

**Bank of America Realty Finance,
Inc.**

**Five-Year Evaluation Report of
Remedial Actions**

Former Mercury Dry Cleaners Facility
2714 Pinole Valley Road, Pinole, California

December 11, 2012



A handwritten signature in black ink that reads "Jennifer Nyman".

Jennifer Nyman, Ph.D., P.E.
Senior Environmental Engineer
California Professional Engineer (C78577)

A handwritten signature in black ink that reads "Ron Goloubow".

Ron Goloubow, P.G. 8655
Principal Geologist
California Professional Geologist (8655)

**Five-Year Evaluation Report of
Remedial Actions**

Former Mercury Dry Cleaners
Facility, 2714 Pinole Valley Road,
Pinole, California

Prepared for:
Bank of America Realty Finance, Inc.

Prepared by:
ARCADIS U.S., Inc.
2000 Powell Street, 7th Floor
Emeryville, California 94608
Tel 510.652.4500
Fax 510.652.4906
www.arcadis-us.com

Our Ref.:
EM007689.0016

Date:
December 11, 2012

*This document is intended only for the use
of the individual or entity for which it was
prepared and may contain information that
is privileged, confidential and exempt from
disclosure under applicable law. Any
dissemination, distribution or copying of
this document is strictly prohibited.*

Executive Summary	iv
1. Introduction	1
2. Site Background	2
2.1. Site Description and History	2
2.2. Geology and Hydrogeology	2
2.3. Pre-Remediation Investigation History	3
2.4. Summary of Investigation Findings	4
2.5. Monitoring Locations	4
2.6. Groundwater Monitoring Program	5
3. Conceptual Site Model	5
3.1. Source of Affected Soil and Groundwater	5
3.2. Groundwater Occurrence	6
3.3. Groundwater Quality	6
4. Remedial Activities	7
5. Five-Year Review Findings	10
5.1. Five-Year Review Process	10
5.2. Applicable or Relevant and Appropriate Requirements (ARARs) Review	10
5.3. Soil-Vapor Investigation and Human Health Risk Assessment	11
5.4. Most Recent Results for Groundwater Monitoring (March 2012) and Soil Quality	12
5.4.1. Groundwater	12
5.4.2. Soil	13
6. Technical Assessment	14
6.1. Effectiveness of the Remedial Actions	14
6.1.1. Source Removal	14
6.1.2. Evaluation of Natural Attenuation	14
7. Issues and Recommendations	18

7.1. Shallow Groundwater Unlikely to Be Developed As a Drinking Water Source ¹⁸	
7.2. Land Use Covenant - Deed Restriction	19
7.3. Periodic Groundwater Monitoring and Reporting	19
7.4. Conditions for Remedy Re-Evaluation	20
7.5. Remedy Cost Estimate	21
8. Protectiveness Statement	22
9. Next Review	22
10. References	23

Tables

Table 1	Volatile Organic Compounds Detected in Groundwater Samples
Table 2	Summary of Statistical Analysis of Groundwater Analytical Data
Table 3	Summary of Statistical Analysis of Groundwater Analytical Data Using U.S. EPA Regression MNA Tool
Table 4	Inorganic Water-Quality Parameters in Groundwater
Table 5	Monitoring and Attenuation Parameters Detected in Groundwater Samples

Figures

Figure 1	Site Vicinity Map
Figure 2	Monitoring Well Locations and Groundwater Elevation Contour Map, Shallow Zone, March 12, 2012
Figure 3	Current PCE Concentrations in Groundwater, March 2012
Figure 4	Current TCE Concentrations in Groundwater, March 2012
Figure 5	Current Cis-1,2-DCE Concentrations in Groundwater, March 2012
Figure 6	Current VC Concentrations in Groundwater, March 2012

Appendices

A	Historical Water-Level and Analytical Data from Previous Consultant (1994 through 1999)
B	Soil and Groundwater Cleanup Goals

C	Historical Soil Sample Results
D	Linear Regression Analysis of Volatile Organic Compound Concentration Trends
E	Results of Statistical Analysis of Groundwater Analytical Data Using U.S. EPA Regression MNA Tool

Executive Summary

This report documents the five-year evaluation of the remedial actions that took place at the Former Mercury Dry Cleaners Facility, located at 2714 Pinole Valley Road, Pinole, California (“the Site”). The five-year review process evaluates whether the remedial measures implemented at the Site are protective of human health and the environment. This report was prepared in response to a request from the Department of Toxic Substances Control (DTSC) in an email message to Mr. Randy Muller of the Bank of America Realty Finance, Inc. (BARFI), dated April 24, 2012.

To address volatile organic compounds (VOCs) detected in soil and groundwater samples collected at the Site, BARFI completed multiple phases of remediation, including:

- Two phases of injection of potassium permanganate into shallow groundwater (November 2000 and February 2001).
- Excavation and removal of approximately 340 cubic yards (461 tons) of VOC-affected soil in the area of the Site where the release of VOCs occurred (July 2002).
- Two phases of injection of sodium lactate into shallow groundwater (2002 and 2003).
- Assessment and demonstration of natural attenuation of VOCs in groundwater.

The key findings of this five-year review were as follows:

- Historical concentrations of VOCs detected in groundwater samples collected at the Site do not indicate vertical migration.
- Groundwater generally flows to the west.
- VOCs in groundwater are not migrating into Pinole Creek.
- Remedial actions conducted at the Site have been effective to a large extent in reducing concentrations of VOCs in soil and groundwater.
- Natural attenuation of VOCs in groundwater is ongoing and concentrations of residual VOCs are degrading over time.

- Shallow groundwater (less than 50 feet below ground surface) at or near the Site cannot be developed as a drinking water source due to Contra Costa County water supply well construction - well permitting requirements.

The following recommendations have been developed in this five-year review:

- A land use covenant should be established for the Site to prevent the development of groundwater until cleanup goals for groundwater are reached at the Site, and to limit the use of the Site to commercial/industrial uses until soil and soil vapor concentrations meet DTSC requirements for residential land use.
- One more round of semiannual groundwater monitoring and reporting should be conducted at the Site in September 2012.
- The groundwater monitoring and reporting schedule should be revised to biennial (one sample event every other year) with the next groundwater monitoring and reporting event to take place in January 2014.