May 29, 2013

Via Email

Mr. Jeff White
Senior Development Director
AvalonBay Communities, Inc.
400 Race Street, Suite 200
San Jose, CA 95126

Re: Summary of Environmental Findings
Nady Systems, Inc.
6701 Shellmound Street or 6707 Bay Street
Emeryville, CA 94608

Dear Jeff:

ENVIRON International Corporation ("ENVIRON") is pleased to present this brief summary of environmental conditions at the Nady Systems property in Emeryville, California (herein referred to as the "facility," "property," or the "site").

This summary is based on the information listed in Attachment A and has been prepared by Anne Gates, P.E., who has been investigating and remediating sites in Emeryville (and the San Francisco Bay Area) since 1988. Her resume is attached in Attachment D.

Site Description

Nady Systems, Inc. owns and operates an electronic sound equipment warehouse and office facility located at 6707 Bay Street (also known as 6701 Shellmound Street) in Emeryville, Alameda County, California. The approximately 2.5-acre site is located approximately 0.5 mile north-northeast of downtown Emeryville, California.

According to the Assessor's Office, the assessor's parcel number (APN) for the site is 49-1490-002. The site is developed with two buildings, the first of which is an approximately 100,000-square-foot warehouse building located in the southern portion of the site. The two-story building consists of a slab-on-grade foundation with a steel frame and concrete pre-fabricated walls. The second building is a two-story office building located in the north-central portion of the site. The site also includes asphalt-paved parking lots located along the northeastern and northern perimeters of the building footprints. The site is bounded by Shellmound Street to the east, Interstate Highway 80 access ramps to the north and west, and Expressions College to the south. The site is accessed from Shellmound Street at the eastern site boundary. The property is located in a mixed industrial and commercial land use area. The nearest residential area is located approximately 700 feet south of the site.

Current and Historical Site Use

Currently, the major operations conducted at the facility consist of office operations, warehouse operations, shipping and receiving, and minor repairs of microphones and other electronic sound equipment. No chlorinated solvents are used at the facility, and use of such chemicals would not be expected based on the nature of current site operations. Nady Systems has occupied the site since 1990.

From approximately 1979 to 1990, the site was owned by MRCP Realty and leased by Mike Roberts Color Production for color printing operations. From 1963 to 1979, Dymo Industries, Inc., a label tape manufacturer operated onsite. Prior to 1963, the site was largely marshland. Beginning in approximately 1947, along with many low-lying areas in Emeryville and San Francisco, the site was reclaimed from the San Francisco Bay, by gradually filling the low-lying marsh along the bay margin with concrete rubble, bricks, soil and other waste material. During this time period, according to some site documents, a municipal landfill may have operated on a portion of the site and the properties to the south.

Environmental Conditions

Site records indicate that volatile organic compounds (VOCs) were previously used and stored on the site in drums and underground storage tanks (USTs) by Mike Roberts Color Production and Dymo Industries. The drum storage area and USTs were removed in the early 1990s. Site documents also indicate that there is residual contamination in soil from fill materials present on the site. Some limited environmental remediation activities were performed at the site from 1990 to 1994 under the oversight of the Alameda County Environmental Health Services Agency (the “County”). These remediation activities consisted of UST removal, soil excavation in a few “hot spot” locations, groundwater monitoring and soil vapor extraction.

In a letter dated December 16, 1996, the County issued a conditional site closure letter stating that further remediation and/or monitoring related to the former USTs removed from the site is not required but the recorded deed notice must be modified to include the following risk management measures:

1. The shallow groundwater beneath the site shall not be used.
2. Appropriate Health and Safety plans shall be prepared prior to and followed during any activities involving exposure to pollution in soil or groundwater.
3. A health risk assessment shall be required if a change in land use, structural configuration or site activities are proposed such that more conservative scenarios should be evaluated.
4. Potential vertical conduits between the shallow and deep aquifers shall not be created.

Previous environmental investigations at the site, including ENVIRON’s investigation in 2013, indicate that elevated concentrations of metals (primarily lead), and total petroleum hydrocarbons (TPH) are present in soil and groundwater at the site. PCBs are also present in soil. Benzene, a VOC, is also present at elevated concentrations in soil gas and groundwater at

the site. The results of ENVIRON's 2013 sampling investigation and a summary of historical sampling data are summarized Attachment B. The attached Figure 1 shows sampling locations.

Potential Environmental Remediation Activities for Redevelopment of the Site

To date, the environmental contamination that has been identified at the Nady Systems site is similar to other types of environmental contamination that have been detected at other former industrial sites in Emeryville. These sites have been subsequently redeveloped for commercial and multi-family residential use. The City of Emeryville has worked collaboratively with the California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) to facilitate the environmental assessment, clean-up and re-use of brownfields in Emeryville. For example, the Bay Street site (a 20-acre site located at 5616 Bay Street) was redeveloped in 2001 for commercial and residential re-use under the oversight of DTSC and in close collaboration with the City of Emeryville. Contaminants at the Bay Street site included metals (lead and arsenic), PCBs, TPH and benzene in soil and groundwater. The remediation approach that was used at Bay Street (as well as other sites in Emeryville) consisted of the following components:

1. Capping of the site with buildings and pavement to prevent direct contact with soil and/or groundwater;
2. Long-term maintenance of the cap;
3. Long-term monitoring of groundwater and removal or containment of the source of groundwater contaminants;
4. Implementation of a deed restriction that: a) prevents use of site groundwater; b) prevents development of ground-level residential units, hospitals or daycare centers; and c) requires implementation of a regulatory agency-approved soil management plan during soil disturbing activities;

It is likely that the Nady Systems site could also be redeveloped for residential re-use by implementation of the above measures. However based on ENVIRON's sampling investigation in 2013, the Nady Systems site has potentially higher concentrations of metals (such as lead, arsenic and mercury) in groundwater than many Emeryville sites (see Table 4 in Attachment B). The source of the metals contamination may be related to the former color printing operations that occurred at the site prior to Nady Systems' occupancy. Further investigation will be needed to determine the horizontal and vertical extent of the metals in soil and groundwater at the site. Depending on the outcome of the investigation, it is possible that additional remediation of metal-contaminated soil and groundwater may be required. Remediation may include excavation and offsite disposal of metal-contaminated soils that are potential source areas for groundwater contamination.

Environmental site closure and approval for the above remediation measures is typically performed by utilizing the Voluntary Cleanup Program under the oversight of the DTSC or the Site Cleanup Program under Cal-EPA San Francisco Bay Regional Water Quality Control Board (SFRWQCB). The steps required to obtain site closure for the site would most likely involve the

following: 1) completion of a site characterization investigation to determine the horizontal and vertical extent of environmental contamination in soil and groundwater at the site; 2) preparation of a human health risk assessment to determine whether remediation measures are required post-development; and 3) assuming remediation measures are necessary, preparation of a remediation plan, typically a Removal Action Workplan (RAW). These documents would be reviewed and approved by either DTSC or the SFRWQCB. The RAW would then be implemented, often during construction and redevelopment of the site and a closure certification obtained from the regulatory agency following implementation of the RAW. If long-term operation and maintenance (O&M), such as groundwater monitoring, is required then the responsible party for the monitoring would enter into an O&M agreement with the regulatory agency. Depending on the timeline for redevelopment and based on past experience in Emeryville, it is likely that regulatory approval of the RAW for the site can be obtained within 12 to 24 months.

Attachment C presents a range of the estimated costs to complete and implement the potential environmental investigation and remediation steps. The estimate assumes a best-case and worst-case conservative cost scenario for environmental remediation. With respect to the Nady Systems site, it is important to note that the lead concentrations in many samples of shallow soil were above California Hazardous Waste Levels and in some instances may be above Federal Hazardous Waste Levels. This means that soil that is excavated and not able to be reused at the site may require management and disposal as a California Hazardous Waste. Disposal of soil that is California Hazardous Waste is very costly, approximately $100 per ton (including transportation and disposal). Disposal of soil that has lead levels above Federal Hazardous Waste Levels requires stabilization prior to disposal in the landfill, which is very costly, approximately $300 per ton (including transportation, stabilization and disposal).

The concentration of lead in shallow groundwater samples was also above California Hazardous Waste levels. As a result, groundwater pumped during dewatering will require special treatment prior to on- or off-site disposal. For example, for small dewatering volumes, assuming groundwater is collected and disposed of offsite in tanks, the cost for disposal could range from $2 to $3 per gallon for the site. For larger volumes (greater than 100,000 gallons), a permitted portable treatment unit would be needed to treat and discharge the groundwater to the sanitary sewer at a cost of approximately $0.65 per gallon. Because of the elevated concentrations of lead in shallow groundwater, it is very important to consider the additional cost of dewatering when designing the foundation and subgrade structures.

CLOSING

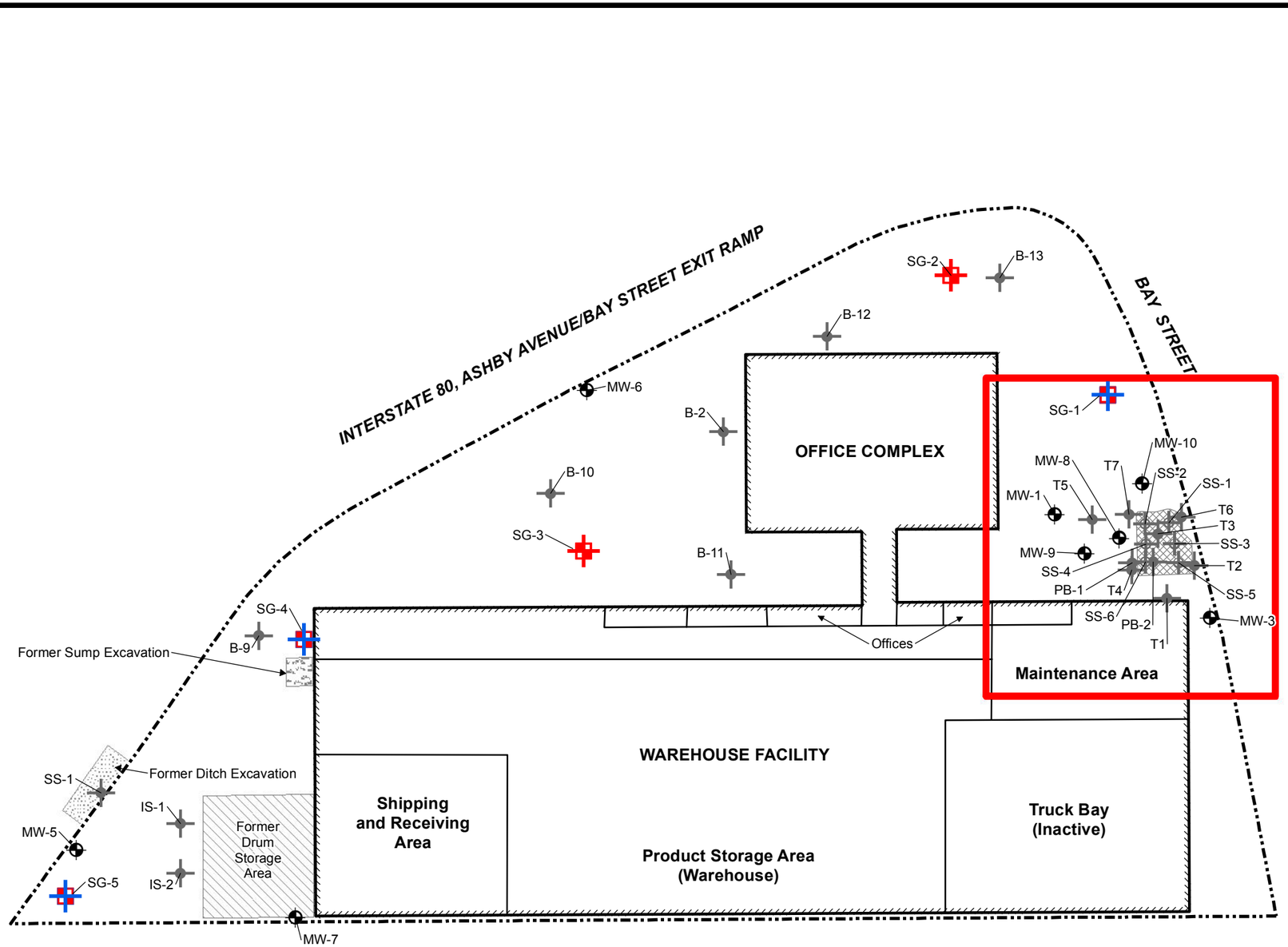
We appreciate the opportunity to be of service to you. If you have questions regarding any of the information in this proposal, please call me at (510) 420-2524.

Sincerely,

Anne W Gates

Anne Gates, PE
Senior Manager

Attachments
Figure 1: Environmental Sampling Locations
Attachment A: Sources of Information for Environmental Summary
Attachment B: Environmental Sampling Results
Attachment C: Estimated Costs for Environmental Remediation
Attachment D: Resume of Anne Gates



Path: Q:\DRAWINGS\0332356A\0332356A-PropSoilSampLocation.mxd

Legend

- Soil, Soil Gas and Groundwater Sampling Location
- Soil Gas and Soil Sampling Location
- Monitoring Well
- Historical Test Boring
- Historical Confirmation Sample from Tank Excavation
- wall
- Building
- Property Line
- Approximate Extent of Previous Tank Excavation

Note: Interior building dimensions are approximate.

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SCALE IN FEET

ENVIRON

Soil, Soil Gas, and Groundwater Sampling Locations
6707 Bay Street
Emeryville, California

Date:	Contract Number:		Figure
4/29/13	03-32356A		1
Drafter: RS	Approved:	Revised:	

Attachment A

Sources of Information for Environmental Summary

Sources of Information for Environmental Summary

- A visit to the site by Dan Clark of ENVIRON on April 9, 2013 to observe the exterior and interior features of the site.
- An interview during the site visit with the following "facility personnel" (year employee started working at the site indicated in parentheses): John Nady, President (1990) and Toby Nady, Vice President (1990).
- A review of information contained in federal and state environmental databases, as obtained from the sources noted below:
  - A radius report prepared by Environmental Data Resources, Inc. (EDR, see Appendix B), which presents the results of searches of federal and state databases for the subject site, as well as properties near the subject site. The radius searched for each database, as well as the databases themselves, was selected in accordance with the ASTM Standard.
  - The United States Environmental Protection Agency's (USEPA's) Envirofacts database, which provides site information contained in multiple USEPA regulatory databases.
  - The USEPA's Enforcement and Compliance History Online (ECHO) database, which provides information on sites' enforcement and compliance history.
  - A review of files available on the Alameda County Department of Environmental Health (ACDEH).
  - Readily available historical sources, including (where available) historical topographic maps and aerial photographs, city directories, and Sanborn Maps, to develop a history of the previous uses of the site and surrounding area.
  - Historical and site-specific information obtained from the following local agencies: the Emeryville Building Department (Building Department), the Alameda County Assessor's Office (Assessor), and the Alameda County Fire Department (Fire Department).
  - E-mail correspondence with Ms. Yolanda Cole, a representative of ACDEH regarding the presence or absence of contamination at the site. Ms. Cole referred ENVIRON to the ACDEH online mapping tool which provides PDFs of all reports pertaining to the site that are in ACDEH's possession.
- A review of physical setting sources including:
  - The current USGS 7.5-minute topographic map that shows the area on which the site is located.
  - Geologic, hydrogeologic, or hydrologic sources as provided in the EDR report and in the previous environmental reports for the site, as listed below.
- A review of documents provided to ENVIRON by facility personnel, including correspondence with regulatory agencies. In addition, ENVIRON was provided with the following previous environmental assessment reports:

- *Final Report/Tank Removal, Mike Roberts Color Productions, 6707 Bay Street, Emeryville, California*, prepared by LW Environmental Services, Inc., dated November 3, 1989.
- *Phase I Review of Documents and Verification of Groundwater Flow Direction*, prepared by McLaren, Inc., dated November 21, 1989.
- *Environmental Assessment, 6707 Bay Street, Emeryville, California*, prepared by SCS Engineers, Inc., dated January 30, 1990.
- *Soil Vapor Recovery and Groundwater Remediation Systems,* prepared by SCS Engineers, Inc., dated February 26, 1990.
- *Sump Sampling at 6707 Bay Street, Emeryville, California*, prepared by SCS Engineers, Inc., dated March 6, 1990.
- *Interim Report One, 6707 Bay Street, Emeryville, California*, prepared by SCS Engineers, Inc., dated February 25, 1991.
- *Letter Report, Nady Systems Inc. Site, 6707 Bay Street, Emeryville, California*, prepared by PES Environmental, Inc., dated December 9, 1991.
- *Site Inspection, Mike Roberts Color Productions, 6707 Bay Street, Emeryville, California,* prepared by Bechtel Environmental, Inc. for EPA, dated October 22, 1992.
- *Summary of Environmental Investigation/Remediation, 6707 Bay Street, Emeryville, California,* prepared by Subsurface Consultants Inc., dated May 23, 1994.
- *Addendum No. 1, Work Plan and Revised Request for "No Further Action", Alternate Compliance Points Monitoring Program,* prepared by Subsurface Consultants Inc., dated January 17, 1995.
- *Draft Phase I Environmental Site Assessment, 6701-6707 Bay Street, Emeryville, California*, prepared by URS Corp., dated October 7, 2005.
- *Final Report, Geotechnical Characterization, 6701 Shellmound Street/Bay Street, Emeryville, California,* prepared by URS Corp., dated October 7, 2005.

A Phase 2 Environmental Investigation completed by ENVIRON at the Site in April 2013. This investigation included the following:

- **Soil Gas Sampling**. Soil gas samples were collected from 5 locations throughout the Site but outside of the buildings. Soil gas samples were collected from semi-permanent soil gas probes installed at depths of approximately 5 feet below ground surface (bgs). Samples were collected into individual Summa™ canisters for off-site analysis of volatile organic compounds (VOCs) by USEPA Method TO-15 and fixed gases including methane.

- **Shallow Soil Sampling.** Discrete soil samples were collected from native soil at approximately 3 to 5 feet bgs from five soil borings installed at the same location as soil gas samples. Samples were analyzed on for CAM 17 Metals, Organochlorine Pesticides/PCBs and total petroleum hydrocarbons (TPH), diesel and motor oil fractions.

- **Shallow Groundwater Sampling**. Grab groundwater samples were collected from three temporary wells installed to depths between 10 and 12 feet bgs. Groundwater samples were analyzed for VOCs, TPH and CAM 17 Metals from these wells.

Attachment B
Environmental Sampling Results

Table 1 - Organics in Soil
2013 Subsurface Investigation by ENVIRON
Nady Systems

Borehole ID	Sample Depth	TPH (mg/kg)		Pesticides and PCBs (mg/kg)		
		TPH-Diesel	TPH-Motor Oil	DDT	Arochlor 1260	Total PCBs
SG-1	3.5-4.0	**43**	**250**	**0.03**	ND < 0.5	ND < 0.5
SG-2	3.0-3.5	**43**	**340**	**0.068**	ND < 1.0	ND < 1.0
SG-3	3.5-4.0	**290**	**1,400**	**0.25**	**14**	**14**
SG-4	3.5-4.0	**200**	**400**	**0.42**	**8**	**8**
SG-5	4.5-5.0	**33**	**290**	ND < 0.020	ND < 1.0	ND < 1.0
CHHSL - Residential [1]		*na*	*na*	*1.6*	*0.089*	*0.089*
ESL - Shallow Soil, Residential, Non-Drinking Water Resource [2]		*100*	*500*	*1.7*	*0.22*	*0.22*

Notes:
exceeds regulatory criteria
Only detected compounds are shown.
Detections are in **bold**.
CHHSL: California Human Health Screening Level
DDT: dichlorodiphenyltrichloroethane
ESL: Environmental Screening Level
mg/kg: milligrams per kilogram
na: not available
ND < ##: Not detected at or above laboratory reporting limit shown
NDW: Non-Drinking Water Resource Area
PCBs: Polychlorinated Biphenyls
TPH: Total Petroleum Hydrocarbons
1. California EPA, 2005. *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties* . January.
2. San Francisco Bay Regional Water Quality Control Board (SF RWQCB), 2013. *2013 Tier 1 Environmental Screening Levels (ESLs)* . February.

Table 2 - Metals in Soil
2013 Subsurface Investigation by ENVIRON
Nady Systems

Borehole ID	Sample Depths	Metals (mg/kg, except where noted)																
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Lead - STLC (mg/L)	Lead - TCLP (mg/L)	Mercury	Molybdenum	Nickel	Silver	Vanadium	Zinc
SG-1	3.5-4.0	**5.2**	**11**	**280**	ND < 0.5	**1**	**100**	**22**	**480**	**990**	**12**	ND<0.2	**0.2**	**4.2**	**220**	**0.6**	**60**	**490**
SG-2	3.0-3.5	**1.9**	**12**	**160**	**0.51**	**0.84**	**50**	**11**	**88**	**120**	**4**	ND<0.2	**0.36**	**1.3**	**63**	ND < 0.5	**50**	**220**
SG-3	3.5-4.0	**8.9**	**7.3**	**230**	ND < 0.5	**0.94**	**54**	**9.3**	**160**	**830**	--	--	**0.2**	**1.3**	**51**	ND < 0.5	**49**	**240**
SG-4	3.5-4.0	**2.6**	**6.9**	**170**	ND < 0.5	**0.82**	**68**	**14**	**78**	**130**	--	--	**0.32**	**2.9**	**83**	ND < 0.5	**45**	**440**
SG-5	4.5-5.0	**1**	**9.9**	**120**	ND < 0.5	**0.44**	**44**	**7.3**	**44**	**75**	--	--	**0.12**	**0.5**	**34**	ND < 0.5	**41**	**97**
CHHSL - Residential [1]		*30*	*0.07*	*5,200*	*150*	*1.7*	*10,000*	*660*	*3,000*	*150*	*N/A*	*N/A*	*18*	*380*	*1,600*	*380*	*530*	*23,000*
ESL - Shallow Soil, Residential, Non-Drinking Water Resource [2]		*20*	*0.39*	*750*	*4*	*12*	*750*	*0.33*	*230*	*80*	*N/A*	*N/A*	*6.7*	*40*	*150*	*20*	*200*	*600*

Notes:
exceeds regulatory criteria
exceeds California hazardous waste criteria
Only detected compounds are shown.
Detections are in **bold**.
mg/kg: milligrams per kilogram
mg/L: milligrams per liter
N/A: Not Applicable
--: not analyzed
ND < ##: Not detected at or above laboratory reporting limit shown
CHHSL: California Human Health Screening Level
ESL: Environmental Screening Level
NDW: Non-Drinking Water Resource Area
STLC: Soluble Threshold Limit Concentration
TCLP: Toxicity Characteristic Leaching Procedure
1. California EPA, 2005. *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties* . January.
2. San Francisco Bay Regional Water Quality Control Board (SF RWQCB), 2013. *2013 Tier 1 Environmental Screening Levels (ESLs)* . February.

Table 3 - Organics in Groundwater
2013 Subsurface Investigation by ENVIRON
Nady Systems

Location ID	Depth to Water (ft bgs)	Observations	TPH (ug/L)		VOCs (ug/L)															
			TPH-Diesel	TPH-Motor Oil	Benzene	TBA	n-Butyl Benzene	sec-Butyl Benzene	Carbon disulfide	Chloro-benzene	Ethyl-benzene	cis-1,2-DCE	Isopropyl-benzene	4-isopropyl toluene	Naph-thalene	n-Propyl benzene	Toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Total Xylenes
SG-1	10.75	Gray color, no odor	920	5,600	ND < 0.5	ND < 2.0	ND < 0.5	ND < 0.5	**1.1**	**4.4**	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
SG-4	11.75	Black color, strong H2S odor	4,700	12,000	**2**	**2.3**	ND < 0.5	**1.3**	**3.9**	ND < 0.5	ND < 0.5	**0.69**	**1.1**	ND < 0.5	ND < 0.5	ND < 0.5	**0.54**	ND < 0.5	ND < 0.5	ND < 0.5
SG-5	10.29	Black color, sheen, H2S odor	58,000	9,500	**8.1**	ND < 20	**32**	**38**	ND < 5.0	ND < 5.0	**45**	ND < 5.0	**67**	**13**	**84**	**87**	ND < 5.0	**350**	**24**	**59**
MCL - Drinking Water[1]			*na*	*na*	*5*	*na*	*na*	*na*	*na*	*100*	*700*	*70*	*na*	*na*	*na*	*na*	*1,000*	*na*	*na*	*10,000*
ESL - Groundwater[2]			*100*	*100*	*1*	*12*	*na*	*na*	*na*	*25*	*30*	*6*	*na*	*na*	*6.2*	*na*	*40*	*na*	*na*	*20*
ESL - Evaluation of Potential Vapor Intrusion Concerns, Residential[2]			*na*	*na*	*27*	*na*	*na*	*na*	*na*	*na*	*310*	*na*	*na*	*na*	*160*	*na*	*95,000*	*na*	*na*	*37,000*

Notes:
exceeds regulatory criteria
Only detected compounds are shown.
Detections are in **bold**.
bgs: below ground surface
DCE: dichloroethene
ESL: Environmental Screening Level
H2S: hydrogen sulfide
ug/L: micrograms per liter
na: not available
ND < ##: Not detected at or above laboratory reporting limit shown
NDW: Non-Drinking Water Resource Area
TBA: t-Butyl alcohol
TPH: Total Petroleum Hydrocarbons
VOCs: Volatile Organic Compounds

1. United States Environmental Protection Agency, 2009. *National Primary Drinking Water Regulations*. May.
2. San Francisco Bay Regional Water Quality Control Board (SF RWQCB), 2013. *2013 Tier 1 Environmental Screening Levels (ESLs)*. February.

Table 4 - Metals in Groundwater
2013 Subsurface Investigation by ENVIRON
Nady Systems

Location ID	Depth to Water (ft bgs)	Observations	Total Metals (ug/L)													
			Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Silver	Vanadium	Zinc
SG-1	10.75	Gray color, no odor	ND < 50	**210**	**12,000**	ND < 25	**4,100**	**820**	**4,200**	**2,700**	**2.7**	**77**	**4,600**	ND < 19	**2,100**	**5,900**
SG-4	11.75	Black color, strong H2S odor	**150**	**650**	**23,000**	**210**	**1,400**	**210**	**8,300**	**26,000**	**130**	**270**	**1,600**	**19**	**480**	**78,000**
SG-5	10.29	Black color, sheen, H2S odor	**94**	**1,600**	**25,000**	**320**	**1,800**	**490**	**34,000**	**60,000**	**52**	**180**	**2,700**	**53**	**1,900**	**160,000**
MCL - Drinking Water[1]			*6*	*10*	*2,000*	*5*	*100*	*na*	*1,300*	*15*	*2*	*na*	*na*	*na*	*na*	*na*
ESL - Groundwater[2]			*6*	*36*	*1,000*	*0.25*	*50*	*3*	*3.1*	*2.5*	*0.025*	*180*	*8.2*	*0.19*	*15*	*81.0*
STLC - California Hazardous Waste Criteria			*15,000*	*5,000*	*100,000*	*1,000*	*5,000*	*80,000*	*25,000*	*5,000*	*200*	*350,000*	*20,000*	*5,000*	*24,000*	*250,000*

Notes:
exceeds regulatory criteria
exceeds hazardous waste and regulatory criteria
Only detected compounds are shown.
Detections are in **bold**.
bgs: below ground surface
ug/L: micrograms per liter
H2S: hydrogen sulfide
na: not available
ND < ##: Not detected at or above laboratory reporting limit shown
STLC: Soluble Threshold Limit Concentration
1. United States Environmental Protection Agency, 2009. *National Primary Drinking Water Regulations*. May.
2. San Francisco Bay Regional Water Quality Control Board, 2013. *2013 Tier 1 ESL Lookup Tables*. February.

Table 5 - VOCs and Fixed Gases in Soil Gas
2013 Subsurface Investigation by ENVIRON
Nady Systems

		VOCs (ug/m^3)															Fixed Gases (% by volume)			
Location ID	**Depth to Water (ft bgs)**	**Acetone**	**Benzene**	**Chloro-methane**	**Ethyl-benzene**	**4-Ethyl-toluene**	**2-Butanone (MEK)**	**PCE**	**TCE**	**Toluene**	**1,2,4-Trimethyl-benzene**	**1,3,5-Trimethyl-benzene**	**cis-1,2-DCE**	**o-Xylene**	**p/m-Xylene**	**1,1-DFA (Leak Check)**	**Methane**	**Carbon Dioxide**	**Oxygen and Argon**	**Nitrogen**
SG-1	10.75	ND < 7.2	**8.6**	ND < 1.6	ND < 3.3	ND < 3.7	ND < 6.7	ND < 5.2	ND < 4.1	**3.4**	ND < 11	ND < 3.7	ND < 3.0	ND < 3.3	ND < 13	ND < 8.2	ND < 0.5	**8.49**	**8.9**	**82.6**
SG-2	--	ND < 13	ND < 4.5	ND < 2.9	ND < 6.1	**13**	ND < 12	ND < 9.6	ND < 7.6	ND < 5.3	**37**	**16**	ND < 5.6	ND < 6.1	ND < 24	ND < 15	ND < 0.5	**10.7**	**12**	**77.2**
SG-3	--	ND < 38	**73**	ND < 8.3	ND < 17	ND < 20	ND < 35	**30**	ND < 21	**18**	ND < 59	ND < 20	**24**	ND < 17	ND < 69	**140**	**0.864**	ND < 0.5	**19.9**	**79.3**
SG-4	11.75	**19**	**37**	**2.4**	**4.6**	ND < 3.6	**7.7**	ND < 4.9	**9.6**	**16**	ND < 11	ND < 3.6	ND < 2.9	**5.8**	**16**	ND < 7.8	ND < 0.5	**9.52**	**11.4**	**79.1**
SG-5	10.29	**19**	**9.5**	ND < 1.7	**6.2**	ND < 4.0	ND < 7.3	ND < 5.6	**9.1**	**6.1**	ND < 12	ND < 4.0	ND < 3.3	**12**	**26**	ND < 8.9	ND < 0.5	**8.5**	**13.6**	**77.9**
SG-2-Shroud	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**130,000**	--	--	--	--
Shallow Soil Gas CHHSL - Residential [1]		*na*	*36.2*	*na*	*na*	*na*	*na*	*180*	*528*	*135,000*	*na*	*na*	*15,900*	*315,000*	*317,000*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*

Notes:
exceeds regulatory criteria
Only detected compounds are shown.
Detections are in **bold**.
na: not available
N/A: not applicable
ND < ##: Not detected at or above laboratory reporting limit shown
--: not analyzed
bgs: below ground surface
CHHSL: California Human Health Screening Level
DCE: dichloroethene
DFA: difluoroethane
PCE: tetrachloroethene
TCE: trichloroethene
ug/m^3: micrograms per cubic meter
1. California EPA, 2005. *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties* . January.

Table A-1 - Historical Total Petroleum Hydrocarbons (TPH) Data
Nady Systems

Borehole ID	Date	Rationale	Sample Depths	TPH (mg/kg)		
				Oil & Grease	TEPH	Total VOCs
IS-1	4/26/1989	Drum Area	3.5	**1,915**	**46**	ND<10
			7	**3,390**	**200**	ND<10
			10	**36,535**	ND<10	ND<10
IS-2	4/26/1989	Drum Area	3	**1,305**	**50**	ND<10
			8.5	**2,185**	ND<10	**300**
B-1/MW-1	7/5/1989	West of Tanks	5.5	**845**	**12**	ND<10
			10.5	ND<50	ND<10	ND<10
			16	**1,600**	**63**	ND<10
			20.5	**80**	ND<10	ND<10
			25.5	**95**	ND<10	ND<10
			30.5	ND<50	ND<10	ND<10
B-2	7/5/1989	West of office	0.5	ND<50	ND<10	ND<10
			6	**1,160**	**19**	ND<10
			10	**14,900**	**172**	**20**
			16	ND<50	ND<10	ND<10
B-3/MW-3	8/28/1989	SE of Tanks	5	**1,845**	**30**	ND<10
			12	**95**	**20**	ND<10
			15	**625**	**260**	**120**
			20	ND<20	ND<10	ND<10
			25	**20**	ND<10	ND<10
B-4	8/28/1989	Location unknown	4.5	**6,685**	ND<10	ND<10
			10	**25,470**	**170**	ND<10
			14.5	ND<20	ND<10	ND<10
B-5/MW-5	8/31/1989	At trench and drum area	6	**330**	ND<10	ND<10
			11	**3,580**	**15**	**25**
			15.5	**1,200**	**15**	**20**
			22.5	**110**	**20**	ND<10
			25.5	**115**	ND<10	ND<10
B-6/MW-6	8/31/1989	NW site boundary	20.5	**100**	ND<10	ND<10
			25.5	**190**	ND<10	ND<10
SS-1-E	10/5/1989	UST Confirmation	2' Beneath UST	--	**12**	**12**
SS-2-W	10/5/1989	UST Confirmation	2' Beneath UST	--	**11**	ND<10
SS-3-E	10/5/1989	UST Confirmation	2' Beneath UST	--	ND<10	ND<10
SS-4-W	10/5/1989	UST Confirmation	2' Beneath UST	--	**60**	**240**
SS-5-E	10/5/1989	UST Confirmation	2' Beneath UST	--	**35**	**115**
SS-6-W	10/5/1989	UST Confirmation	2' Beneath UST	--	**700**	**460**
B-7/MW-7	1/3/1990	Drum Area	4	**9,000**	ND<10	ND<10
			9	**8,800**	**788**	ND<10
B-8/MW-8	1/3/1990	Downgradient of USTs	4	**2,000**	ND<10	ND<10
			9	**20,000**	ND<10	ND<10
B-9	1/4/1990	At sump	4	**23,000**	ND<10	ND<10
			9	**15,000**	**5,050**	ND<10
B-10	1/4/1990	NW part of site	4	**9,500**	**380**	ND<10
			9	**6,300**	ND<10	ND<10
B-11	1/4/1990	Between office and warehouse	4	**45,000**	ND<10	ND<10
			9	**30,400**	ND<10	ND<10
B-12	1/4/1990	N of office	4	**12,000**	ND<10	ND<10
			9	**38,800**	ND<10	ND<10
B-13	1/4/1990	N part of site	4	**9,400**	ND<10	ND<10
			9	**3,000**	ND<10	ND<10
Sump	1/5/1990	Sump Excavation	Confirmation	**10,500**	ND<10	ND<10
MW-9	4/13/1994	W of Tank Excavation	8.5	--	ND<1	--
			15.5	**470**	--	--
MW-10	4/14/1994	N of Tank Excavation	9.5	--		
			15.5	**9,400**	**7,300**	**2**
T-1	4/13/1994	S of tank excavation	8	--	--	--
			14	--	**96**	ND<1
T-2	4/13/1994	SE tank excavation	6	**160**	**40**	--
			8.5	--	--	ND<1
T-3	4/13/1994	Bottom tank excavation	8	--	--	ND<1
			14.5	--	--	--
T-4	4/14/1994	SW tank excavation	9	--	--	ND<1
			14.5	--	--	--
T-5	4/14/1994	W of tank excavation	5	**710**	ND<10	ND<1
			9	ND<50	ND<1	ND<1
			14.5	--	--	--
T-7	4/14/1994	NW tank excavation	7.5	**68**	ND<10	ND<1
			14	--	ND<20	160
ESL - Shallow Soil, Residential, Non-Drinking Water Resource Area [1]				*500*	*100*	*na*

Notes:
exceeds regulatory criteria
Only locations with detected TPH and/or Total VOC data are shown.
mg/kg: milligrams per kilogram
na: not available
ND<##: Not detected at or above laboratory reporting limit shown.
TEPH: Total Extractable Petroleum Hydrocarbons
TPH: Total Petroleum Hydrocarbons
VOCs: Volatile Organic Compounds
UST: Underground storage tank
1. San Francisco Bay Regional Water Quality Control Board (SF RWQCB), 2013. *2013 Tier 1 Environmental Screening Levels (ESLs)* . February.

Table A-2 - Historical Volatile Organic Compound (VOC) Data
Nady Systems

Borehole ID	Date	Rationale	Sample Depths (ft bgs)	VOCs (ug/kg)											
				Acetone	Benzene	Ethylbenzene	Toluene	Total Xylenes	MIBK	1,2-DCB	1,3-DCB	1,4-DCB	MEK	Carbon Disulfide	Methylene Chloride
SS-1-E	10/5/1989	UST Confirmation	2' Beneath UST	ND<200,000	**1,300**	**40**	NR	**300**	**600,000**	ND<30	**120**	**260**	ND<200,000	ND<80,000	ND<30
SS-2-W	10/5/1989	UST Confirmation	2' Beneath UST	ND<20	**230**	**30**	**60**	**50**	**20**	ND<30	ND<30	ND<30	ND<20	ND<3	ND<30
SS-3-E	10/5/1989	UST Confirmation	2' Beneath UST	**40**	ND<30	ND<30	**50**	**35**	ND<20	ND<30	ND<30	ND<30	ND<20	ND<3	ND<30
SS-4-W	10/5/1989	UST Confirmation	2' Beneath UST	ND<2,000,000	**1,400**	110	NR	**1,100**	**3,300,000**	**70**	**2,000**	**2,400**	ND<2,000,000	ND<800,000	ND<30
SS-5-E	10/5/1989	UST Confirmation	2' Beneath UST	ND<400,000	ND<300	ND<300	NR	**1,000**	**180,000**	ND<30	ND<30	ND<30	ND<40,000	ND<20,000	ND<30
SS-6-W	10/5/1989	UST Confirmation	2' Beneath UST	ND<2,000,000	**4,600**	ND<1,500	NR	**7,500**	**5,000,000**	ND<30	ND<30	ND<30	ND<2,000,000	ND<800,000	ND<30
B-7/MW-7	1/3/1990	Drum Area	4	ND<50	ND<10	ND<10	ND<10	ND<10	ND<30	ND<10	ND<10	ND<10	ND<50	ND<10	ND<50
			9	ND<50	ND<10	**250**	**61**	**1,020**	ND<30	ND<10	ND<10	ND<10	ND<50	ND<10	ND<50
B-8/MW-8	1/3/1990	Downgradient of USTs	4	ND<50	ND<10	ND<10	ND<10	ND<10	ND<30	ND<10	ND<10	ND<10	ND<50	ND<10	ND<50
			9	ND<50	ND<100	ND<100	ND<100	ND<100	**8,300**	ND<100	ND<100	ND<100	ND<500	ND<100	ND<50
B-9	1/4/1990	At sump	4	ND<50	ND<10	ND<10	**12**	ND<10	ND<30	ND<10	ND<10	ND<10	ND<50	ND<10	ND<50
			9	ND<50	**54**	**140**	**26**	**380**	ND<30	ND<10	ND<10	ND<10	ND<50	ND<10	ND<50
B-11	1/4/1990	Between office and warehouse	4	ND<50	ND<10	ND<10	**15**	ND<10	ND<30	ND<10	ND<10	ND<10	ND<50	ND<10	ND<50
			9	ND<50	ND<10	ND<10	ND<10	ND<10	ND<30	ND<10	ND<10	ND<10	ND<50	ND<10	ND<50
PB-1	9/5/1991	Soil Boring in tank area	6	ND<20	ND<5	ND<5	ND<5	ND<5	ND<10	ND<5	**2**	ND<5	ND<20	ND<5	ND<5
			8.5	ND<20	ND<5	ND<5	ND<5	ND<5	ND<10	**3**	**4**	ND<5	ND<20	ND<5	ND<5
PB-2	9/5/1991	Soil Boring in tank area	5.5	ND<20	ND<5	ND<5	ND<5	ND<5	ND<10	ND<5	ND<5	ND<5	ND<20	ND<5	ND<5
			8	ND<20	**5**	ND<5	ND<5	ND<5	ND<10	**4**	**4**	ND<5	ND<20	ND<5	ND<5
MW-9	4/13/1994	W of Tank Excavation	8.5	**70**	ND<5	ND<5	ND<5	ND<5	**6**	NR	NR	NR	**10**	ND<5	ND<10
			15.5	**140**	**4**	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	**20**	ND<5	ND<10
MW-10	4/14/1994	N of Tank Excavation	9.5	**30**	ND<5	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	ND<10	ND<5	ND<10
			15.5	**320**	ND<10	ND<10	ND<10	ND<10	**11**	NR	NR	NR	**120**	**20**	**40**
T-2	4/13/1994	SE tank excavation	6	--	--	--	--	--	--	--	--	--	--	--	--
			8.5	**110**	ND<5	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	**20**	ND<5	ND<10
T-3	4/13/1994	Bottom tank excavation	8	**70**	**4**	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	**10**	ND<5	ND<10
			14.5	**100**	ND<5	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	**20**	ND<5	ND<10
T-4	4/14/1994	SW tank excavation	9	**50**	ND<5	ND<5	ND<5	ND<5	**10**	NR	NR	NR	**8**	**4**	ND<10
			14.5	**160**	ND<5	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	**40**	ND<5	ND<10
T-5	4/14/1994	W of tank excavation	5	--	--	--	--	--	--	--	--	--	--	--	--
			9	**20**	ND<5	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	ND<10	ND<5	ND<10
			14.5	ND<20	**12**	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	**10**	ND<5	ND<10
T-6	4/14/1994	NE tank excavation	7.5	**100**	ND<5	ND<5	ND<5	ND<5	**6**	NR	NR	NR	**10**	ND<5	ND<10
			14	ND<100	ND<30	ND<30	ND<30	ND<30	ND<50	NR	NR	NR	ND<50	ND<30	ND<50
T-7	4/14/1994	NW tank excavation	7.5	**30**	ND<5	ND<5	ND<5	ND<5	ND<10	NR	NR	NR	**9**	ND<5	ND<10
			14	ND<1,000	ND<1,000	**600**	ND<300	ND<300	**500**	NR	NR	NR	ND<500	ND<300	ND<500
ESL - Shallow Soil, Residential, Non-Drinking Water Resource Area [1]				*500*	*44*	*2,900*	*2,900*	*2,300*	*2,800*	*1,100*	*7,400*	*590*	*6,500*	*na*	*77*

Notes:
exceeds regulatory criteria
Only locations with detected VOCs are shown.
Only detected compounds are shown.
ug/kg: micrograms per kilogram
bgs: below ground surface
DCB: dichlorobenzene
MEK: Methyl ethyl ketone
MIBK: Methyl isobutyl ketone
na: not available
ND<##: Not detected at or above laboratory reporting limit shown
TCA: trichloroethane
TCE: trichloroethene
UST: Underground storage tank
1. San Francisco Bay Regional Water Quality Control Board (SF RWQCB), 2013. *2013 Tier 1 Environmental Screening Levels (ESLs)* . February.

Table A-3 - Historical Semi-Volatile Organic Compound (SVOC) Data
Nady Systems

Borehole ID	Date	Rationale	Sample Depths	SVOCs (ug/kg)														
				Benzo(a) anthracene	Benzo(a) pyrene	Benzo(k) fluoranthene	Chrysene	Fluor-anthene	Isophor-one	2-Methyl naphthal-ene	Naphthal-ene	Nitro-benzene	Phen-anthrene	Pyrene	Bis (2-ethylhexyl) phthalate	4-Methyl phenol	1,2,4-TCB
SS-3-E	10/5/1989	UST Confirmation	2' Beneath UST	ND<30	ND<30	ND<30	ND<70	ND<30	ND<30	ND<30	ND<30	ND<30	ND<30	ND<30	ND<300	**200**	**200**
SS-5-E	10/5/1989	UST Confirmation	2' Beneath UST	ND<200	ND<200	ND<200	ND<400	ND<200	ND<200	**1,000**	**300**	ND<200	ND<200	ND<200	ND<2,000	ND<200	ND<200
B-7/MW-7	1/3/1990	Drum Area	4	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<2,000	ND<300	ND<300
			9	ND<300	ND<300	ND<300	**390**	**320**	ND<300	**1,500**	**750**	ND<300	**530**	**380**	ND<2,000	ND<300	ND<300
B-8/MW-8	1/3/1990	Downgradient of USTs	4	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<2,000	ND<300	ND<300
			9	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	**410**	ND<2,000	ND<300	ND<300
B-9	1/4/1990	At sump	4	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<2,000	ND<300	ND<300
			9	ND<300	ND<300	ND<300	**690**	**340**	ND<300	**1,100**	**8,900**	ND<300	**590**	**550**	ND<2,000	ND<300	ND<300
B-11	1/4/1990	Between office and warehouse	4	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	**320**	ND<2,000	ND<300	ND<300
			9	**580**	ND<300	ND<300	**820**	**1,100**	ND<300	ND<300	ND<300	ND<300	**560**	**1,800**	ND<2,000	ND<300	ND<300
B-12	1/4/1990	N of office	4	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	**370**	ND<2,000	ND<300	ND<300
			9	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<2,000	ND<300	ND<300
B-13	1/4/1990	N part of site	4	ND<300	**470**	ND<300	**390**	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	**920**	ND<2,000	ND<300	ND<300
			9	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<2,000	ND<300	ND<300
MW-9	4/13/1994	W of Tank Excavation	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			15.5	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	**400**	ND<300	ND<300
T-2	4/13/1994	SE tank excavation	6	ND<300	ND<300	**200**	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300
			8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T-5	4/14/1994	W of tank excavation	5	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000	ND<3,000
			9	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	ND<300	**400**	ND<300	ND<300
			14.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHHSL - Residential [1]				*na*	*38*	*na*	*na*	*na*	*na*	*na*	*na*	*na*	*na*	*na*	*na*	*na*	*na*
ESL - Shallow Soil, Residential, Non-Drinking Water Resource Area [2]				*380*	*38*	*380*	*3,800*	*40,000*	*na*	*250*	*1,700*	*na*	*11,000*	*85,000*	*160,000*	*na*	*7,600*

Notes:
exceeds regulatory criteria
Only locations with detected SVOCs are shown.
Only detected compounds are shown.
na: not available
ND<##: Not detected at or above laboratory reporting limit shown
SVOCs: Semivolatile Organic Compounds
TCB: trichlorobenzene
ug/kg: micrograms per kilogram
UST: Underground storage tank

1. California EPA, 2005. *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties (Revised 2009)* . January.
2. San Francisco Bay Regional Water Quality Control Board (SF RWQCB), 2013. *2013 Tier 1 Environmental Screening Levels (ESLs)* . February.

Table A-4 - Historical Metals Data
Nady Systems

Borehole ID	Date	Rationale	Sample Depths (ft bgs)	Metals (mg/kg)														
				Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Silver	Vanadium	Zinc
IS-1	4/26/1989	Drum Area	3.5	6.5	ND<2.2	110	0.05	4.1	20.1	5.6	70	100	ND<5	1.2	32.1	15.2	15.4	200
			7	1.4	ND<2.2	130	ND<0.025	4.2	21.5	6.4	104	130	ND<5	ND<1	31.5	ND<0.1	17.3	48.9
			10	1.6	ND<2.2	255	ND<0.025	10.2	63.5	11.4	1,042	4,300	ND<5	3.7	42.6	ND<0.1	17.3	5,400
IS-2	4/26/1989	Drum Area	3	ND<1	ND<2.2	90	ND<0.025	3.2	18.5	6	56.7	90	ND<5	1.2	30.9	ND<0.1	15.6	270
			8.5	ND<1	ND<2.2	35.7	ND<0.025	1.5	6.6	2.8	13.8	5.3	ND<5	ND<1	15.5	ND<0.1	6.7	22.9
B-1/MW-1	7/5/1989	West of Tanks	5.5	ND<1	ND<2.2	92	ND<0.025	1.4	13	5.7	28	61	ND<5	ND<1	14	ND<0.1	15	94
			10.5	ND<1	ND<2.2	21	ND<0.025	0.6	12.5	2.6	4	3	ND<5	ND<1	12.7	ND<0.1	7	5.4
			16	4	ND<2.2	78	ND<0.025	12	42	12.4	15.3	160	ND<5	2.4	30	ND<0.1	32	6,040
			20.5	ND<1	ND<2.2	61	ND<0.025	2.4	15	4.5	23	77	ND<5	ND<1	19	ND<0.1	12	106
			25.5	ND<1	ND<2.2	67	ND<0.025	2	10	8	13	8	ND<5	ND<1	24	ND<0.1	12	27
			30.5	ND<1	ND<2.2	23	ND<0.025	1.2	9.9	3.6	7.4	4.5	ND<5	ND<1	22	ND<0.1	6.7	15
B-2	7/5/1989	West of office	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			6	1.2	ND<2.2	109	ND<0.025	1.6	11.8	5	92	167	ND<5	ND<1	18.5	ND<0.1	9.7	67
			10	ND<1	ND<2.2	41	ND<0.025	ND<0.3	12.7	2.7	22.5	1,360	ND<5	ND<1	12.5	ND<0.1	13	532
			16	1.2	ND<2.2	95	ND<0.025	2.4	43	12	10	11	ND<5	ND<1	79	ND<0.1	10	23
			20.5	ND<1	ND<2.2	35	ND<0.025	1.4	7.8	1.9	9	8.7	ND<5	ND<1	16.6	ND<0.1	17	11
B-5/MW-5	8/31/1989	At trench and drum area	6	ND<1	ND<2.2	29.2	ND<0.025	0.5	13.5	3.4	13.3	9.7	ND<5	ND<1	18	ND<0.1	12	52
			11	1.05	ND<2.2	167.1	ND<0.025	2.15	15.2	8.7	64	164	ND<5	ND<1	22	ND<0.1	23.4	200
			15.5	3.85	ND<2.2	661	ND<0.025	4.5	22.4	8.2	200	1,270	ND<5	ND<1	26.8	ND<0.1	20	1420
			22.5	ND<1	ND<2.2	1,150	ND<0.025	3.8	19	40	44.2	24	ND<5	ND<1	151	ND<0.1	58.3	58.6
			25.5	ND<1	ND<2.2	158	ND<0.025	3.1	21	12.3	22.6	12	ND<5	ND<1	54	ND<0.1	31	42
B-6/MW-6	8/31/1989	NW site boundary	20.5	ND<1	ND<2.2	250	ND<0.025	3.5	23	19	22.5	15.3	ND<5	ND<1	48	ND<0.1	53	47
			25.5	ND<1	ND<2.2	56.5	ND<0.025	3.3	25	11	22	15	ND<5	ND<1	54	ND<0.1	25	42.6
B-7/MW-7	1/3/1990	Drum Area	4	ND<10	ND<16	140	0.48	ND<0.7	32	8.6	27	ND<12	ND<0.09	ND<1	28	ND<0.4	36	79
			9	ND<10	ND<16	24	0.13	ND<0.7	21	ND<2	3.6	ND<12	0.088	ND<1	16	ND<0.4	12	310
B-8/MW-8	1/3/1990	Downgradient of USTs	4	ND<10	ND<16	42	0.16	ND<0.7	27	2.8	18	ND<12	ND<0.009	ND<1	18	ND<0.4	15	75
			9	ND<10	ND<16	85	0.15	ND<0.7	9.6	ND<2	41	24	0.36	ND<1	6.8	ND<0.4	8.5	120
B-9	1/4/1990	At sump	4	ND<10	ND<16	140	0.41	ND<0.7	33	7.4	55	41	0.45	ND<1	32	ND<0.4	31	120
			9	ND<16	ND<16	610	0.31	44	180	15	2,300	980	0.66	27	350	ND<0.4	26	6,200
B-10	1/4/1990	NW part of site	4	ND<10	ND<16	33	0.05	ND<0.7	23	ND<2	39	42	0.1	ND<1	10	ND<0.4	5	95
			9	ND<16	21	590	0.33	1.3	34	6.9	140	1,500	0.62	ND<1	24	ND<0.4	28	410
B-11	1/4/1990	ween office and wareho	4	ND<10	ND<16	240	0.36	1	22	5.4	44	72	0.092	ND<1	25	ND<0.4	21	940
			9	ND<10	ND<16	160	0.31	0.7	21	3.6	ND<4,500	55	0.012	ND<1	24	ND<0.4	17	160
B-12	1/4/1990	N of office	4	ND<10	ND<16	89	0.23	ND<0.7	36	3.4	170	120	ND<0.009	ND<1	29	ND<0.4	21	150
			9	ND<28	38	540	0.26	7.7	190	28	2,200	3,000	ND<0.009	20	110	ND<0.4	23	3,600
B-13	1/4/1990	N part of site	4	ND<10	ND<16	160	0.36	ND<0.7	62	6.5	120	520	ND<0.009	ND<1	42	ND<0.4	27	300
			9	ND<10	ND<16	37	0.15	ND<0.7	29	2.9	4.9	12	ND<0.009	ND<1	18	ND<0.4	15	210
Sump	1/5/1990	Sump Excavation	Confirmation	ND<10	ND<16	180	0.48	ND<0.7	95	10	49	62	0.022	ND<1	135	ND<0.4	39	150
MW-9	4/13/1994	W of Tank Excavation	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			15.5	ND<3	4.2	190	0.43	ND<0.25	26	12	30	19	ND<0.083	ND<1	36	ND<0.5	27	61
MW-10	4/14/1994	N of Tank Excavation	9.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			15.5	4.4	19	140	0.21	3.3	59	10	330	250	0.77	3.1	37	1.1	24	530
T-2	4/13/1994	SE tank excavation	6	5.1	9.3	170	0.23	1	25	8.7	2,100	330	ND<0.087	1.5	55	0.5	26	580
			8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T-5	4/14/1994	W of tank excavation	5	ND<2.9	6	130	0.31	0.27	25	9.2	60	61	0.21	ND<0.98	28	ND<0.49	26	88
			9	ND<3	ND<2.5	41	ND<0.10	ND<0.25	23	4.2	14	1.5	ND<0.087	ND<1	19	ND<0.5	15	18
			14.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T-7	4/14/1994	NW tank excavation	7.5	ND<3	4.2	150	0.45	0.28	27	10	40	6.1	ND<0.087	ND<0.99	37	ND<0.5	27	62
			14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHHSL - Residential [1]				*30*	*0.07*	*5,200*	*16*	*1.7*	*100,000*	*660*	*3,000*	*80*	*18*	*380*	*1,600*	*380*	*530*	*23,000*
ESL - Shallow Soil, Residential, Non-Drinking Water Resource Area [2]				*20*	*0.39*	*750*	*4*	*12*	*750*	*0.33*	*230*	*80*	*6.7*	*40*	*150*	*20*	*200*	*600*

Notes:
exceeds regulatory and California hazardous waste criteria
exceeds regulatory criteria
Only detected compounds are shown.
bgs: below ground surface
mg/kg: milligrams per kilogram
ND<##: Not detected at or above laboratory reporting limit shown
1. California EPA, 2005. *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties (Revised 2009)*. January.
2. San Francisco Bay Regional Water Quality Control Board (SF RWQCB), 2013. *2013 Tier 1 Environmental Screening Levels (ESLs)*. February.

Table A-5 - Historical PCBs Data
Nady Systems

Borehole ID	Date	Rationale	Sample Depths	PCBs (mg/kg)	
				Arochlor 1260	Other PCBs
B-7/MW-7	1/3/1990	Drum Area	4	ND<1	ND
			9	ND<1	ND
B-8/MW-8	1/3/1990	Downgradient of USTs	4	ND<1	ND
			9	**2.3**	ND
B-9	1/4/1990	At sump	4	ND<1	ND
			9	ND<1	ND
B-10	1/4/1990	NW part of site	4	ND<1	ND
			9	ND<1	ND
B-11	1/4/1990	Between office and warehouse	4	**2.2**	ND
			9	ND<1	ND
B-12	1/4/1990	N of office	4	ND<1	ND
			9	ND<1	ND
B-13	1/4/1990	N part of site	4	**3.1**	ND
			9	ND<1	ND
Sump	1/5/1990	Sump Excavation	Confirmation	**4.2**	ND
CHHSL - Residential [1]				*0.089*	*0.089*
ESL - Shallow Soil, Residential, Non-Drinking Water Resource Area [2]				*0.22*	*0.22*

Notes:
exceeds regulatory criteria
Only locations with detections are shown.
Only detected compounds are shown.
mg/kg: milligrams per kilogram
ND<##: Not detected at or above laboratory reporting limit shown
PCBs: Polychlorinated biphenyls
UST: Underground storage tank

Attachment C

Estimated Costs for Environmental Remediation Activities
Nady Site Redevelopment

ENVIRON

ESTIMATED COSTS FOR ENVIRONMENTAL REMEDIATION ACTIVITIES AS PART OF REDEVELOPMENT OF NADY SITE IN EMERYVILLE

	Expected Best-Case Estimate				Worst-Case Estimate				
	Unit	Assumed Unit Price	No. of Units	Subtotal	Unit	Assumed Unit Price	No. of Units	Subtotal	Source/Notes/Assumptions
Capital Costs									
1. Environmental Insurance Premium	LS	$ 125,000	1	$ 125,000	LS	$ 150,000	1	$ 150,000	Quote from John Kim at INTEGRO - 3/19/12
2. Complete DTSC-required Site Characterization Investigation	LS	$ 100,000	1	$ 100,000	LS	$ 250,000	1	$ 250,000	
3. Prepare Environmental Remediation Documents to obtain closure from DTSC. Documents include RAW and O&M Plan	LS	$ 150,000	1	$ 150,000	LS	$ 250,000	1	$ 250,000	
4. Install New Groundwater Monitoring Wells	LS	$ 80,000	1	$ 80,000	LS	$ 150,000	1	$ 150,000	Install 10 new shallow wells
5. DTSC Oversight	LS	$ 50,000	1	$ 50,000	LS	$ 100,000	1	$ 100,000	
6. Groundwater Source Remediation	-	$ -		$ -	LS	$ 300,000	1	$ 300,000	
7. Subtotal				***$ 505,000***				***$ 1,200,000***	
Capital Costs Related to Construction of Below Grade Parking Structure									
7. Construction Dewatering	gal	$ 3.00	100,000	$ 300,000	gal	$ 0.65	900,000	$ 585,000	Decon Environmental Phone Call 5/2/2012. For dewatering volumes> 100,000 gallons, water is collected and disposed of offsite in tanks at $2-$3/gallon; For larger volumes, a portable treatment unit will be used to treat and discharge to sanitary sewer. Quantities estimated.
8. Transport and Disposal of Contaminated Soil (California Class 1)	ton	$ 99.20	50,053	$ 4,965,238	ton	$ 99.20	45,048	$ 4,468,714	Disposal costs from Pacific States and Tucker Engr. bids for Archstone Parkside Project in Emeryville May 2012. Lead concentrations in soil exceed State hazardous waste levels; Volume of soil from AvalonBay email dated May 28, 2013.
9. Transport and Disposal of Contaminated Soil (RCRA Hazardous)	ton	-	-	-	ton	$ 300	5,005	$ 1,501,584	Disposal Costs from email dated April 29, 2013 from Jim Gray at Sequoia Construction. Lead concentrations exceed Federal hazardous waste levels. Soil must be stabilized prior to landfill disposal. Worst-case assumes 10 percent of excavated soil must be disposed of as Federal hazardous waste.
10. Subtotal (Lines 7-9) Below Grade Parking Costs				***$ 5,265,238***				***$ 6,555,298***	
Annual Costs									
11. DTSC Oversight	LS	1	$ 10,000	$ 10,000	LS	1	$ 15,000	$ 15,000	
12. Groundwater Monitoring	LS	1	$ 45,000	$ 45,000	LS	1	$ 80,000	$ 80,000	
13. Annual Cap Monitoring	LS	1	$ 2,500	$ 2,500	LS	1	$ 2,500	$ 2,500	
14. Estimated Total Annual Cost Range				***$ 57,500***				***$ 97,500***	
15. Present Value Cost Range for Annual Monitoring (30 yr duration, i=3%)				***$ 1,127,023***				***$ 1,911,039***	
16. ESTIMATED CAPITAL COST & PRESENT VALUE COST (NO SOIL DISPOSAL OR DEWATERING)				***$ 1,632,023***				***$ 3,111,039***	
17. ESTIMATED CAPITAL COST & PRESENT VALUE COST (WITH BELOW GRADE PARKING)				***$ 6,897,261***				***$ 9,666,337***	

Building area (ft2)= 69,000
Below Grade Excavation (CYS)= 25,185
Pile Caps and Elevator Pits (CYS)= 6,098
Utilities (CYS)= 0
cubic yards to tons= 1.6

Attachment D

Resume of Anne Gates, P.E.

Anne Wooster Gates, PE | Senior Manager

Emeryville, California
+ 1 510 420 2524 | agates@environcorp.com

Anne Gates has been a licensed professional engineer in California since 1987, with over 25 years of experience in consulting engineering related to environmental investigations, feasibility study analyses, civil/environmental design and remediation construction. For both private- and public-sector clients, she provides overall technical management related to investigation and remediation of contaminated property. She has prepared feasibility studies, engineering evaluations/cost analysis (EE/CA) reports and remedial action plans (RAPs) to analyze and select alternatives for site remediation. The alternatives evaluated in these reports have included innovative technologies, risk management strategies and traditional remedies. For the past 10 years, Anne's environmental engineering work has focused on remediation of sites for the purposes of redevelopment. These projects have included preparation of detailed cost estimates for the design, construction and monitoring of environmental remediation alternatives. She has also provided expert testimony on projects involving environmental investigation and remediation.

EDUCATION

1988 MS, Civil Engineering (Oceans and Hydraulics), University of California, Berkeley

1984 BS, Civil Engineering, Stanford University

EXPERIENCE

Bay Street, Emeryville

- Worked closely with a private developer, the City of Emeryville Redevelopment Agency and the California DTSC to negotiate closure and redevelopment of a 20-acre former industrial site contaminated with heavy metals, benzene and pesticides /PCBs.
- Closure of the site was contingent upon implementation of deed restrictions and a risk management plan and Anne worked closely with the relevant agencies and the private developer to finalize the risk management plan and obtain site closure.
- Implemented the risk management plan during site construction and development activities. Additional contamination was found during development and Anne worked closely with the developer and DTSC to ensure the additional contamination was remediated. She is currently working with the developer on several cost recovery actions with respect to the additional contamination that was identified during development.

Bay Area Research and Extension Center (BAREC) in Santa Clara

- Assisting the State of California in investigating and remediating a former pesticide research and testing facility in Santa Clara, California. The 17-acre parcel is slated for redevelopment into single- and multi- family homes and a small park. Responsibilities include preparation of a Site Characterization Report and Remedial Action Workplan to obtain site closure from DTSC.

Mission Bay in San Francisco

- Assisted with Catellus's redevelopment of the one of the largest "Brownfields" developments in Northern California.
- Analyzed different remediation scenarios for petroleum hydrocarbons in soil and ground water and the potential impact of these remedies on future development activities.

- In addition, provided technical assistance with respect to risk communication and environmental risk management procedures to be performed during site redevelopment and construction.

San Quentin Prison

- Assisted the State of California in preparation of a study of alternatives for redevelopment of the roughly 200-acre San Quentin Prison. Responsible for identifying the redevelopment issues and costs related to potential releases of chemicals from current/former prison industries, the gas chamber and former waste disposal areas, assuming different land use scenarios.

City of Emeryville, Emeryvillage Project

- Successfully negotiated site closure with the California RWQCB for a former industrial site that was contaminated with petroleum hydrocarbons and VOCs in soil and ground water.
- Integral to negotiating this site closure was communication of potential environmental risks and risk management procedures to be followed during construction and redevelopment.

Comprehensive Engineering Design Packages

- Prepared comprehensive engineering design packages for implementation of selected remediation alternatives. The design packages typically include detailed plans and specifications; a cost estimate and schedule; a Basis of Design Report; Operation and Maintenance Plan; Waste Management Plan; System Monitoring and Sampling Plan; and Health and Safety Plan. She has prepared design packages which have involved the following:
  - Excavation and treatment of contaminated soil (hydrocarbons, PCBs, metals);
  - Ground-water pump and treat systems;
  - Dual phase extraction of ground-water and free-phase fuel hydrocarbons;
  - Vapor extraction for chlorinated VOCs and hydrocarbons; and
  - Landfill capping and containment systems.
- Examples of this experience include her work as project manager for closure of two solid waste landfills. Both projects involved preparation of an EE/CA to evaluate different closure alternatives, preparation of plans and specifications, and preparation of construction and environmental monitoring plans. Anne was instrumental in negotiating with EPA Region IX to accept closure of one of the landfills, which was located in a remote area using locally available materials. Although these materials did not directly meet the requirements of RCRA Subtitle D, Anne was able to demonstrate that they were adequate for protection of potentially-exposed populations and environmental receptors.

Additional Representative Project Examples

- Managed preparation of design plans and specifications for a vapor extraction system to remediate explosive levels of gasoline vapors and methane gas.
- Managed a remediation project for an active gas station and fuel oil recovery facility. Project involved implementation of a pilot-scale ground-water remediation system, site characterization sampling, collection of tidal monitoring data, aquifer-testing and use of ground-watering flow model to determine location and spacing of ground-water extraction wells and trenches to collect and extract floating hydrocarbons. Also evaluated different free phase hydrocarbon recovery system alternatives, developed plans and specifications for implementation of the selected remedial alternative, provided construction oversight during implementation, and provided operation, maintenance and performance monitoring of the final remedial alternative.

- Managed a remediation project for cleanup of diesel and fuel oil from a former power plant. Project involved site characterization sampling, collection of tidal monitoring data, aquifer-testing and use of a ground-watering flow model to determine location and spacing of ground-water extraction wells and trenches to collect and extract floating hydrocarbons. Also evaluated different free phase hydrocarbon recovery system alternatives, developed plans and specifications for implementation of the selected remedial alternative, provided construction oversight during implementation, and provided operation, maintenance and performance monitoring of the final remedial alternative.
- Managed an investigation and remediation of PCE-, TCE- and vinyl chloride-containing vapors at a laundry facility and adjacent elementary school. Project involved: investigating the extent of the vapor plume in soil gas and ambient air; performing a risk assessment and fate and transport modeling to determine whether adjacent school children were at risk; performing fate and transport modeling to determine whether potential marine ecological receptors were potentially impacted; performing a vapor extraction pilot-test to analyze remedial alternatives; evaluating removal action alternatives for cost, effectiveness and implementability; preparing plans and specifications for design of a horizontal and vertical vapor extraction system with a catalytic oxidation treatment system; and construction, operation and maintenance of the selected removal action alternative.
- Assisted with design, implementation and construction oversight of a remediation system for hydrocarbon contaminated soil at a former military base in Alaska. Project involved installation and operation of a soil vapor extraction system.
- Managed the design/analysis of an electrokinetic remediation system for cleanup of a former battery acid pit contaminated with lead. Project involved analysis of site-specific data to determine the applicability of the technology for the site and detailed comparisons of other technologies in terms of cost, effectiveness and implementability.
- Managed the preparation of a Removal Action Site Evaluation Report, Engineering Evaluation/Cost Analysis and engineering design package for closure of a landfill. Project involved collection/analysis of additional site data, evaluation of different landfill capping alternatives performance of a streamlined risk assessment and development of a ground-water monitoring plan. Project also involved assessing engineering risks with future development of the closed landfill. Successfully negotiated with USEPA to obtain an exemption from RCRA Subtitle D landfill closure requirements because it was demonstrated that the selected alternative was effective in minimizing risks associated with the former landfill.
- Managed preparation of an Engineering Evaluation/Cost Analysis and plans and specifications for closure of an oily waste pit. Project included analysis and design of alternatives for remediating oily contaminated soil and design of a protective cap to prevent the migration of gases to the ground surface.
- Provided litigation support in cases involving the responsibility, extent and remediation costs of soil and ground water contamination, consistency of remedial investigations and remedial/removal actions with the NCP, and Superfund cost allocation.
  - Provided litigation support regarding the extent and source of petroleum releases at a site adjacent to San Diego Bay.
  - Provided litigation support regarding the extent and source of contamination and the allocation of remedial costs among various PRPs at a former foundry and wood-stove manufacturing site in Alameda County, California
  - Prepared a cost allocation analysis for litigation involving remediation of hydrocarbons at the San Francisco airport.

- Prepared a cost analysis of various cleanup alternatives for cadmium contaminated ground water at a State NPL site in South Carolina.

Other Environmental Projects

- Assisted with preparation and development of a ground-water monitoring plan for a hazardous waste landfill. Assisted with vadose zone and ground-water modeling to simulate leaks from waste management units (WMUs) and for determination of the location and spacing of ground-water monitoring wells. Designed a vadose zone monitoring system using an additional model to simulate releases of moisture from a newly constructed WMU due to consolidation of the WMUs clay liner. The project also included design and installation of the vadose zone and ground-water monitoring system and additional ground-water modeling studies to determine if a deep (>800 feet) water supply well had a hydraulic effect on the shallow ground-water monitoring well system.
- Assisted in investigation and characterization of solid waste management units and report preparation as part of a RCRA Facility Investigation.
- Prepared a solid waste management permit application for nonhazardous waste disposal units at a waste disposal facility.
- Assisted in chemical characterization of waste disposed in landfill for modeling air emission rates from active hazardous waste landfill. Results of model were basis for air permit application for hazardous waste landfill.
- Performed environmental assessments of several solid waste/sanitary landfills in Michigan, Indiana, Oklahoma for possible conversion to hazardous waste facilities. Project involved assessing engineering feasibility for landfill unit conversion and expansion, review of historical regulatory compliance, and potential for release of contaminants from landfill wastes.
- Performed environmental compliance audits, due diligence reviews and site assessments of more than 50 facilities to identify environmental liabilities associated with federal, state and local regulations (e.g., CERCLA, RCRA, wastewater, Federal Safe Drinking Water Act, air emissions, underground storage tanks, California's Proposition 65, and other hazardous waste regulations, asbestos). The types of facilities included motor and pump repair facilities in Ohio, West Virginia, Florida, Alabama, California, and Mexico; computer and electronics-related manufacturing facilities in California, chemical processing facilities in Michigan and California; wood treatment facilities in Wisconsin; hazardous and nonhazardous waste treatment, storage, and disposal facilities in Indiana, Alabama, Louisiana, Arizona, and California; a garment manufacturing facility in Texas; a newspaper printing facility in California; a metal tubing manufacturer in Canada; pump manufacturing facilities in the United Kingdom, Germany, and Nebraska; and an industrial port facility in California.
- Assisted with design, implementation and construction oversight of a remediation system for hydrocarbon contaminated soil and ground water from an oil recovery facility in Louisiana. Project involved excavation of a former hydrocarbon waste pit and installation of ground water "pump and treat" remediation system. "Pump and treat" remediation system design involved application of a ground water flow model to determine and locate extraction wells.
- Assisted with implementation of the Superfund selected remedial alternative for a former asbestos mine in California. Project involved preparation of preliminary design documents for sediment retention ponds and diversion channels which included review and application of hydrogeologic and sediment transport flow models.
- Developed and prepared a ground-water monitoring plan for cleanup of hydrocarbon contaminated ground water via an extraction trench for an auto manufacturing facility.

- Assisted with preparation of a Remedial Investigation/Feasibility Study (RI/FS) of chlorinated-solvent contamination from an electronics manufacturer. Project responsibilities involved application of a ground-water model to determine contaminant transport between two aquifers.
- Managed preparation of NPDES storm water permit applications for discharges from construction sites, hazardous waste storage facilities, and fuel recovery facilities in California, Hawaii and Louisiana.
- Directed study to determine compliance with California's Proposition No. 65 for numerous food manufacturing plants. Project involved use of USEPA air emissions models to estimate potential air exposure to contaminants and development of a vadose model to estimate concentrations of ground-water contaminants.
- Managed closure and removal of several petroleum-containing USTs in California and New York. Projects involved oversight of tank removals, soil sampling, installation of ground-water monitoring wells, coordination with regulatory agencies and preparation of site investigation and closure reports.
- Managed closure of a microchip and metal plating facility. Project involved coordination and oversight of a subcontractor to remove and decontaminate all equipment, sampling to verify if residual contamination remained, preparation of a closure plan and final closure report, and coordination with regulatory agencies.

Prior to joining ENVIRON, Anne had the following positions:

- Manager of remediation and design engineering, Ogden Environmental and Energy Services Company, Honolulu and San Francisco offices.
  - Managed numerous hazardous waste and petroleum hydrocarbon investigation and remediation projects in California, Alaska, Hawaii and Guam.
  - Provided technical management for environmental engineering and remedial design projects on a $210 million dollar CLEAN Contract with the US Navy in Hawaii.
- Associate Engineer, McGill-Martin-Self, Orinda, California.
  - Designed and managed land development projects. Performed hydraulic and hydrogeologic analysis of floods, landslides, and land development projects.
  - Designed and implemented grading, drainage, and erosion control plans for various engineering projects.
  - Conducted numerous investigations on the causes and remediation measures for seepage in hillsides and various types of engineering excavations.
  - Audited and assessed residential developments for compliance with building codes and other regulations.

CREDENTIALS

Registrations and Certifications

Registered Professional Engineer, State of California, 1988

Registered Professional Engineer, State of Hawaii, 1992

Registered Professional Engineer, State of Alaska, 1997

Registered Professional Engineer, State of Washington, 1997

Professional Affiliations and Activities

Member, American Society of Civil Engineers

PUBLICATIONS & PRESENTATIONS

Comparison of Modeled to Estimated Emission Rates at Active Hazardous Waste Landfill (with D. Suder and C. Schmidt). 1990. Presented at the Air and Waste Management Association, annual conference.

Estimation of Hydraulic Conductivity for a Tidally-Influenced Unconfined Aquifer (with Jeff Cotter). Presented at 1993 Joint CSCE–ASCE National Conference on Environmental Engineering, July, 1993.