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ALAMEDA/NAS

25 MAY 1984

State of California  
Department of Health Services  
2151 Berkeley Way  
Berkeley, CA 94704

Gentlemen:

Enclosed is a copy of the Draft Work Plan for the Verification Step of the Confirmation Study at Naval Air Station, Alameda, for your review.

A two week review period has been scheduled and written comments from your office must be received by us before June 15, 1984. If we do not receive your written comments by that date, we will assume that the plan was found to be satisfactory by your office.

We would appreciate your cooperation in keeping within our time schedule during the course of this Confirmation Study. Please direct any questions you may have to Ms. Helen Ling or Mr. Henry Shanks, Environmental Engineers of this Command, at (415) 877-7493.

Sincerely, .

VICTOR I. CRAWFORD, P.E.  
Head, Environmental Operations Section

Encl:

(1) Confirmation Study, Naval Air Station, Alameda  
Draft Work Plan, Verification Step May 21, 1984

Copy to:  
California Regional Water Quality Control Board,  
San Francisco Bay Region

Blind copy to:  
NAS ALAMEDA  
1142  
1142C  
1142I

Doc. #1249D

CONFIRMATION STUDY  
NAVAL AIR STATION, ALAMEDA

DRAFT WORK PLAN  
VERIFICATION STEP

May 21, 1984

INTRODUCTION

The Verification Step Work Plan described here is intended to determine whether or not contamination of soil, sediment, or water at 6 pre-selected sites is present at levels high enough to pose a possible environmental or human health hazard. The work is also intended to provide the field data necessary to make a reasonable determination of whether or not additional detailed field studies are warranted to accurately define the nature and extent of site contamination. Such additional studies are beyond the scope of work described here, and would fall in the Characterization Step of the overall Confirmation Study.

The emphasis in this Work Plan is only on providing an answer to the question "Is there actually significant contamination at this site?" It is recognized that no absolute answer to this question can ever be given, based on a limited amount of field work. This Work Plan is designed to maximize the probability of observing contamination, in order to increase the reliability of the "answer", for a reasonable level of field and laboratory effort.

This Work Plan concentrates on the proposed field and laboratory program. The proposed Safety Plan is described in a separate document. The other aspects of the Verification Step, such as field data review and reports, are adequately described in the current (April 27, 1984) version of Contract Appendix "A", the contract Scope of Work, which is included for reference here.

PROPOSED FIELD AND LABORATORY PROGRAM

Six sites have been identified for study during the Verification Step. They are known as the:

1943-1956 Disposal Area  
Seaplane Lagoon  
Buildings 301 and 389  
CAN-2 Area  
Building 360  
Area 97.

A program of field work and laboratory testing has been developed for each site, based on our review of the Initial Assessment Study (IAS) and other documents provided to date by the Navy, our observations during 4 base visits, and our discussions with Joe Shandling, Bob Baker, Dan Lent, Stan Ristrem, Larry Scharr, Ben Fugate, and others at NAS, Alameda, Henry Shanks and Helen Ling of WESTNAVFACENCOM, and John Accardi of NEESA. It is our understanding that our discussions with John Accardi have covered his own discussions with the authors of the IAS through about mid-May, 1984.

The current Scope of Work for the overall Confirmation Study calls for the investigation of conditions at the West Beach Landfill, in addition to studies at the 6 sites named above. However, field and laboratory information is already available on the presence of contaminants in ground water at the West Beach Landfill, and it appears that additional studies may be required in order to answer the concerns of state agencies over conditions in the landfill. These studies are likely to involve a scope out of proportion to the level of effort justified during the Verification Step. Therefore, we recommend that field work at the West Beach Landfill be postponed until the Characterization Step of this contract, when the associated changes in overall project scope and cost can be readily handled during regularly scheduled negotiations. However, existing information will be reviewed during the Verification Step, so that appropriate recommendations can be made for Characterization Step work. The proposed field and laboratory activities associated with each site are discussed in the following paragraphs.

## 1943-1956 Disposal Area

This Work Plan calls for installing 5 permanent ground water monitoring wells, located roughly as shown on Figure 1. It is anticipated that these wells will be installed to a depth of between 15 and 40 feet, depending on the stratigraphy at each well location. The wells will be cased with 2-inch diameter PVC casing and slotted screens. The wells will be sand and/or gravel packed to the extent possible, and provided with shallow surface seals and locking well caps.

The wells will be sampled and the samples analyzed for heavy metals by inductively-coupled plasma emission spectroscopy (ICP) scan, for organic priority pollutants by gas chromatography/mass spectrometry (GC/MS), for gross alpha and beta radioactivity, and for pH and electrical conductivity. For this study, analysis of organic compounds by GC/MS is preferred to Total Organic Carbon (TOC) and Total Organic Halogens (TOX) methods because of its superior detection limits and compound identification capabilities. TOC and TOX have limited acceptance by California state regulatory agencies. In addition to chemical samples, water levels will be obtained in each well. The wells will be surveyed for location and elevation.

The proposed well locations have been selected to give a high probability of encountering contamination, based on existing information about past disposal practices, as described in the IAS. Note that the areal coverage of each well is likely to be limited, especially in the heterogeneous materials likely to characterize the disposal area. Therefore, a sampling program of this scope must be considered to be potentially incomplete, although it is nearly twice as large as the program described in the IAS.

## Seaplane Lagoon

This Work Plan calls for the collection of 10 surface/near-surface sediment samples, 8 inside the lagoon and 2 outside the lagoon. The samples will be collected with a Ponar grab sampler. At least one sample will be taken from

the bottom near each identified outfall into the lagoon. The remaining in-lagoon samples will be distributed throughout the lagoon in order to increase the likelihood of observing contamination from other unidentified outfalls or other sources. If sampling conditions permit, more than 10 sampling locations may be utilized, with some samples representing composites of several locations. However, in order to control the possible degradation of analytical sensitivity which may be associated with composite samples, no more than 2 locations will be represented in a single sample. The two samples collected outside the lagoon will provide a local background reference for contaminants, especially heavy metals, which may be expected to occur at significant levels even in sediments not affected by discharges into the lagoon.

All 10 sediment samples will be analyzed for heavy metals by ICP scan, and for PCB's by GC. These appear to be the possible contaminants which are likely to be of greatest interest in the Seaplane Lagoon.

Sampling in the Seaplane Lagoon will require the use of a power boat, both in the lagoon, and outside, in the harbor area. Consideration of base security concerns, and overall project cost indicate that it would be best to use a Navy boat and crew to support this sampling, rather than a private or commercial vessel. Based on our discussions with Mr. Shandling of NAS, Alameda, we understand that a suitable boat and operating personnel will be provided by the Navy.

Buildings 301 and 389

This Work Plan calls for the collection of 10 shallow soil samples in the storage areas adjacent to Buildings 301 and 389. The samples will be collected from the uppermost 12 inches of soil, using a hand-auger, pushed or driven tube sampler, or similar, appropriate sampling tool. Exact sampling locations will be determined in the field, based on visual inspection and/or information developed from site personnel. Recent discussions with Public Works Center personnel indicate that sampling should

be concentrated near the north and west sides of Building 389. An effort will be made to sample those areas which are most likely to be contaminated with PCB's, either from storage of electrical equipment, or from use of PCB's as weed killers. All 10 soil samples will be analyzed for PCB's by GC.

The proposed sampling scheme represents an increase in spatial coverage, at the expense of depth profiling, when compared to the scheme outlined in the IAS. This is justified because lateral spreading of concentrated PCB spills on unsaturated ground may be quite limited and a smaller number of sampling locations would therefore involve a much greater risk of missing a significant contaminant "hot spot". At the same time, it appears that depth profiling, if warranted, could be reasonably postponed until the Characterization Step.

#### CAN-2 Area

This Work Plan calls for the collection of 10 shallow soil samples at a variety of locations within the CAN-2 storage area. The samples will be collected from the uppermost 12 inches of soil, except in the area where soil removal was carried out as part of an earlier PCB spill cleanup operation. In that area, samples will be taken below the level of soil removal, to the best extent that that depth can be identified. Soil samples will be taken using a hand auger, pushed or driven tube sampler, or similar, appropriate sampling tool. Exact sampling locations will be determined in the field, based on visual inspection for evidence of earlier spills, on records of the areas where various materials were previously stored, and on the location of the earlier PCB spill and cleanup.

All 10 soil samples will be analyzed for heavy metals by ICP scan, for PCB's and common chlorinated pesticides by GC, and for total hydrocarbons by GC. The IAS called for PCB, pesticide, and metal analyses on samples from the CAN-2 area. The total hydrocarbon analyses have been added as an expedient means of estimating possible contamination with other organics, such as

solvents, fuels, etc. Navy representatives have expressed concern over such possible contamination during site visits which preceded this Work Plan.

### Building 360

This Work Plan calls for the collection of 10 soil samples from the crawl space beneath the floor of the plating shop. Samples will be taken from areas which show visual signs of contamination, or which are located beneath floor areas judged likely to leak significant quantities of hazardous materials. Any remaining samples will be located so as to optimize overall areal coverage of the crawl space. Soil samples will be taken from the uppermost 8 inches of soil, using a hand auger, pushed or driven tube sampler, spade, trowel, or other appropriate tool, depending on the available clearance and working conditions. All 10 soil samples will be analyzed for heavy metals by ICP scan and for pH and cyanide by wet chemistry.

We understand that some sampling and chemical analysis of soils beneath Building 360 has already taken place. In addition to the sampling and testing program outlined here, we will also review the material from these earlier programs which is provided to us by the Navy. Our Verification Step findings will reflect both the earlier data and our own field and laboratory results.

### Area 97

During earlier investigations around Area 97, Kennedy Engineers (now Kennedy/Jenks Engineers) installed 18 shallow semi-permanent monitoring wells. During recent site visits, 10 of these wells have been located. Six more of the original wells seem to have been obliterated, although some of them may be recoverable by surveying techniques. The condition of the remaining 2 wells is not presently known. The 10 wells which have been located in the field appear to be reasonably intact, based on visual inspection. This Work Plan calls for the cleaning, re-development, and

purging of the 10 currently located Kennedy Engineers' ground water monitoring wells, located roughly as shown on Figure 2. The wells will then be sampled and the samples analyzed for lead and total hydrocarbons, using atomic absorption (AA) and GC respectively. Water levels will be obtained in each well.

In addition, an attempt will be made to locate the remaining 8 original wells by means of surveying. If any of these wells can be recovered, they will be included in the rehabilitation and resampling program with the 10 currently located wells. If sufficient additional original wells cannot be recovered to give an adequate areal distribution of sampling points, especially in the quadrant northwest of Area 97, then up to 3 new monitoring wells will be installed and sampled. The installation of new wells will be contingent on the findings of sampling from the original wells. No new wells would need to be installed at this time, if the existing wells show a pattern of contamination which indicates that Characterization Step work is necessary. If new wells are installed, they would be constructed in a manner consistent with the original wells.

The proposed well locations will give a high probability of encountering the residual gasoline plume, if it still exists, while minimizing the overall amount of drilling in the highly developed part of the base, where the possibility of hitting unidentified or "lost" buried utilities is high. If new wells are installed, consideration will be given to the most likely plume directions, in light of available ground water gradient data, and to the principal that the Verification Step should focus on problem confirmation, not detailed definition.

#### SAMPLING, SAMPLE PRESERVATION, AND CHEMICAL TESTING

Table 1 presents a summary of the testing proposed for the Verification Step. Where applicable, sampling methods and tools will conform to EPA, California, or other recognized guidelines. Ground water samples will be collected with either stainless steel or Teflon/glass bailers. Sediment samples will be obtained with a Ponar grab sampler, which is rated by EPA as

a good general purpose sediment sampler. All sampling and drilling tools will be cleaned before each use with cleaning agents appropriate to the materials being sampled and the conditions of use.

All samples will be packaged and preserved in accordance with applicable EPA or other appropriate agency guidelines. This includes routine field chilling of all samples immediately after packaging, the use of Teflon/silicone rubber septa vials for volatile organics samples, and the use of acid preservatives for metals samples of water. All other applicable sample storage and preservation guidelines will be applied. Both Wahler Associates and Kennedy/Jenks Engineers have thorough practical experience with the requirements of chemical sample handling.

Wherever applicable, chemical testing will be performed in accordance with EPA or other appropriate agency standards. In cases where strict standard methods are not available, generally recognized standard laboratory practices will be utilized.

#### GENERAL CONSIDERATIONS

Before field sampling can begin, the Navy must provide any needed security clearances, gate passes, authorizations to take photographs, and other similar documentation and/or authorizations to Wahler Associates and its subcontractors, including drillers, surveyors, etc. Before drilling begins for the 1943-1956 Disposal Site or the Area 97 site, it will be necessary for the specific drilling locations to be checked by the Navy and any concerned public or private utilities in order to determine if there is any danger of damaging buried utilities during drilling. Wahler Associates cannot accept any liability resulting from damage to buried utilities or other structures not identified during this pre-drilling review.

This Work Plan assumes that suitable maps will be provided by the Navy for purposes of project planning, analysis, and both written and oral presentations. If such maps cannot be provided, then additional work will

need to be authorized in order to allow suitable maps to be prepared. As discussed earlier, this Work Plan also assumes that the Navy will provide a suitable boat and crew to support the Seaplane Lagoon sampling.

As discussed and agreed during contract negotiations, this Work Plan assumes that the Navy will retain responsibility for proper disposal of waste materials (e.g. drill cuttings) generated during the course of the Confirmation Study. Also as discussed and agreed during contract negotiations, the fee negotiated and incorporated into the contract was only intended to cover the nominal scope and level of effort of Verification Step work which was subject to negotiation at that time. Increases in Verification Step scope or level of effort over those used for contract negotiation, and scope and fees for later steps of the study, are subject to negotiation, if those steps are authorized by the Navy.

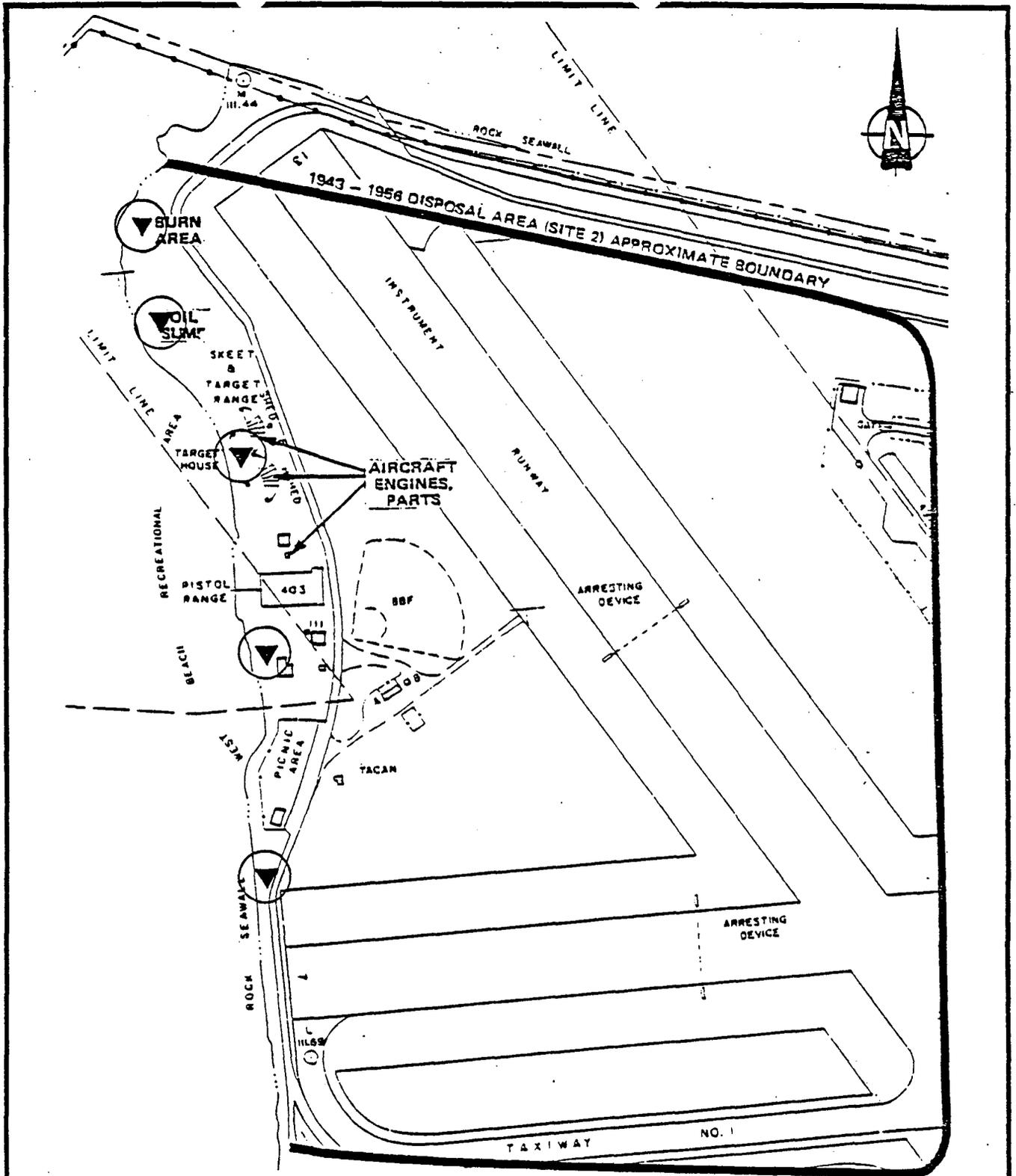
REPRODUCED AT GOVERNMENT EXPENSE

TABLE 1

PROPOSED VERIFICATION STEP TESTING  
CONFIRMATION STUDY, NAS, ALAMEDA, MAY 21, 1984

| <u>Test Description<br/>(Analysis Method)</u>                             | <u>1943-1956<br/>Disposal<br/>Area</u> | <u>Seaplane<br/>Lagoon</u> | <u>Buildings<br/>301 &amp; 389</u> | <u>CAN-2<br/>Area</u> | <u>Building 360<br/>Plating<br/>Shop</u> | <u>Area 97</u> | <u>Total<br/>Number<br/>of Tests</u> |
|---|--|----------------------------|------------------------------------|-----------------------|--|----------------|--------------------------------------|
| 17 metal scan in water (ICP)  | 5                                      |                            |                                    |                       |  |                | 5                                    |
| 17 metal scan in soil (ICP)   |  | 10                         |                                    | 10                    | 10                                       |                | 30                                   |
| PCB's in soil (GC)  |  | 10                         | 10                                 |                       |  |                | 20                                   |
| PCB's and chlorinated<br>pesticides in soil (EPA<br>Method 608, GC)       |  |                            |                                    | 10                    |  |                | 10                                   |
| Petroleum hydrocarbons in<br>water (GC)                                   |  |                            |                                    |                       |  | 15             | 15                                   |
| Petroleum hydrocarbons in<br>soil (GC)                                    |  |                            |                                    | 10                    |  |                | 10                                   |
| Organic Priority Pollutants<br>(EPA Methods 624 & 625,<br>GC/MS)          | 5                                      |                            |                                    |                       |  |                | 5                                    |
| Gross alpha and gross beta  | 5                                      |                            |                                    |                       |  |                | 5                                    |
| Cyanide in soil (wet<br>chemistry)  |  |                            |                                    |                       | 10                                       |                | 10                                   |
| Lead in water (AA)  |  |                            |                                    |                       |  | 15             | 15                                   |
| pH and electrical conductivity<br>of soil/soil extract (wet<br>chemistry) |  |                            |                                    |                       | 10                                       |                | 10                                   |

METHODS KEY: ICP = Inductively-coupled plasma emission spectroscopy  
 GC = Gas Chromatography  
 GC/MS = Gas Chromatography with Mass Spectrometer  
 AA = Atomic Absorption



After: Initial Assessment Study, NAS, Alameda



Approximate Proposed Well Locations

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**W** Wahler  
Associates

CONFIRMATION STUDY  
NAS, ALAMEDA

1943-1956 Disposal Area  
Approximate Proposed Well Locations

PALO ALTO • NEWPORT BEACH • DENVER

PROJECT NO.

DATE

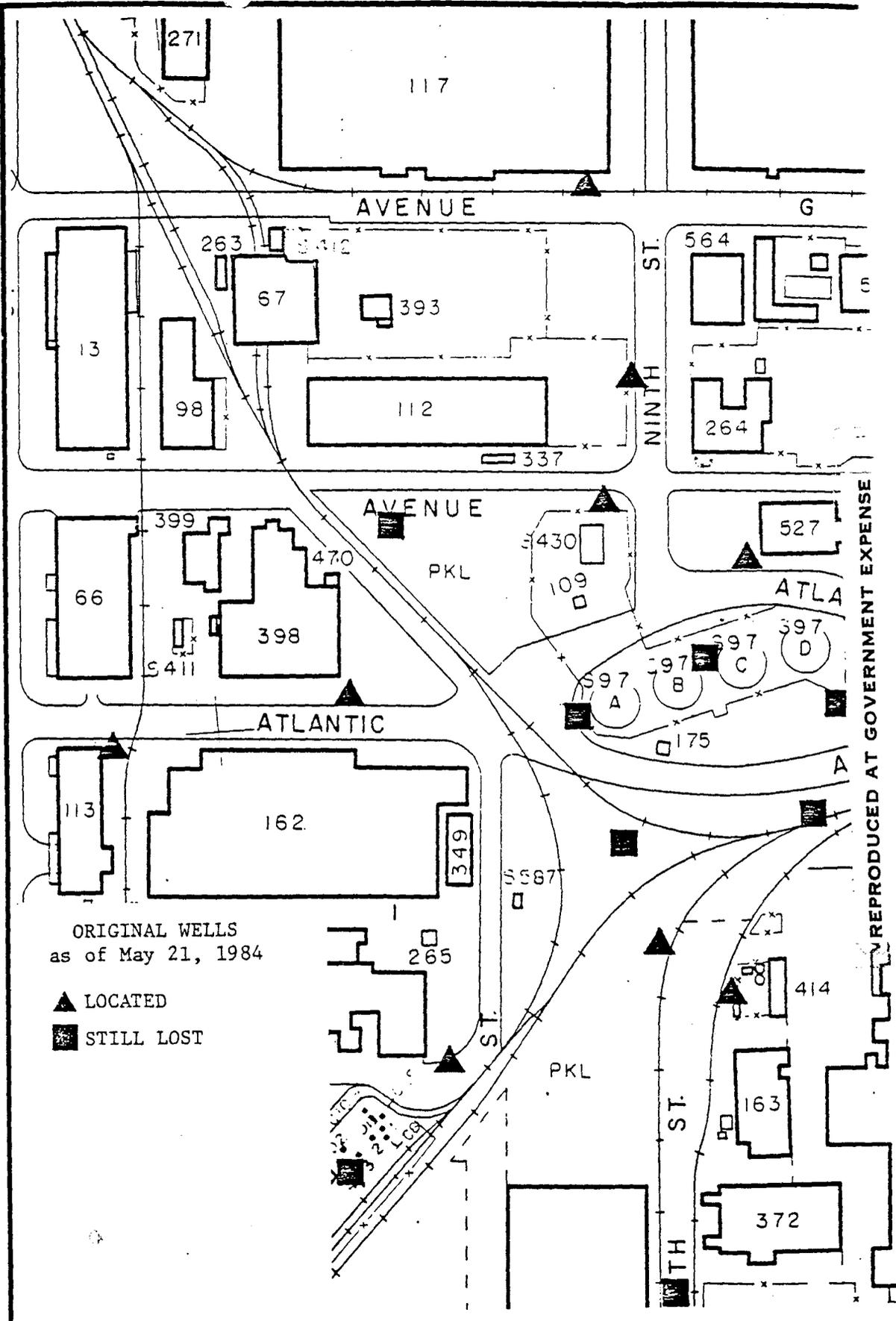
FIGURE NO.

NAV-112A

MAY 21, 1984

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154W



ORIGINAL WELLS  
as of May 21, 1984

- ▲ LOCATED
- STILL LOST

**Wahler Associates**

CONFIRMATION STUDY  
NAS, ALAMEDA

AREA 97 - ORIGINAL WELLS

PALO ALTO • NEWPORT BEACH • DENVER

| PROJECT NO. | DATE         | FILE NO. |
|-------------|--------------|----------|
| NAV-112A    | MAY 21, 1984 |          |

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