

November 1990

86-018-1810

PHASE 2A SURVEY DATA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

ENCLOSURE 15

Prepared for Western Division Naval Facilities Engineering Command

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Canonie Environmental

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November 9, 1990

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Ms. Bella Dizon (Code 1813BD)
Western Division Naval Facilities
Engineering Command
PO Box 727
San Bruno, CA 94066-0727

Phase 2A Survey Data
Remedial Investigation/Feasibility Study
Naval Air Station Alameda
Alameda, California

Dear Ms. Dizon:

This letter report presents the survey results obtained during Phase 2A of the Remedial Investigation/Feasibility Study (RI/FS) at Naval Air Station (NAS) Alameda. During August 28 through September 7, 1990; boring locations, monitoring well locations, soil gas survey points, and surface soil sampling locations were established by vertical and horizontal surveys for each of the Phase 2A sites, including Building 360, Building 547, Yard D-13, Building 410, Building 530, Oil Refinery, Cans C-2 Area, and Area 97. The survey data contain both coordinate and elevation information for each sampling location as presented in Table 1. In addition, site plans (Figures 1 through 4) showing each sampling location are provided.

Several problems were encountered during the course of the survey work. Prior to commencing field activities, we discovered that NAS Alameda currently uses different coordinate systems for establishing their horizontal ground control. Information regarding these coordinate systems was gathered by Canonie personnel from the NAS Alameda Facilities Management office. The information search showed that NAS Alameda personnel use two different coordinate systems, the California Grid System (California Zone III Coordinates) and the NAS Alameda General Development Map. As originally discussed in the Quality Assurance Project Plan, Volume 3 of the RI/FS Work Plan for NAS Alameda, horizontal and vertical ground control coordinates were to be established using the California Grid System. On the basis of further discussion with the U.S. Navy Surveyor from the Naval Supply Center, Canonie decided to use the survey monuments shown on the NAS Alameda General Development Map. This system was chosen because the U.S. Navy Surveyor could only furnish one set of California Zone III Coordinates for one of our survey monuments within our field traverse.

November 9, 1990

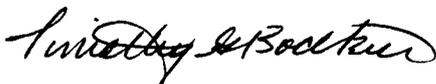
Upon completion of the field work and office data reduction, Canonie was then informed by the U.S. Navy Surveyor that the vertical datum on the NAS Alameda General Development Map (NAVFAC Drawing No. 638456, Revision 8, dated September 15, 1986) was incorrect. Because the office calculations already had been performed and the vertical datum was considered invalid, field measurements had to be recalculated using updated information from PWC Drawing No. 25144 provided by the Navy Surveyor. The surveyor emphasized that even this updated vertical datum was established before the October 1989 Loma Prieta earthquake and that this vertical datum had not recently been field-verified.

After further review of the PWC drawing, we noted that the two bench marks (vertical datums), on which the level loops were based, were shown on the NAVFAC drawing but not on the PWC drawing. Three monitoring wells, MW97-1 through MW97-3, whose elevations were established within this loop, could not be linked to the new vertical datum. Because the new vertical datum varies by as much as 0.50 feet from the previous datum, additional field work would be needed to make these elevations consistent with the other sampling point elevations. These elevations outside of Area 97 are based on the new vertical datum.

The results of the traverse network also exhibited a horizontal deviation of up to 0.40 feet using the base control coordinates shown on NAVFAC Drawing No. 638456. Numerous survey monuments were reportedly tied into the traverse network during the field survey. After further review of the survey data, it was determined that only two survey monument coordinates (Monuments No. 25 and No. 27) could be used to properly close the traverse network. The coordinate of Monuments No. 25 and No. 27 were used as the basis for calculation of the backsight bearing from Monument No. 25 to Monument No. 27 and of the coordinates of other points on the traverse.

If you have any questions regarding these results, please call me at (415) 573-8012.

Respectfully submitted,



Timothy G. Bodkin, R.G.
Senior Project Scientist

TGB/kw

LIST OF TABLES

TABLE
NUMBER

TITLE

1

Phase 2A Survey Data

LIST OF FIGURES

<u>FIGURE NUMBER</u>	<u>DRAWING NUMBER</u>	<u>TITLE</u>
1	86-018-E87	Phase 2A Monitoring Well and Soil Boring Locations
2	86-018-E98	Cans C-2 Area Site Plan
3	86-018-E94	Soil Gas Survey Locations for Area 97
4	86-018-E95	Soil Gas Survey Locations for Building 547

TABLE 1
 PHASE 2A SURVEY DATA
 NAS ALAMEDA
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>		<u>Elevation (feet)</u>	<u>Remarks</u>
BUILDING 360	MW360-1	S 2078.7	E 2832.4	113.19	Top of Christy Box
				112.72	Top of PVC Casing
	MW360-2	S 2508.9	E 2724.8	114.27	Top of Christy Box
				113.76	Top of PVC Casing
	MW360-3	S 2691.3	E 2901.7	114.28	Top of Christy Box
				113.85	Top of PVC Casing
	MW360-4	S 2277.1	E 3130.2	113.90	Top of Christy Box
				113.66	Top of PVC Casing
	B360-5	S 2286.2	E 2757.7	114.7	Ground Surface
	B360-6	S 2455.8	E 2753.6	114.2	Ground Surface
B360-7	S 2615.4	E 2727.7	114.0	Ground Surface	
B360-8	S 2655.4	E 3154.0	113.9	Ground Surface	
B360-9	S 2369.3	E 3153.6	113.8	Ground Surface	
BUILDING 547	MW547-1	S 2697.1	E 3204.8	114.58	Top of Christy Box
				114.27	Top of PVC Casing
	MW547-2	S 2688.6	E 3486.6	113.87	Top of Christy Box
				113.50	Top of PVC Casing
	MW547-3	S 2880.9	E 3267.6	115.61	Top of Christy Box
				115.19	Top of PVC Casing
	MW547-4	S 2914.5	E 3212.4	114.68	Top of Christy Box
				114.17	Top of PVC Casing
	MW547-5	S 2880.6	E 3465.4	114.68	Top of Christy Box
				114.30	Top of PVC Casing
	B547-6	S 2718.1	E 3433.4	114.8	Ground Surface
	B547-7	S 2769.8	E 3282.1	116.2	Ground Surface
	B547-8	S 2773.4	E 3332.5	116.2	Ground Surface
	B547-9	S 2845.4	E 3192.2	114.0	Ground Surface
	B547-10	S 2915.3	E 3304.5	114.9	Ground Surface
	L-0	S 2655.4	E 3154.0	113.8	Ground Surface
	L-1	S 2650.5	E 3203.4	114.5	Ground Surface
	L-2	S 2648.5	E 3246.3	114.8	Ground Surface
	L-3	S 2646.5	E 3292.4	114.9	Ground Surface
	L-4	S 2644.3	E 3343.9	115.0	Ground Surface
L-5	S 2643.0	E 3395.5	114.7	Ground Surface	
L-6	S 2640.6	E 3455.8	114.2	Ground Surface	
L-7	S 2641.5	E 3500.8	113.8	Ground Surface	

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 NAS ALAMEDA
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>		<u>Elevation (feet)</u>	<u>Remarks</u>
BUILDING 547	L-8	S 2636.2	E 3517.0	113.4	Ground Surface
	M-0	S 2696.4	E 3155.4	113.9	Ground Surface
	M-1	S 2695.3	E 3204.6	114.6	Ground Surface
	M-2	S 2700.3	E 3248.8	114.8	Ground Surface
	M-3	S 2697.8	E 3292.9	115.5	Ground Surface
	M-4	S 2694.6	E 3341.9	115.8	Ground Surface
	M-6	S 2701.3	E 3437.0	115.7	Ground Surface
	M-7	S 2692.7	E 3486.0	113.9	Ground Surface
	M-8	S 2690.5	E 3517.9	113.4	Ground Surface
	N-0	S 2755.9	E 3157.2	114.1	Ground Surface
	N-1	S 2758.9	E 3206.6	114.5	Ground Surface
	N-2	S 2752.3	E 3249.5	115.5	Ground Surface
	N-3	S 2752.2	E 3295.1	116.0	Ground Surface
	N-4	S 2751.6	E 3348.8	116.0	Ground Surface
	N-5	S 2750.6	E 3395.0	115.6	Ground Surface
	N-6	S 2743.5	E 3439.3	114.8	Ground Surface
	N-7	S 2741.7	E 3488.6	114.0	Ground Surface
	N-8	S 2750.1	E 3520.6	113.4	Ground Surface
	O-0	S 2808.6	E 3158.6	114.2	Ground Surface
	O-1	S 2805.9	E 3207.8	114.6	Ground Surface
	O-2	S 2803.5	E 3250.9	116.4	Ground Surface
	O-3	S 2797.7	E 3297.1	116.4	Ground Surface
	O-4	S 2794.5	E 3347.0	116.5	Ground Surface
	O-5	S 2797.1	E 3394.3	115.4	Ground Surface
	O-6	S 2801.7	E 3443.8	116.6	Ground Surface
	O-7	S 2798.9	E 3487.9	113.8	Ground Surface
	P-0	S 2858.1	E 3159.7	113.9	Ground Surface
	P-1	S 2855.6	E 3208.4	114.5	Ground Surface
	P-2	S 2853.8	E 3253.4	115.9	Ground Surface
	P-3	S 2852.8	E 3303.1	116.0	Ground Surface
	P-4	S 2851.0	E 3351.1	115.9	Ground Surface
	P-5	S 2849.8	E 3394.5	115.1	Ground Surface
	P-6	S 2847.8	E 3445.1	115.1	Ground Surface
	P-7	S 2848.3	E 3490.8	114.0	Ground Surface
	P-8	S 2844.8	E 3523.0	113.7	Ground Surface
	Q-0	S 2905.2	E 3161.3	113.5	Ground Surface
	Q-1	S 2902.8	E 3209.8	114.5	Ground Surface
	Q-2	S 2903.1	E 3256.3	115.4	Ground Surface
	Q-3	S 2903.2	E 3303.9	115.1	Ground Surface
	Q-4	S 2903.5	E 3351.0	115.4	Ground Surface

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<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>		<u>Elevation (feet)</u>	<u>Remarks</u>
BUILDING 547	Q-5	S 2901.8	E 3397.6	115.4	Ground Surface
	Q-5.5	S 2878.7	E 3392.0	115.3	Ground Surface
	Q-6	S 2899.3	E 3437.2	114.8	Ground Surface
	Q-7	S 2892.2	E 3491.1	114.3	Ground Surface
	Q-8	S 2902.6	E 3525.6	113.7	Ground Surface
	R-0	S 2953.6	E 3163.0	113.3	Ground Surface
	R-1	S 2967.5	E 3218.5	114.2	Ground Surface
	R-2	S 2969.3	E 3258.0	114.5	Ground Surface
	R-3	S 2966.8	E 3305.3	114.5	Ground Surface
	R-4	S 2967.3	E 3359.1	114.5	Ground Surface
	R-5	S 2966.1	E 3395.9	114.3	Ground Surface
	R-7	S 2948.7	E 3486.0	113.9	Ground Surface
	R-8	S 2948.6	E 3526.3	113.8	Ground Surface
YARD D13	MWD13-1	S 2661.2	E 2637.0	114.57	Top of Christy Box
				114.02	Top of PVC Casing
	MWD13-2	S 2724.6	E 2636.3	113.90	Top of Christy Box
				113.58	Top of PVC Casing
	MWD13-3	S 2896.4	E 2554.5	114.36	Top of Christy Box
				114.12	Top of PVC Casing
	MWD13-4	S 2928.7	E 2636.5	115.69	Top of Christy Box
				115.31	Top of PVC Casing
	BD13-5	S 2678.5	E 2572.9	113.9	Ground Surface
	BD13-6	S 2684.4	E 2629.7	114.1	Ground Surface
	BD13-7	S 2678.5	E 2690.7	114.1	Ground Surface
	BD13-8	S 2764.1	E 2577.3	114.5	Ground Surface
	BD13-9	S 2762.7	E 2627.4	114.7	Ground Surface
	BD13-10	S 2755.9	E 2688.2	114.6	Ground Surface
	BD13-11	S 2828.6	E 2560.2	114.2	Ground Surface
	BD13-12	S 2838.4	E 2626.7	115.6	Ground Surface
	BD13-13	S 2845.8	E 2688.9	114.9	Ground Surface
	BD13-14	S 2907.9	E 2590.0	115.2	Ground Surface
	BD13-15	S 2907.6	E 2627.6	115.5	Ground Surface
	BD13-16	S 2914.8	E 2678.4	115.0	Ground Surface
BUILDING 410	MW410-1	S 3572.1	E 2401.2	114.75	Top of Christy Box
				114.03	Top of PVC Casing

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<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>		<u>Elevation (feet)</u>	<u>Remarks</u>
BUILDING 410	MW410-2	S 3834.5	E 2246.4	115.47	Top of Christy Box
				114.78	Top of PVC Casing
	MW410-3	S 3939.5	E 2367.7	113.98	Top of Christy Box
				113.40	Top of PVC Casing
	MW410-4	S 3779.1	E 2593.2	114.64	Top of Christy Box
				113.94	Top of PVC Casing
	B410-5	S 3616.8	E 2249.4	114.9	Ground Surface
	B410-6	S 3532.7	E 2545.0	114.6	Ground Surface
	B410-7	S 3694.5	E 2498.7	114.9	Ground Surface
B410-8	S 3797.4	E 2457.3	115.1	Ground Surface	
B410-9	S 3893.6	E 2499.7	114.9	Ground Surface	
BUILDING 530	MW530-1	S 3551.1	E 3158.2	114.11	Top of Christy Box
				113.79	Top of PVC Casing
	MW530-2	S 3859.6	E 2931.8	114.47	Top of Christy Box
				113.86	Top of PVC Casing
	MW530-3	S 4054.4	E 2854.1	112.67	Top of Christy Box
				112.31	Top of PVC Casing
OIL REFINERY	MWOR-1	S 3003.4	E 2868.6	114.41	Top of Christy Box
				113.84	Top of PVC Casing
	MWOR-2	S 3461.5	E 2532.9	114.12	Top of Christy Box
				113.60	Top of PVC Casing
	MWOR-3	S 3265.9	E 3206.4	114.82	Top of Christy Box
				114.40	Top of PVC Casing
	MWOR-4	S 3624.8	E 3643.1	113.40	Top of Christy Box
				113.01	Top of PVC Casing
	MWOR-5	S 3863.7	E 3734.3	113.83	Top of Christy Box
				113.16	Top of PVC Casing
	BOR-6	S 2843.0	E 2919.3	114.7	Ground Surface
	BOR-7	S 2842.5	E 3070.8	114.4	Ground Surface
	BOR-8	S 3157.2	E 2579.0	114.5	Ground Surface
	BOR-9	S 3170.8	E 2900.4	114.6	Ground Surface
BOR-10	S 3239.7	E 2565.2	114.7	Ground Surface	
BOR-11	S 3463.6	E 2825.5	114.4	Ground Surface	
BOR-12	S 3535.7	E 2914.0	114.6	Ground Surface	
BOR-13	S 3381.2	E 2903.2	114.7	Ground Surface	
BOR-14	S 3045.0	E 3073.3	114.2	Ground Surface	

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<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>		<u>Elevation (feet)</u>	<u>Remarks</u>
OIL REFINERY	BOR-15	S 3143.2	E 3238.5	114.7	Ground Surface
	BOR-16	S 3098.1	E 3617.0	113.3	Ground Surface
	BOR-17	S 3353.3	E 3245.6	114.8	Ground Surface
	BOR-18	S 3249.8	E 3599.7	113.6	Ground Surface
	BOR-19	S 3463.4	E 3162.6	113.9	Ground Surface
	BOR-20	S 3786.2	E 2752.1	114.0	Ground Surface
	BOR-21	S 3637.2	E 3221.4	113.5	Ground Surface
	BOR-22	S 3742.4	E 3212.5	114.0	Ground Surface
	BOR-23	S 3741.1	E 3366.5	113.2	Ground Surface
	BOR-24	S 3707.3	E 3664.8	113.8	Ground Surface
	BOR-25	S 4037.1	E 3191.2	114.6	Ground Surface
	BOR-26	S 4036.5	E 3437.8	113.6	Ground Surface
	BOR-27	S 4033.5	E 3746.5	114.3	Ground Surface
CANS C2 AREA	MWC2-1	S 4090.7	E 3334.5	113.41	Top of Christy Box
				112.96	Top of PVC Casing
	MWC2-2	S 4273.4	E 3221.5	114.79	Top of Christy Box
				114.02	Top of PVC Casing
	MWC2-3	S 4667.3	E 3353.8	112.43	Top of Christy Box
				111.72	Top of PVC Casing
	BC2-4	S 4183.9	E 3316.3	113.8	Ground Surface
	BC2-5	S 4281.6	E 3311.4	114.2	Ground Surface
	BC2-6	S 4278.1	E 3403.5	114.5	Ground Surface
	BC2-7	S 4409.6	E 3300.9	114.3	Ground Surface
	BC2-8	S 4517.3	E 3253.3	113.6	Ground Surface
	BC2-9	S 4570.0	E 3332.8	113.0	Ground Surface
	SSC2-1	S 4098.9	E 3240.9	114.2	Ground Surface
	SSC2-2	S 4144.0	E 3233.2	114.2	Ground Surface
	SSC2-3	S 4184.3	E 3232.0	114.3	Ground Surface
	SSC2-4	S 4228.3	E 3232.2	114.4	Ground Surface
	SSC2-5	S 4267.7	E 3230.1	114.5	Ground Surface
	SSC2-6	S 4304.7	E 3231.8	114.5	Ground Surface
	SSC2-7	S 4335.8	E 3231.7	114.6	Ground Surface
	SSC2-8	S 4384.4	E 3231.1	114.6	Ground Surface
	SSC2-9	S 4455.6	E 3230.8	114.2	Ground Surface
	SSC2-10	S 4554.9	E 3231.4	113.7	Ground Surface
	SSC2-11	S 4087.3	E 3288.7	113.9	Ground Surface
	SSC2-12	S 4131.1	E 3293.0	113.7	Ground Surface

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<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>		<u>Elevation (feet)</u>	<u>Remarks</u>
CANS C2 AREA	SSC2-13	S 4179.9	E 3294.5	113.7	Ground Surface
	SSC2-14	S 4221.2	E 3294.4	114.0	Ground Surface
	SSC2-15	S 4256.5	E 3290.5	114.2	Ground Surface
	SSC2-16	S 4283.2	E 3296.1	114.3	Ground Surface
	SSC2-17	S 4329.3	E 3290.0	114.3	Ground Surface
	SSC2-18	S 4382.1	E 3293.3	114.4	Ground Surface
	SSC2-19	S 4446.2	E 3296.3	114.1	Ground Surface
	SSC2-20	S 4534.7	E 3297.1	113.2	Ground Surface
	SSC2-21	S 4097.4	E 3323.0	113.4	Ground Surface
	SSC2-22	S 4127.0	E 3334.8	113.5	Ground Surface
	SSC2-23	S 4172.8	E 3333.7	113.5	Ground Surface
	SSC2-24	S 4217.0	E 3334.1	113.7	Ground Surface
	SSC2-25	S 4257.8	E 3339.4	114.0	Ground Surface
	SSC2-26	S 4284.9	E 3341.0	114.2	Ground Surface
	SSC2-27	S 4323.8	E 3340.7	114.5	Ground Surface
	SSC2-28	S 4376.8	E 3343.8	114.4	Ground Surface
	SSC2-29	S 4454.4	E 3356.3	113.8	Ground Surface
	SSC2-30	S 4501.2	E 3350.7	113.3	Ground Surface
	SSC2-31	S 4094.1	E 3376.3	113.3	Ground Surface
	SSC2-32	S 4156.6	E 3392.5	113.4	Ground Surface
	SSC2-33	S 4203.1	E 3390.6	113.7	Ground Surface
	SSC2-34	S 4244.8	E 3391.1	114.2	Ground Surface
	SSC2-35	S 4286.6	E 3393.8	114.4	Ground Surface
	SSC2-36	S 4325.1	E 3390.4	114.6	Ground Surface
	SSC2-37	S 4386.4	E 3395.1	114.3	Ground Surface
	SSC2-38	S 4455.1	E 3396.6	113.8	Ground Surface
	SSC2-39	S 4501.9	E 3396.4	113.5	Ground Surface
	SSC2-40	S 4538.4	E 3396.0	113.2	Ground Surface
	SSC2-41	S 4106.7	E 3433.2	113.7	Ground Surface
	SSC2-42	S 4156.7	E 3436.0	113.7	Ground Surface
	SSC2-43	S 4197.8	E 3435.3	113.9	Ground Surface
	SSC2-44	S 4246.6	E 3419.6	114.5	Ground Surface
	SSC2-45	S 4286.8	E 3434.1	114.7	Ground Surface
	SSC2-46	S 4341.9	E 3434.5	114.5	Ground Surface
	SSC2-47	S 4385.8	E 3435.9	114.1	Ground Surface
	SSC2-48	S 4449.8	E 3433.6	114.3	Ground Surface
	SSC2-49	S 4499.9	E 3431.0	114.0	Ground Surface
	SSC2-50	S 4532.9	E 3431.4	113.9	Ground Surface
	SSC2-51	S 4148.2	E 3491.7	113.9	Ground Surface
	SSC2-52	S 4290.1	E 3491.3	114.5	Ground Surface

TABLE 1
 PHASE 2A SURVEY DATA
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<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>		<u>Elevation (feet)</u>	<u>Remarks</u>
CANS C2 AREA	SSC2-53	S 4343.8	E 3489.5	114.5	Ground Surface
	SSC2-54	S 4391.0	E 3491.3	114.5	Ground Surface
	SSC2-55	S 4441.1	E 3497.3	114.3	Ground Surface
AREA 97	MW97-1	S 1432.7	E 2654.4	113.61	Top of Christy Box
				113.10	Top of PVC Casing
	MW97-2	S 1691.4	E 2876.1	112.68	Top of Christy Box
				112.36	Top of PVC Casing
	MW97-3	S 1819.7	E 2537.4	113.90	Top of Christy Box
				113.60	Top of PVC Casing
	A-1	S 1412.5	E 1588.0	111.3	Ground Surface
	A-2	S 1470.1	E 1729.1	112.8	Ground Surface
	A-3	S 1491.9	E 1801.5	112.5	Ground Surface
	A-4	S 1435.5	E 1914.4	113.2	Ground Surface
	A-5	S 1366.7	E 2041.5	113.4	Ground Surface
	A-6	S 1368.4	E 2125.3	113.4	Ground Surface
	A-7	S 1367.4	E 2237.3	113.5	Ground Surface
	A-8	S 1431.5	E 2337.2	115.3	Ground Surface
	A-9	S 1423.7	E 2454.5	113.3	Ground Surface
	A-12	S 1417.7	E 2792.1	113.5	Ground Surface
	A-13	S 1423.1	E 2876.7	113.6	Ground Surface
	A-14	S 1416.6	E 2967.1	113.5	Ground Surface
	A-15	S 1415.2	E 3062.5	114.1	Ground Surface
	B-1	S 1550.8	E 1587.4	111.2	Ground Surface
	B-2	S 1550.0	E 1686.7	112.3	Ground Surface
	B-3	S 1555.9	E 1809.6	112.4	Ground Surface
	B-4	S 1550.1	E 1913.2	112.9	Ground Surface
	B-5	S 1543.1	E 2059.4	113.1	Ground Surface
	B-6	S 1541.1	E 2159.9	113.7	Ground Surface
	B-7	S 1542.8	E 2271.8	114.2	Ground Surface
	B-8	S 1542.2	E 2356.9	113.9	Ground Surface
	B-9	S 1540.9	E 2455.7	113.7	Ground Surface
	B-10	S 1544.4	E 2560.3	113.9	Ground Surface
	B-11	S 1543.6	E 2654.9	114.0	Ground Surface
	B-12	S 1546.2	E 2768.8	114.2	Ground Surface
B-13	S 1545.8	E 2870.4	114.0	Ground Surface	
B-14	S 1545.8	E 2957.0	113.8	Ground Surface	
B-15	S 1540.9	E 3058.8	113.5	Ground Surface	
C-1	S 1686.3	E 1585.0	111.3	Ground Surface	
C-2	S 1603.4	E 1744.4	112.6	Ground Surface	

TABLE 1
 PHASE 2A SURVEY DATA
 NAS ALAMEDA
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>	<u>Elevation (feet)</u>	<u>Remarks</u>
AREA 97	C-3	S 1622.3 E 1794.0	113.3	Ground Surface
	C-4	S 1629.4 E 1871.1	113.6	Ground Surface
	C-5	S 1635.2 E 2062.2	114.1	Ground Surface
	C-6	S 1637.8 E 2165.7	114.1	Ground Surface
	C-7	S 1636.9 E 2268.4	114.9	Ground Surface
	C-8	S 1623.1 E 2356.1	114.4	Ground Surface
	C-10	S 1636.8 E 2569.5	113.6	Ground Surface
	C-11	S 1644.0 E 2671.0	113.9	Ground Surface
	C-12	S 1644.0 E 2778.2	113.8	Ground Surface
	C-13	S 1662.6 E 2868.4	113.3	Ground Surface
	C-14	S 1668.5 E 2960.8	113.1	Ground Surface
	D-1	S 1753.7 E 1582.8	111.1	Ground Surface
	D-2	S 1711.6 E 1744.3	112.7	Ground Surface
	D-3	S 1706.5 E 1813.0	112.5	Ground Surface
	D-5	S 1680.7 E 2026.3	114.0	Ground Surface
	D-6	S 1732.0 E 2170.0	113.5	Ground Surface
	D-7	S 1718.1 E 2270.0	114.1	Ground Surface
	D-8	S 1703.6 E 2346.2	113.5	Ground Surface
	D-9	S 1680.6 E 2474.1	113.5	Ground Surface
	D-10	S 1709.4 E 2542.3	113.6	Ground Surface
	D-11	S 1720.8 E 2685.3	114.4	Ground Surface
	D-14	S 1755.1 E 2961.0	112.9	Ground Surface
	E-1	S 1807.5 E 1588.0	110.8	Ground Surface
	E-2	S 1808.1 E 1745.4	112.6	Ground Surface
	E-3	S 1806.4 E 1837.3	112.9	Ground Surface
	E-4	S 1818.9 E 1919.5	113.5	Ground Surface
	E-5	S 1820.5 E 2017.5	113.4	Ground Surface
	E-6	S 1804.2 E 2164.7	113.8	Ground Surface
	E-7	S 1778.3 E 2270.2	113.7	Ground Surface
	E-8	S 1806.0 E 2367.3	113.4	Ground Surface
	E-9	S 1802.7 E 2450.9	114.9	Ground Surface
	E-12	S 1814.6 E 2773.2	113.5	Ground Surface
	E-13	S 1807.0 E 2870.0	113.1	Ground Surface
	F-1	S 1894.5 E 1584.3	110.8	Ground Surface
	F-2	S 1893.5 E 1721.8	112.7	Ground Surface
F-3	S 1894.9 E 1827.8	112.3	Ground Surface	
F-4	S 1892.5 E 1922.5	112.5	Ground Surface	
F-5	S 1885.1 E 2023.1	113.2	Ground Surface	
F-6	S 1895.0 E 2161.1	113.6	Ground Surface	
F-7	S 1902.6 E 2263.4	114.1	Ground Surface	

TABLE 1
 PHASE 2A SURVEY DATA
 NAS ALAMEDA
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>	<u>Elevation (feet)</u>	<u>Remarks</u>
AREA 97	F-8	S 1892.3 E 2357.5	113.7	Ground Surface
	F-9	S 1907.2 E 2453.7	113.1	Ground Surface
	F-10	S 1912.3 E 2530.4	113.4	Ground Surface
	F-11	S 1890.0 E 2687.5	113.1	Ground Surface
	F-13	S 1933.5 E 2861.3	113.2	Ground Surface
	F-14	S 1936.4 E 2958.6	114.0	Ground Surface
	F-15	S 1908.7 E 3063.3	113.9	Ground Surface
	G-1	S 2055.3 E 1580.6	111.1	Ground Surface
	G-2	S 2012.1 E 1713.5	112.8	Ground Surface
	G-6	S 2042.0 E 2214.3	113.9	Ground Surface
	G-7	S 2033.7 E 2252.6	113.6	Ground Surface
	G-8	S 2038.6 E 2403.3	114.0	Ground Surface
	G-9	S 2086.0 E 2481.9	113.0	Ground Surface
	G-10	S 2051.6 E 2573.1	112.9	Ground Surface
	G-11	S 2049.1 E 2662.6	113.3	Ground Surface
	G-13	S 2037.2 E 2858.7	113.0	Ground Surface
	H-1	S 2124.3 E 1581.5	110.9	Ground Surface
	H-2	S 2123.1 E 1659.3	111.9	Ground Surface
	H-3	S 2134.7 E 1795.2	114.0	Ground Surface
	H-4	S 2141.2 E 1954.5	114.3	Ground Surface
	H-5	S 2143.5 E 2063.2	113.8	Ground Surface
	H-6	S 2140.2 E 2186.7	113.8	Ground Surface
	H-7	S 2140.6 E 2254.4	113.9	Ground Surface
	H-8	S 2141.6 E 2382.3	113.3	Ground Surface
	H-9	S 2144.9 E 2490.4	113.3	Ground Surface
	H-10	S 2131.6 E 2569.7	113.5	Ground Surface
	H-11	S 2132.6 E 2666.1	113.9	Ground Surface
	H-12	S 2133.1 E 2756.7	114.3	Ground Surface
	H-13	S 2120.7 E 2855.8	114.3	Ground Surface
	I-1	S 2210.2 E 1584.5	111.4	Ground Surface
	I-2	S 2200.0 E 1707.0	112.6	Ground Surface
	I-5	S 2202.2 E 2071.5	114.4	Ground Surface
	I-7	S 2232.3 E 2250.1	114.3	Ground Surface
	J-1	S 2345.3 E 1585.1	111.5	Ground Surface
	J-2	S 2340.2 E 1688.3	112.6	Ground Surface
	J-3	S 2351.6 E 1836.5	113.0	Ground Surface
	J-4	S 2354.6 E 2015.6	113.4	Ground Surface
	J-5	S 2348.2 E 2143.3	113.5	Ground Surface
	J-6	S 2348.4 E 2193.6	113.6	Ground Surface
	J-7	S 2343.8 E 2261.0	113.8	Ground Surface

TABLE 1
 PHASE 2A SURVEY DATA
 NAS ALAMEDA
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

<u>Site</u>	<u>Boring/ Well No.</u>	<u>Coordinates</u>		<u>Elevation (feet)</u>	<u>Remarks</u>
AREA 97	K-1	S 2451.3	E 1582.3	111.6	Ground Surface
	K-2	S 2441.6	E 1700.8	112.6	Ground Surface
	K-3	S 2439.5	E 1847.4	112.5	Ground Surface
	K-4	S 2433.7	E 2017.0	112.7	Ground Surface
	K-5	S 2429.6	E 2159.5	113.2	Ground Surface
	K-6	S 2455.0	E 2222.8	113.7	Ground Surface
	K-7	S 2435.3	E 2288.6	114.3	Ground Surface
	K-8	S 2428.0	E 2383.3	114.5	Ground Surface

Notes:

1. Basis of Coordinates:

Alameda Naval Air Station Base Grid

- a. Monument Number 25: Brass plug in concrete
 S 3510.00 E 2900.00
- b. Monument Number 27: Nail Shiner in AC Pavement
 S 3000.00 E 3200.00

Reference: Naval Air Station Alameda, Alameda, California, General Development Map, Station Map with Survey Monuments added, NAVFAC Drawing No. 638456, Revision 8, dated September 15, 1986.

2. Bench Mark:

- a. "X" in concrete threshold at south end of hangar door, southwest corner of Building 410 (Mon. Ref. No. 22) per Naval Air Station, Alameda, California, Station Bench Map, Station Map with Survey Monuments added, NAVFAC Drawing No. 638456, Revision 8, dated September 15, 1986.
 Elevation 115.532
- b. Elevations based on concrete footing at the northwest corner of Building 70-A (Mon. Ref. No. 32) per Naval Air Station Alameda, Alameda, California, General Development Map, Station Map with Survey Monuments added, NAVFAC Drawing No. 638456, Revision 8, dated September 15, 1986.
 Elevation 112.37

TABLE 1
PHASE 2A SURVEY DATA
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

3. Well and boring elevations obtained by field survey dated August 28 through September 7, 1990.
4. All vertical and horizontal datums, as shown on the maps mentioned above, were established prior to the earthquake of October 1989.
5. Abbreviations:

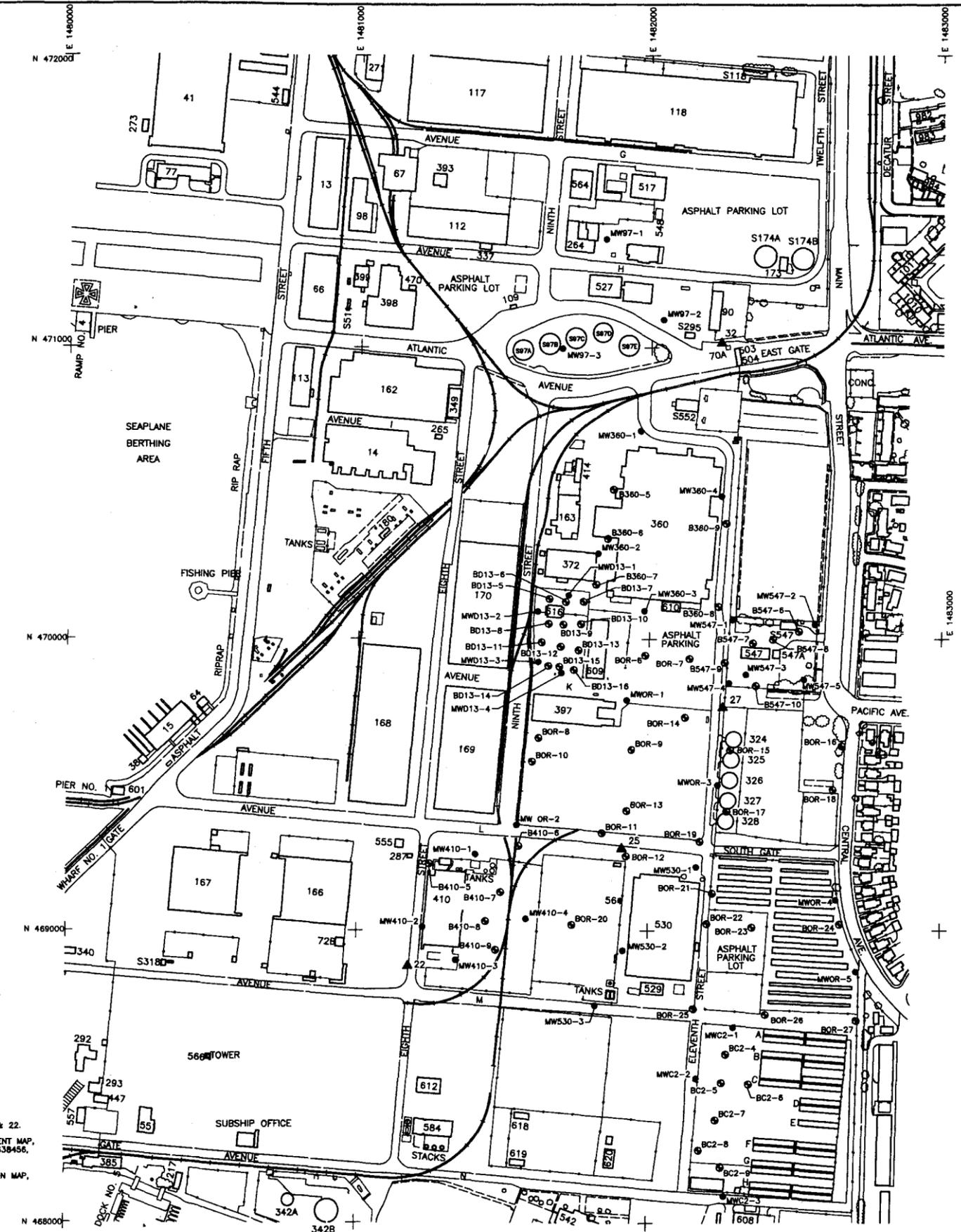
MW denotes Monitoring Well

B denotes Boring

L-0 denotes Soil Gas Survey Row and Point Number

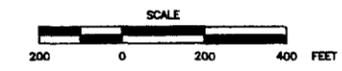
SS denotes Surface Soil Sample

DRAWING NUMBER 86-018-E87



LEGEND:

- B360-5 SOIL BORING LOCATION
- MW97-2 MONITORING WELL LOCATION
- ▲ 22 SURVEY MONUMENT



**PHASE 2A
MONITORING WELL AND
SOIL BORING LOCATIONS
NAVAL AIR STATION
ALAMEDA, CALIFORNIA**

PREPARED FOR
WESTERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA

- REFERENCES:**
1. NAVAL AIR STATION ALAMEDA GENERAL DEVELOPMENT MAP, SHEETS 18 & 22.
 2. NAVAL AIR STATION ALAMEDA, ALAMEDA, CALIFORNIA GENERAL DEVELOPMENT MAP, STATION MAP WITH SURVEY MONUMENTS ADDED, NAVFAC DRAWING NO. 838456, REVISION B, DATED SEPTEMBER 15, 1986.
 3. NAVAL AIR STATION, ALAMEDA, CALIFORNIA, STATION BENCHMARK LOCATION MAP, PWC DRAWING NO. 25144, DATED JANUARY 1985

11-9-90	ISSUED FOR PHASE 2A SURVEY DATA REPORT	VZC	TGS	CM	
10-17-90	ISSUED FOR ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT PERMIT NO. 90385	VZC	TGB	RJG	
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY

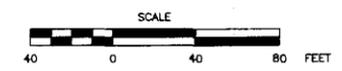
DATE: 10-9-90	FIGURE 1	DRAWING NUMBER 86-018-E87
SCALE: AS SHOWN		

Canonie Environmental



LEGEND:

- BOR-26 SOIL BORING LOCATION
- MWC2-1 MONITORING WELL LOCATION
- SSC2-51 SURFACE SOIL SAMPLE LOCATION



CANS C-2 AREA
 SITE PLAN
 NAVAL AIR STATION
 ALAMEDA, CALIFORNIA
 PREPARED FOR

WESTERN DIVISION
 NAVAL FACILITIES ENGINEERING COMMAND
 SAN BRUNO, CALIFORNIA

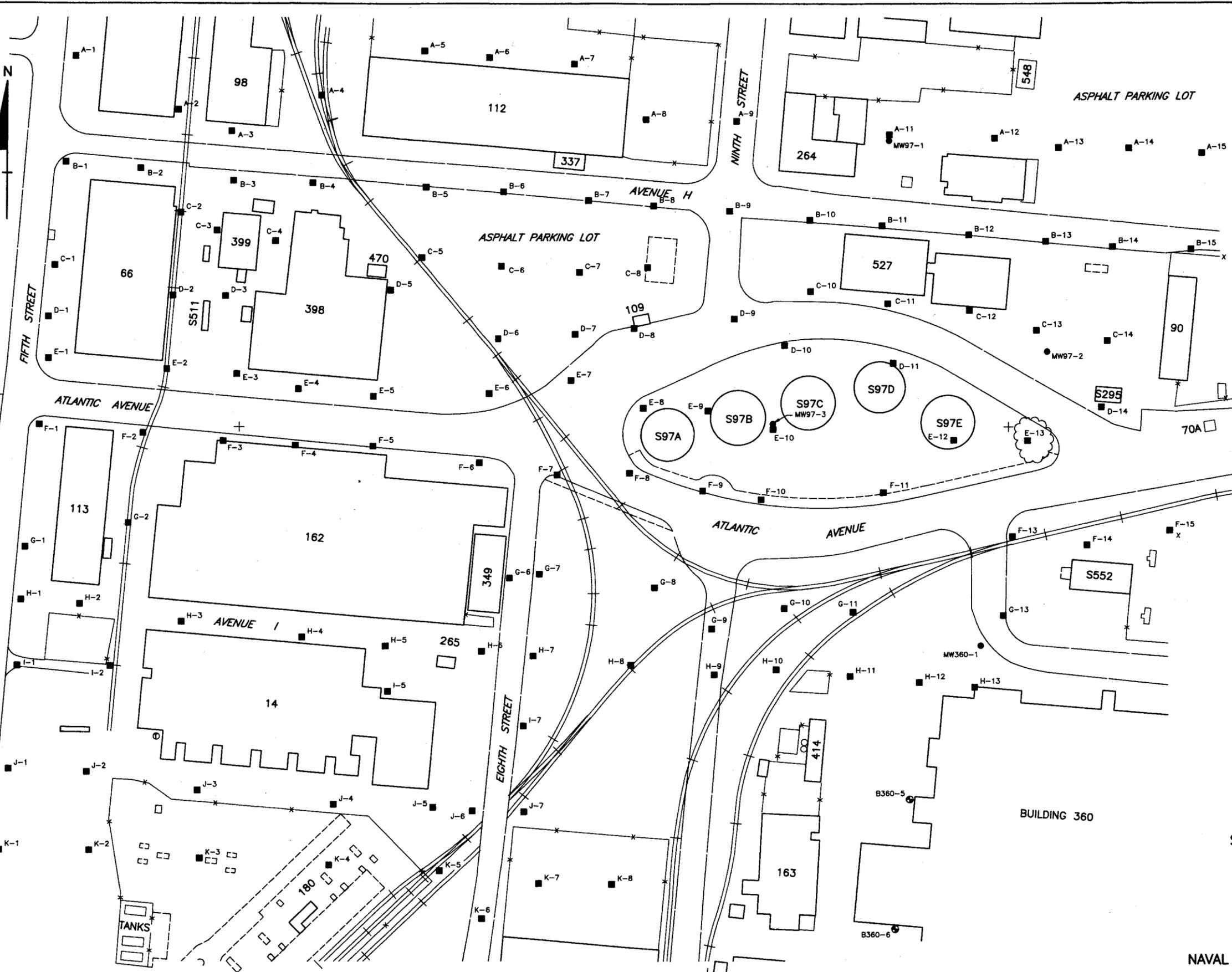
Canonie Environmental

- REFERENCES:**
1. NAVAL AIR STATION ALAMEDA GENERAL DEVELOPMENT MAP, SHEET 18 & 22.
 2. NAVAL AIR STATION ALAMEDA, ALAMEDA, CALIFORNIA GENERAL DEVELOPMENT MAP, STATION MAP WITH SURVEY MONUMENTS ADDED, NAVFAC DRAWING NO. 638456, REVISION 8, DATED SEPTEMBER 15, 1986.

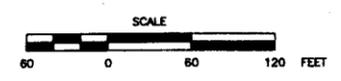
11-9-90	ISSUED FOR PHASE 2A SURVEY DATA REPORT	KCH	-5	awf	
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY

DATE: 10-23-90	FIGURE 2	DRAWING NUMBER 86-018-E98
SCALE: AS SHOWN		

DRAWING NUMBER 86-018-E94



- LEGEND:**
- A-12 SOIL GAS SURVEY LOCATION
 - MW360-1 MONITORING WELL LOCATION
 - ⊙ B360-5 SOIL BORING LOCATION



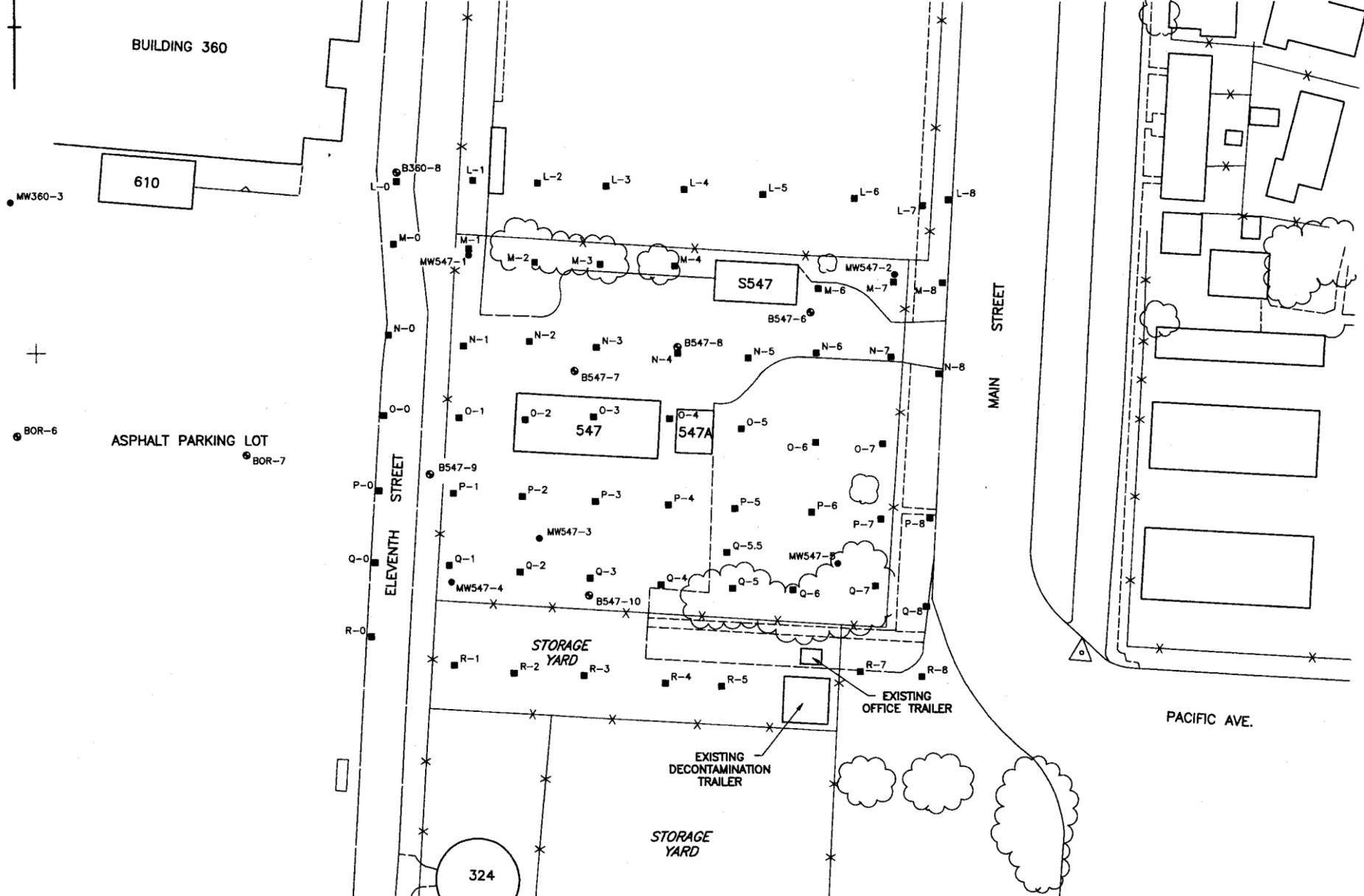
SOIL GAS SURVEY LOCATIONS
 FOR AREA 97
 NAVAL AIR STATION
 ALAMEDA, CALIFORNIA
 PREPARED FOR
 WESTERN DIVISION
 NAVAL FACILITIES ENGINEERING COMMAND
 SAN BRUNO, CALIFORNIA

CanonieEnvironmental

- REFERENCES:**
1. NAVAL AIR STATION ALAMEDA GENERAL DEVELOPMENT MAP, SHEET 18 & 22.
 2. NAVAL AIR STATION ALAMEDA, ALAMEDA, CALIFORNIA GENERAL DEVELOPMENT MAP, STATION MAP WITH SURVEY MONUMENTS ADDED, NAVFAC DRAWING NO. 638456, REVISION 8, DATED SEPTEMBER 15, 1986.

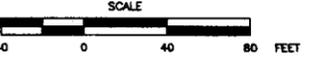
11-9-90	ISSUED FOR PHASE 2A SURVEY DATA REPORT	VZC/KCH	Ta	
No.	DATE	ISSUE / REVISION	OWN. BY	CK'D BY

DATE: 10-18-90	FIGURE 3	DRAWING NUMBER 86-018-E94
SCALE: AS SHOWN		



LEGEND:

- L-3 SOIL GAS SURVEY LOCATION
- MW360-3 MONITORING WELL LOCATION
- ⊙ BOR-7 SOIL BORING LOCATION



SOIL GAS SURVEY LOCATIONS
FOR BUILDING 547
NAVAL AIR STATION
ALAMEDA, CALIFORNIA
PREPARED FOR

WESTERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA

Canonie Environmental

- REFERENCES:**
1. NAVAL AIR STATION ALAMEDA GENERAL DEVELOPMENT MAP, SHEET 18 & 22.
 2. NAVAL AIR STATION ALAMEDA, ALAMEDA, CALIFORNIA GENERAL DEVELOPMENT MAP, STATION MAP WITH SURVEY MONUMENTS ADDED, NAVFAC DRAWING NO. 638456, REVISION 6, DATED SEPTEMBER 15, 1986.

△	11-9-90	ISSUED FOR PHASE 2A SURVEY DATA REPORT	VZC	TGS	CMW
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY

DATE:	11-8-90	FIGURE 4	DRAWING NUMBER 86-018-E95	△
SCALE:	AS SHOWN			