

C.H.J

PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT  
375+ ACRES - BADGER CANYON AREA  
SAN BERNARDINO, CALIFORNIA  
PREPARED FOR  
ALLIED INVESTMENT AND DEVELOPMENT, INC.  
JOB NO. 89-01-060



ENVIRONMENTAL  
INCORPORATED

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November 7, 1989

Allied Investment and Development, Inc.  
1875 Century Park East, Suite 1880  
Los Angeles, California 90067  
Attention: Mr. Steven F. Dallman

Job No. 89-01-060

Dear Sir:

Enclosed is the Preliminary Environmental Site Assessment report for the approximately 375 acres located in the Badger Canyon area in the City of San Bernardino, California.

This report was based upon a scope of services discussed in telephone conversations (August 16, September 29 and October 2, 1989) and outlined in our proposals dated August 17 and October 5, 1989.

We appreciate this opportunity to provide the necessary services for this project. Should questions arise, please contact this firm at your convenience.

Respectfully submitted,  
C.H.J. ENVIRONMENTAL, INC.

A handwritten signature in cursive script that reads "John R. Ford".

John R. Ford, Project Geologist

JRF:jlm



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INTRODUCTION

During October of 1989, a Preliminary Environmental Site Assessment for approximately 375 acres in the Badger Canyon Area in the City of San Bernardino, California was performed by this firm. The purpose of this assessment is to provide information pertinent to the presence of hazardous materials on or adjacent to the subject property.

SCOPE OF SERVICES

The scope of this assessment was determined during telephone conversations (August 16, September 29 and October 2, 1989) and in our proposals dated August 17 and October 5, 1989. As agreed upon our assessment was to determine:

1. The historic use of the property.
2. Potential contamination sources on-site.
3. The location of the property relative to known hazardous waste sites.
4. If public documents indicate a record of hazardous waste disposal on the property.

The procedures used to make these determinations included:

1. Interpretation of aerial photographs (1938, 1955, 1963, 1964, 1969, 1971, 1978, 1980, 1981 and 1986)
2. Reconnaissance of the property and adjacent area in order to determine current land usage.
3. A review of published lists (EPA CERCLIS, Cortese, SWAT, Regional Water Quality Control Board Leaking Tank Data Base, Etc.) of potentially contaminated sites.

4. A request to the San Bernardino County Department of Environmental Health Services for their review of files on the property.

SITE DESCRIPTION

The subject property is located in the Badger Canyon area in the City of San Bernardino, California. The Badger Canyon area is a portion of the generally southwest-facing slopes along the south front of the San Bernardino Mountains (See Index Map, Enclosure "A-1").

At the time of this assessment, the property was generally vacant. The south-central portion contained the remains of several structures. These remains included a partially demolished concrete walled residence and the concrete floor slabs of several apparent outbuildings. Several small piles of household refuse were within and around these structures. An abandoned swimming pool, stone and concrete-lined empty reservoir (15'w x 30'l x 6'd ±), building foundation (residence ?) and an approximately 15 foot diameter concrete pool/reservoir fed by an active spring were located in the east-central portion of the property (See Plat, Enclosure "A-2").

The terrain generally consists of moderate to steep mountainous slopes in the northeast 1/2. Several ephemeral drainages converge into Badger Canyon in the east-central portion. The remainder of the property is an alluvial slope generally towards the south. Vegetation consists of native grasses and shrubs to four feet in height over most of the property. Several isolated groups of trees to 40 feet in height are located around the former structures and along the stream in the east-central portion.

A high-pressure water line (buried) with several partially buried concrete-cased manholes traverses the southwest portion.

ADJACENT PROPERTIES

The adjacent properties are vacant. The San Bernardino Mountains are north of the site and, several groundwater percolation basins are adjacent to the south. The closest structures to the property include a residence and several outbuildings approximately 500 feet to the west along the mountain front. The California State University complex is located approximately 1/2 miles to the southwest and residential developments are approximately 2000 feet to the south-east.

GEOLOGIC SETTING

The property is located in and along the south front of the San Bernardino Mountains. Bedrock outcrops are present mostly in the northern half of the property. The southern half is comprised mostly of Quaternary age alluvial fan deposits (Bortugno and Spittler, 1986). Recent alluvium is anticipated along Badger Creek.

The north and south branches of the northwest-southeast trending San Andreas Fault traverse the property (Bortugno and Spittler, 1986).

HYDROLOGIC SETTING

The property lies in the Devil Canyon sub-basin of the upper Santa Ana Valley groundwater basin. The minimum depth to groundwater is anticipated to be variable throughout the property due to branches of the San Andreas Fault. Areas of high groundwater may be found behind (immediately north of) the two main fault branches traversing the property. An active spring was noted during our reconnaissance in the former building area in the east-central portion. This spring feeds into Badger Creek which otherwise has seasonal flow. The depth to groundwater south of the south branch fault is expected to be greater than 50 feet, as inferred from Carson and Matti, 1986.

AERIAL PHOTOGRAPH REVIEW

Aerial photographs taken in 1938, 1955, 1963, 1964, 1969, 1971, 1978, 1980, 1981 and 1986 were reviewed. These photographs are on file with the San Bernardino County Flood Control District Office and the specific coverage is listed on Enclosure "B". This review indicated that the subject property was generally vacant but contained several residential type structures with associated swimming pool and outbuildings.

The review of the 1938 photographs indicated a majority of the property was vacant. One or two small residential type structures were located in a landscaped area in the east-central portion. This area also contained several small cultivated plots (low row crops). A residence with two or three outbuildings adjacent were located in the south-central portion. The adjacent properties in all directions were vacant.

The review of the 1955 photographs indicated the cultivated areas in the east-central portion were no longer in use. Several earthen flood control berms had been constructed adjacent the site to the southwest and approximately 500 feet to the southeast.

The 1963 photographs were available for only the southern half of the property. A small flood control berm/percolation basin had been constructed in the area between Badger Hill and the southeast portion of the property. No significant changes as compared to the 1955 photographs were noted on the subject property.

The 1964 photographs were at a larger scale and had better resolution than the previous years reviewed. The structures previously observed on the 1938 photographs were more clearly shown to include a swimming pool, small residence/clubhouse, and an additional outbuilding in the east-central portion. A gravel parking lot with several vehicles was also observed in that area. No significant changes from the previous photographs were observed.

The review of the 1969 photographs indicated the developed area in the east-central portion appeared to be abandoned. Badger Canyon Creek had eroded the parking area and several trees had been removed adjacent to the swimming pool. No significant changes from the previous photographs were observed on the remainder of the property or adjacent land.

The review of the 1971 photographs indicated an open trench traversing northwest-southeast across the southern portion. (The location of this trench is coincident with recent field observations of a high pressure water line). The small residence/clubhouse and outbuilding on the east-central portion had been removed prior to the date of these photographs. No other changes were observed on the property. Additional earthen flood control berms/percolation basins were noted approximately 1500 feet to the southwest.

The review of the 1978 photographs indicated the structures located in the south-central portion may have been partially demolished. However, shadows from surrounding trees obscured this area. No significant changes were observed on the remainder of the property.

The review of the 1980 and 1981 photographs indicated the outbuildings on the south-central portion had been removed prior to the date of these photographs. The property and adjacent areas to the east and west had been burned in a recent fire. Excavation of a small percolation basin was noted in the area between the south-central portion and Badger Hill. No other changes were observed.

The review of the 1986 photographs indicated no significant changes to the subject property or adjacent land.

#### AGENCY INQUIRIES

A "Request for Environmental Assessment Review" was submitted (September 6, 1989) to the San Bernardino County Environmental Health

Department. This request included any information regarding underground storage tanks, hazardous waste generators, hazardous waste handlers and emergency response records pertaining to the property.

Their response, dated October 11, 1989, indicated their review found "no record of any release, spill, dumping, contamination, clean-up action, underground tank or above ground storage of hazardous materials, substances or wastes on the subject property".

#### RECORDS REVIEWED

Existing lists of contaminated sites or sites which are a candidate for investigation were reviewed. The title of these lists and a brief summary of our review are presented below.

- \* National Priorities List (N.P.L.). The nearest listed site was the Stringfellow Acid Pits approximately 15 miles to the southwest.
  
- \* Expenditure Plan for the Hazardous Substances Clean Up Bond Act of 1984. Revised January 1989. The nearest listed site was the Newmark Well Field area of the Bunker Hill groundwater basin approximately one mile to the south. Four wells were closed in the early 1980's after they were found to contain halogenated organic chemicals including PCE and TCE (solvents). The contaminant plume is migrating generally towards the south. The City of San Bernardino and the Department of Health Services (DHS) have taken remedial actions. The information provided in this listing is attached (Enclosure "C"). Additional background information from a newspaper article (San Bernardino Sun) is also attached (Enclosure "D").
  
- \* U.S. Environmental Protection Agency (EPA) Superfund Program, CERCLIS List 8, February 1989. The nearest listed site was the above mentioned Newmark Well Field.

- \* Identified Hazardous Waste Sites in San Bernardino County (Cortese List), June 1989. The nearest listed site was the above mentioned Newmark Well Field.
- \* California Regional Water Quality Control Board, Leaking Underground Tank Data Base, April 1989. Numerous sites are included on this list. These sites are at least 3 1/2 miles from the subject property towards the south and the southeast.
- \* California Regional Water Quality Control Board, List of Contaminated Domestic Wells, September 1989. The closest wells on this list (Well No. 01N/04W-16E01, 2 & 3) are those associated with the Newmark Well Field. These wells are approximately one mile downgradient to the south.
- \* California Regional Water Quality Control Board, Solid Waste Assessment Test (S.W.A.T). The nearest listed landfill was the Cajon Landfill approximately three miles to the west.

The subject property was not included on the above lists. The above listed sites are sufficiently removed or have problems of a magnitude that they are not anticipated to affect the subject property.

Underground sewage disposal systems (leach lines or seepage pits) may be associated with the remains of the on-site structures.

#### SOIL CONTAMINATION

No evidence of commercial dumping or waste disposal on-site was observed during our aerial photograph review. Minor amounts of household debris was noted during the site reconnaissance. Stained soils or abnormally distressed vegetation were not observed on the property. Underground sewage disposal systems (leach lines or seepage pits) may be associated with the remains of the on-site structures.

GROUNDWATER CONTAMINATION

Concentration levels of various chemicals, notably TCE and PCE, are above State action levels in several wells approximately one mile to the south. The contaminant plume originates near the intersection of Kendall Drive and 40th Street (one mile south) and is migrating southward and away from the subject property. Groundwater treatment wells have been installed by the City of San Bernardino to help mitigate the plume (See Enclosures "C" and "D").

HAZARDOUS WASTE/BORDER ZONE PROPERTY

California Health and Safety codes defines hazardous waste property in Section 25117.3 and border zone property in Section 25117.4. Our interpretation of those laws are that properties on the San Bernardino County Identified Hazardous Waste Site List (Cortese List) are "hazardous waste properties". Border zone properties are those within 2,000 feet of significant disposal of hazardous waste.

The site is not a "hazardous waste property" or a "border zone property" as defined above.

CONCLUSIONS

The subject property is generally vacant. The concrete foundations of several structures and the partial remains of a residence were located in the south-central portion. An abandoned swimming pool, a concrete foundation and a small concrete water reservoir/pool were located in the east-central portion.

Several small piles of household refuse were within and around the former structures on-site. Underground sewage disposal systems (leach lines or seepage pits) may be associated with the remains of the on-site structures.

Adjacent properties are vacant land. The San Bernardino Mountains border the property to the north and Badger Hill is to the south. Several groundwater recharge areas (percolation basins) are located immediately adjacent to the south and approximately 1/2 mile to the west. Several residences and outbuildings are located 500 feet and greater to the west but do not indicate a significant potential for contamination of the property.

A northwest-southeast oriented high-pressure water line (buried) with several partially buried concrete-cased manholes traverses the southwest portion of the property.

The subject site is not a "hazardous waste property" or "border zone property" as defined by the California Health and Safety Code Sections 25117.3 and 25117.4

#### RECOMMENDATIONS

If discolored soils or soils with an unusual odor are encountered during the development of this property, this firm should be immediately contacted and work discontinued in that particular area until an evaluation can be made.

The construction materials of the remains of the structures on-site were not evaluated for the potential of hazardous substances such as asbestos. An evaluation of these remains should be conducted prior to demolition.

The miscellaneous household debris on the property should be disposed of properly.

**C.H.J.**

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CLOSURE

We appreciate this opportunity to be of service and trust this report provides the information desired at this time. Should questions arise, please contact this firm at your convenience.



Respectfully submitted,  
C.H.J. ENVIRONMENTAL, INC.

*John R. Ford*

John R. Ford, Project Geologist

*Robert J. Johnson*

Robert J. Johnson, R.E.A. 00859  
President

JRF/RJJ: jlm

Enclosures: Index  
Plat  
References "B"  
Expenditure Plan Information "C"  
Newspaper Article on Newmark Well Field "D"

C.H.J

Enclosure "B"  
Job No. 89-01-060

REFERENCES

of Mines and Geology, "Geologic Map of the San Bernardino Valley", Scale 1:250,000, compiled by E.J. Bortugno 1986.

Li, J.C., 1986, Contour Map Showing Minimum Depth to Groundwater Upper Santa Bernardino Valley and Vicinity 1973-1983, Report 86-562.

Li, J.C., 1986, Contour Map Showing Minimum Depth to Groundwater Upper Santa Bernardino Valley and Vicinity 1973-1983, U.S.G.S. Open-File report 82-562.

Li, J.C., Chase, G.W., Chapman, R.H., Sproutte, E.C., 1976, Geologic Hazards in Southwestern San Bernardino County, California. California Division of Mines and Geology Report No. 113.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight No. W-80, Photos No. L2-1, L1-13, Scale 1"=1600'±.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight No. F-34, Photos No. 33, 34 and 35, Scale 1"=1600'±.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight C-113, Photos No. 4 and 5, Scale 1"=1600'±.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight C-169, Photos No. 158 and 159, Scale 1"=1600'±.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight C-295, Photos No. 12 and 13, Scale 1"=1600'±.

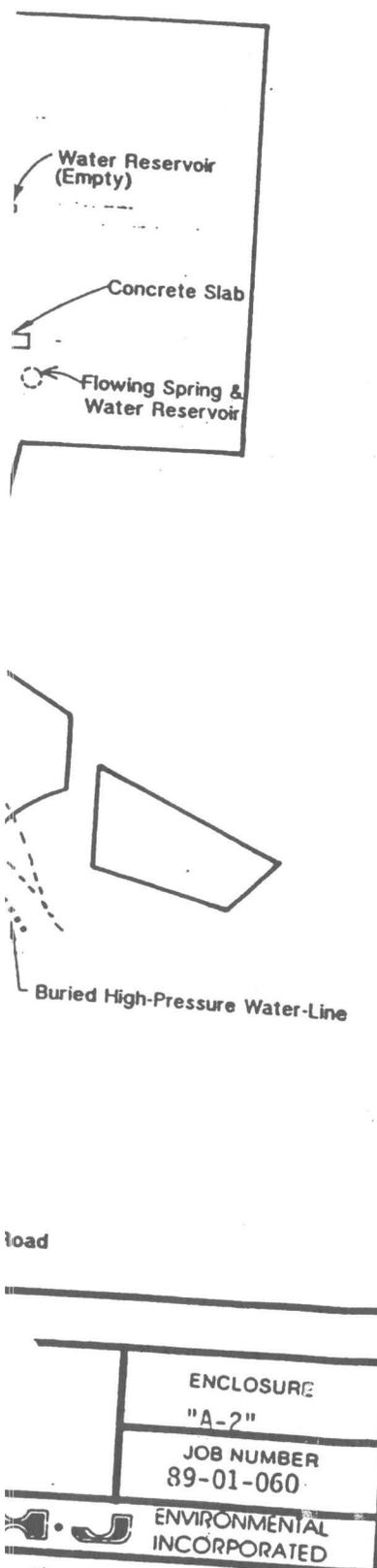
San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight C-186, Photos No. 15, 16, 18 and 19, Scale 1"=2000'±.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight C-279, Photos No. 166, 167 and 168, Scale 1"=2000'±.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight C-351, Photos No. 1 and 2, Scale 1"=2000'±.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight C-390, Photos No. 1 and 2, Scale 1"=2000'±.

San Bernardino County Flood Control District, Black & White. Aerial Photographs, Flight C-450, Photos No. 168 and 169, Scale 1"=2000'±.



ENCLOSURE

"A-2"

JOB NUMBER  
89-01-060

ENVIRONMENTAL  
INCORPORATED

## NPL SITE CLEANUP WORKPLAN

### NEWMARK GROUND WATER CONTAMINATION

#### Site Information

**Location and Type of Site**  
Muscoy Area North of San Bernardino  
San Bernardino, CA 92401  
San Bernardino

This site is part of the North San Bernardino Area site. It encompasses four municipal wells known as the Newmark Well Field. The site consists of approximately 700 square feet in the Bunker Hill Ground Water Basin. The San Bernardino Municipal Water Department was forced to close the four wells in the early 1980s when they were found to be contaminated with high levels of halogenated organic chemicals including tetrachloroethylene (PCE) and trichloroethylene (TCE).

#### Description of Hazardous Wastes

There are levels of TCE and PCE in the four domestic water wells above the State health based action levels for drinking water at this site. TCE was a degreaser used in large quantities for commercial, industrial and aerospace applications in the area. PCE is a similar degreaser and is commonly used as a cleaning compound in the dry cleaning industry.

#### Threat to Public Health and Environment

Ground water in the well field is of high natural quality. Four domestic supply wells have been closed. There is evidence that suggests that the contamination is moving in the direction of other well fields serving the majority of the population of the Cities of San Bernardino and Riverside. The population served by wells potentially affected by the contamination is at least 200,000. In November, 1986, DHS found the Bunker Hill Basin, including the Newmark Well Field, to constitute an imminent and substantial endangerment to public health and the environment. There is no known current exposure above the drinking water standards.

#### Site Status

##### Status of Site Activity

An interagency group consisting of the City of San Bernardino Municipal Water District, the Santa Ana RWQCB, the San Bernardino County Department of Health Services and DHS (Public Water Supply Branch and TSCD) are coordinating an effort for characterizing and mitigating the contamination. Field site characterization activities were initiated in November, 1987.

In October, 1986, DHS entered into a contract with the City of San Bernardino for initial remedial measures. These measures included design, construction and installation of airstripping towers (using carbon vapor units to control exhaust emissions) for the Newmark well field. The treatment system has been in operation since June, 1988, and it replaced the total capacity of the four municipal wells.

#### Projected Revenue Sources

There are no identifiable responsible parties. Therefore, Bond funds have been used to construct the airstripping towers. Bond funds will also be used as State match. If during the investigation RPs are identified, DHS will pursue appropriate cost recovery.

Federal funds will be available to continue investigation and remediation at the site.

#### Project Budget and Cash Flow Estimates

The cost estimates shown below reflect only the State share, ten percent, of site cleanup costs. All activities will be funded from Bond sale proceeds to the extent that federal Superfund or responsible party funding is not available.

Task Group	Projected State Costs	Estimated Completion
Site Characterization Enforcement Order Remedial Investigation/ Feasibility Study		N/A Oct. 1990
Remedial Action Plan/ Record of Decision		June 1992
Remedial Action Design Implementation Certification	\$ 500,000	Nov. 1993 Aug. 1996 Dec. 1996
Cost Recovery and/or Operation and Maintenance Cost Recovery Operation and Maintenance		Jan. 1998 20+ years
<b>TOTAL PROJECT COSTS</b>	<b>\$ 500,000</b>	

THE DEGREE OF HEALTH HAZARD POSED BY CHEMICAL CONTAMINATION OF A SITE DEPENDS ON THE CONCENTRATION OF THE MATERIAL PRESENT AND THE DURATION OF EXPOSURE. DHS POLICY IS TO EVALUATE ALL LISTED HAZARDOUS SUBSTANCE RELEASE SITES FOR THE NEED TO TAKE ACTION TO ABATE ANY ACUTE PUBLIC HEALTH OR ENVIRONMENTAL THREATS POSED BY A SITE. THEREFORE, THE THREATS DESCRIBED IN THIS DOCUMENT GENERALLY REPRESENTS THE POTENTIAL IMPACT OF LONG-TERM EXPOSURE TO SPECIFIC HAZARDOUS SUBSTANCES IF: 1) THE SITE IS NOT ABATED, 2) THE SUBSTANCES MIGRATE OFFSITE, AND 3) THE SUBSTANCES AT SOME POINT COME INTO CONTACT WITH HUMAN OR ENVIRONMENTAL RECEPTORS.

# S.B.'s new water towers switched on

## Purifying effort allows use of 4 closed wells

By CASSIE MacDUFF  
Sun Staff Writer

The flip of a switch set pumps humming Monday morning inside two 45-foot-tall water-purifying towers on Waterman Avenue in north San Bernardino.

The move returned to operation four contaminated wells that were shut down in 1984 because they contained health-threatening levels of the chemical solvents trichloroethylene and tetrachloroethylene.

In a dedication ceremony attended by about 100 people, state Health Services Director Kenneth Kiser hailed the facility as of statewide and perhaps national significance.

The \$2 million project, paid for by his department's toxic substances control division, is the largest in the state and possibly in the country, Kiser said. It is the second of three to be built in San Bernardino.

The plant will strip the chemicals from 14.4 million gallons of well water daily by sending the water cascading down through the two towers filled with millions of hollow plastic balls with holes in them, city Water Director Herbert Wessel said.

Air forced in at the bottom of each tower will cause the chemicals to evaporate.

The cleaned-up tap water will head for about 40,000 customers in San Bernardino.

Lessons learned from building the San Bernardino plant will be used when similar projects are built elsewhere in the state, Kiser said.

By December 1991, the water department will build treatment systems to cleanse chemical-la-



den air evaporating out of the towers.

In all, the city shut down 11 wells when chemical contamination was discovered in 1984, Wessel said. That cut water production by 25 percent. Without the stripping towers opened Monday, water rationing might have been necessary.

The chemicals apparently originated at the now-closed, privately operated San Bernardino Airport in the northwest part of the city. The chemicals traveled through the ground water, migrating southeast to the aquifer supplying city wells.

The solvents were commonly used to degrease engines. Dry-cleaning chemicals also were found.

Efforts are continuing to identify past and present sources of the contamination so the responsible parties can help foot the cleanup bill.

Because the chemicals went into the soil so long ago — probably in the 1930s and 1940s — those responsible may never be found, Wessel said.