Resource, Inc. (ARI). 1991. Remedial investigation and closure plan for former corpoeration yard site, 4030 Hollis Street, Emeryville, California. January.

Levine•Fricke, Inc. 1990a. Phase I and phase II environmental investigation, Yerba Buena Project Site, Emeryville and Oakland, California. August 15 (REVISED October 26, 1990).

———. 1992a. Work Plan for ground-water investigations, former Ransome property, Yerba Buena project site, Emeryville, California. Report. Emeryville, California. April 15.

——— . 1992b. Ground-water investigations, former Ransome property, Yerba Buena project site, Emeryville, California. Report. Emeryville, California. August 4.

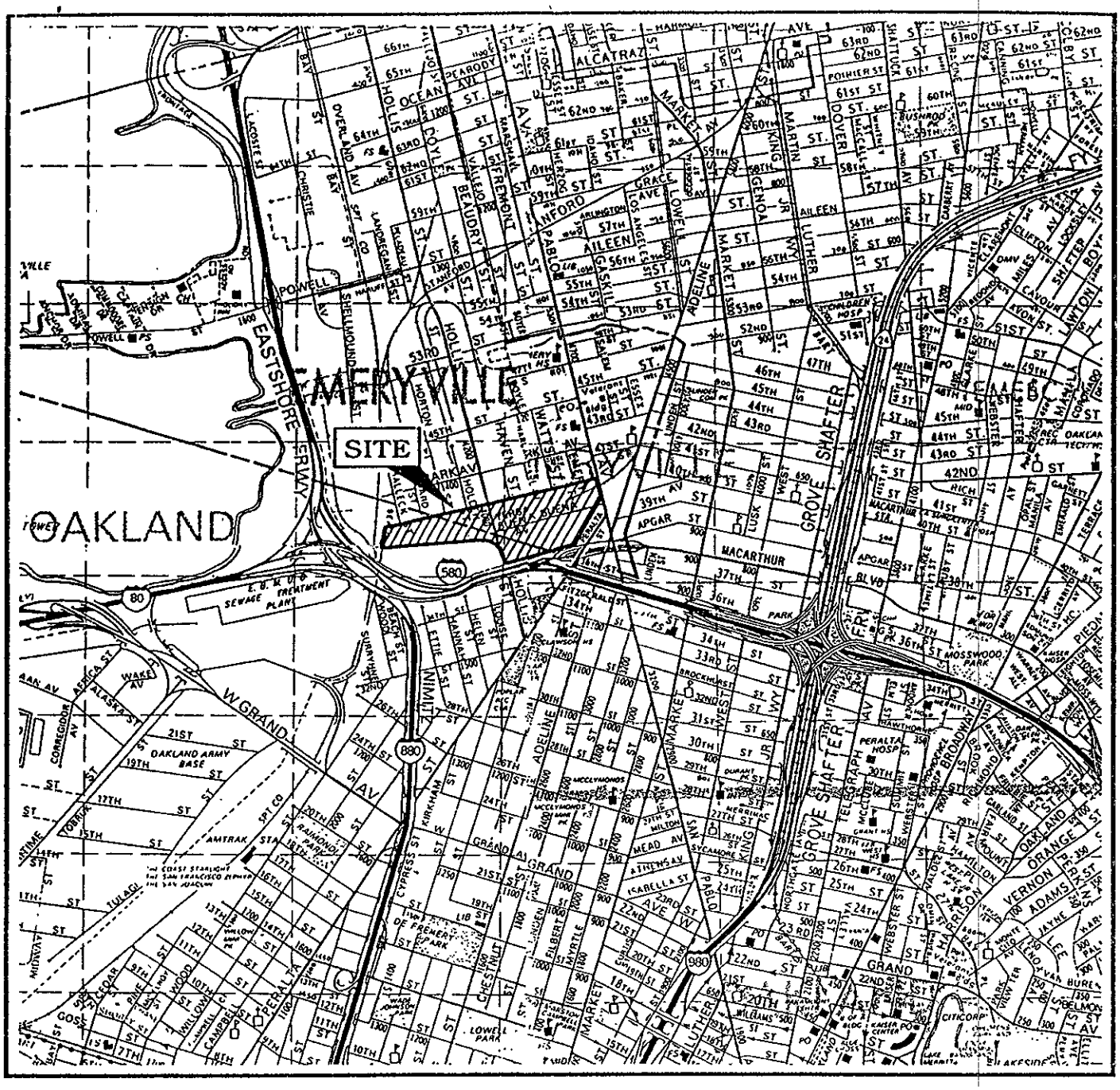
TABLE 1

GROUND-WATER MONITORING SCHEDULE FOR OCTOBER 1992 THROUGH SEPTEMBER 1993*
FORMER RANSOME PROPERTY, YERBA BUENA PROJECT SITE
EMERYVILLE, CALIFORNIA

| Quarter | Quarterly Period | Wells to Be Sampled | Analysis | Report Submittal Date |
|---|---|---|---|---|
| First+ | October-December 1992 | LF-16, LF-24, LF-25, LF-26, LF-27, LF-28, and LF-29 | Modified EPA Method 8015; EPA Method 8020; Standard Method 5520 | January 31, 1993 |
| Second | January-March 1993 | LF-16, LF-24, LF-25, LF-26, LF-27, LF-28, and LF-29 | Modified EPA Method 8015; EPA Method 8020; Standard Method 5520 | April 30, 1993 |
| Third | April-June 1993 | LF-16, LF-24, LF-25, LF-26, LF-27, LF-28, and LF-29 | Modified EPA Method 8015; EPA Method 8020; Standard Method 5520 | July 30, 1993 |
| Fourth | July-September 1993 | LF-16, LF-24, LF-25, LF-26, LF-27, LF-28, and LF-29 | Modified EPA Method 8015; EPA Method 8020; Standard Method 5520 | October 29, 1993 |

* Ground-water quality results will be reviewed at the end of one year to evaluate an appropriate frequency for future monitoring.

+ Quarterly monitoring is anticipated to begin in October 1992.




MAP SOURCE:
Alameda & Contra Costa Counties,
Thomas Bros. map, 1990 Edition

**Figure 1 : SITE LOCATION MAP**
YERBA BUENA PROJECT SITE

Project No. 1649

LEVINE • FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

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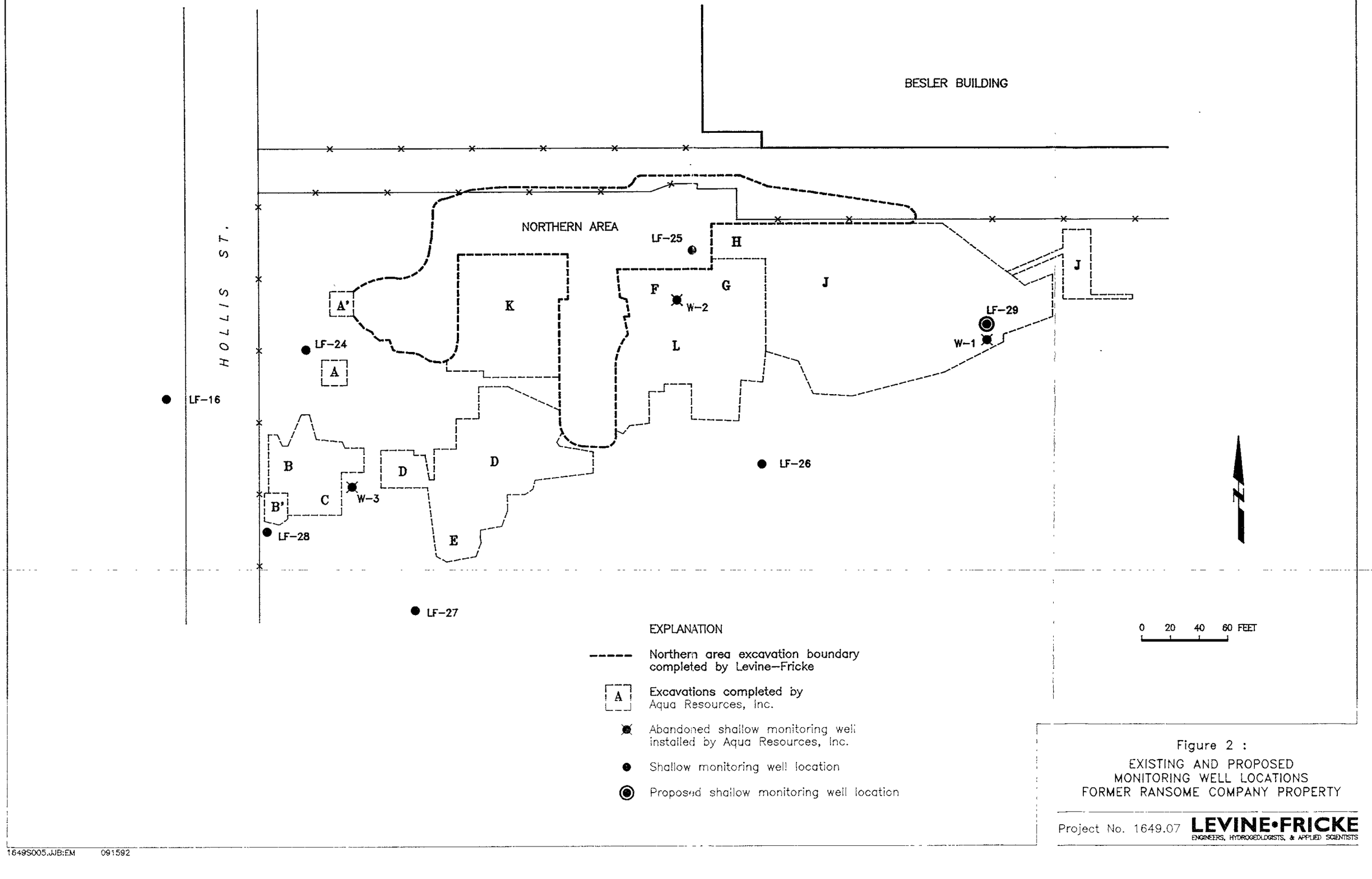


Figure 2 :
EXISTING AND PROPOSED
MONITORING WELL LOCATIONS
FORMER RANSOME COMPANY PROPERTY

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