N00296.000005
MOFFETT FIELD
SSIC NO. 5090.3

DEPARTMENT OF THE NAVY
NAVAL AIR STATION
MOFFETT FIELD, CALIFORNIA 94035

IN REPLY REFER TO

183:KET:jlh
11000
Ser 1 2329
OCT 28 1982

Mr. Fred H. Dierker, Executive Officer
California Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6040
Oakland, California 94607

Dear Mr. Dierker:

In accordance with your letter of 30 September 1982, the enclosed scope of work with attachments for a subsurface investigation program is submitted for your approval. It is requested that comments and/or approval for the program be forwarded by phone to expedite implementation of the program. A subsequent letter of approval is requested.

The subsurface investigation program will be conducted by contract through an architect/engineering firm. As you are well aware of, there are numerous underground tanks, waste and non-waste storage, on the Naval Air Station and additional time is required to ensure the results of the subsurface investigation program are accurate and the procedures in the scope of work are followed. Accordingly, the final report on the results of the program will be submitted by 15 December 1982.

Sincerely,

M. K. Burke, P.E.
CDR, CEC, USN
Public Works Officer
By direction of the
Commanding Officer

Encl:
(1) Scope of Work for a Subsurface Investigation Program
(2) Map of Naval Air Station
(3) NAS Moffett Field, Public Works Drawing No. 323-516-1 thru 323-516-8

Copy to:
Western Division, Naval Facilities Engineering Command
(Attn: M. Yao, Code 1142)

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NAVY/RWQCB 3

I. Scope of Work:

Engineering Services are required to conduct a subsurface investigation program in accordance with ITEMS II-IV. The subsurface investigation program includes construction of monitoring wells, soil sampling, water sampling, testing of samples, and submission of a final report.

II. MONITORING WELL CONSTRUCTION

a. Number of Monitoring Wells
(1) Individual sumps of tanks which includes:

PURPOSE	TANK NO.	DESCRIPTION	LOCATION	GRID
Fuel Stge	58	Day Tanks	Tank Truck Unloading Fac.	18V
" "	59	" "	" "	18V
" "	60	" "	" "	17V
" "	61	" "	" "	17V
" "	253	Day Tanks	Hi Spd Refuel	21BB
Waste Solvent	---	Ang, Hgr 3	NE Corner Hgr 3	19Z
Waste Solvent	---	AIID Power Plants	East Side Hgr 3	19X

(a) At least two wells within 10 feet of each end on the down gradient side of the tank.

(2) Closely spaced multiple tank or multiple sumps which includes:

PURPOSE	TANK NO.	DESCRIPTION	LOCATION	GRID
Fuel Stge	137-140	Bulk Fuel Stge	Fuel Farm #503	17Y/16Z
Fuel Stge	---	Nex Fuel Stge	Nex Serv. Sta	27R
Rinse Water	---	Flux Ponds	Near Bldg 524	19AA
Fuel Stge	---	Trans. Fuel Stge	Near Bldg 161	250
Fuel Stge	135-136	Working Tanks	Truck Loading Fac	17V

a. Wells along each side of the unit and within 10 feet of the unit as indicated on the attachments.

b. Each monitoring will shall be bored to a depth of 20 feet below the upper limit of the zone of saturation. However, monitoring wells shall not penetrate a competent (approximately 5 feet thick) clay layer below the zone of saturation.

c. Drilling with a hollow-stem, continuous-flight is preferable. If conditions do not permit the use of an auger, an air rotary drill with casing hammer can be used. In no cases will a conventional mud-rotary drill be allowed. Test holes shall be logged by a registered engineering geologist or registered geologist and shall be located on a site map which shows the location of all subsurface tanks, sumps and buried pipelines used to transport material to or from tanks and sumps.

d. Monitoring wells shall be drilled to accept a casing of 2 inch (inside diameter) minimum diameter.

e. Monitoring wells shall be cased with clean PVC casing. Cleaning shall be accomplished with trisodium phosphate (TSP) and water followed by thorough rinsing with water. Treaded joints will be used. PVC screened casing shall be installed within the entire saturated zone considering water table fluctuation. The entire perforated zone shall be gravel-paced with clean, washed pea gravel. The casing shall be cemented from the top of the perforated zone to the ground surface and an appropriate surface grout seal installed.

f. The casing shall extend at least one foot above the ground surface and be sealed to prevent contamination.

g. The well shall be extend at least one foot above the ground surface and be sealed to prevent contamination.

h. Each boring pursuant to II.A. shall include soil samples as follows:

(1) Samples shall be taken at depths of 5, 10, 20 and 30 feet below the lowest point of any sump or subsurface tank; however, no soil samples are required in the saturated zone.

(2) Samples shall be taken utilizing a Shelby Tube or Modified California sampler.

(3) Samples shall be immediately capped with teflon or aluminum.

(4) Samples shall not be extruded in the field but shall be immediately cooled according to current sample preservation requirements and extruded by and at certified laboratories.

i. If groundwater is not encountered within the first 30 feet below the lowest point of any sump or subsurface tank it is not necessary to complete the monitoring well. If a well is not completed the bore hole shall be sealed according to County Well sealing standards.

III. MONITORING WELL SAMPLING

a. Water sampling shall be accomplished with a teflon or stainless bailer or submersible pump. Teflon shall be used for pump tubing.

b. The wells shall be bailed or pumped to remove 4 to 10 well volumes prior to sampling. If the well is evacuated before 4 to 10 well volumes are removed, then the sample shall be taken when the well recovers to approximately 80% of its initial water elevation. It is acceptable to use a peristaltic pump to remove this 4 to 10 well volumes; however, jetting shall not be used.

c. Two water samplings will be taken at a minimum of 7 calendar days apart.

d. Water samples shall be handled and preserved according to the latest EPA methods described in the Federal Register (Volume 44, No. 233, Monday December 3, 1979 pg 69544, table II) for the type of analysis to be performed.

IV. LABORATORY ANALYSIS

a. All samples shall be analyzed by laboratories approved for the type of analysis to be performed. A list of approved laboratories is attached.

b. Monitoring well samples around underground tanks or sumps shall be analyzed for constituents stored in the tanks or held in the sumps as follows:

(1) Production grade (non-waste) constituents (tank storage).

(a) Water samples shall be analyzed according to EPA methods for all constituents which have ever been or are being stored in the tank. The following information shall be provided:

1 List of constituents held in tank;

2 EPA method(s) used to detect each constituent listed;

3 Limits of detection;

4 Section IV b.(1)(a) applies to all tanks listed under section II a.(1) except for the two waste solvent tanks and the flux ponds.

(b) If the nature of all constituents ever stored in the tank cannot be accurately determined then analysis of well samples shall include a complete priority pollutant scan (volatile organic, base/neutral extractables, acid extractables, pesticides/PCB's metals and cyanide) in which all peaks detected are identified. If specific groups of constituents can be accurately documented to have not been held in the tank; analysis for these group may be eliminated (e.g. if pesticides were never handled then the pesticide fraction may be eliminated). The following information shall be reported:

1 Rationale for eliminating any analysis;

2 EPA methods used;

3 Limits of detection.

(2) Waste tanks or sumps

(a) Follow procedures outlined in IV b.(1)(b) for the two waste solvent tanks and the flux ponds.

c. Soil samples around underground tanks or sumps shall be analyzed as described in the appropriate section of IV. b. above. Soil samples from the same bore hole may be composited on an equal volume basis prior to analysis. If analysis for volatile constituents are to be performed the compositing shall occur by taking equal volumes directly from each sample with a cork bore and placing these volumes directly into purge and trap apparatus.

V. REPORTS

a. A report shall be submitted to the Officer-in-Charge of Construction which will include:

(1) Letter of transmittal;

(2) Map showing locations of sumps, tanks and monitoring wells;

(3) Monitoring will boring logs and as-constructed information;

(4) Laboratory Data including laboratory procedures.

b. If the results of analysis under section IV. b. and c. indicate no detectable levels of constituents then the report will be submitted 30 calendar days from the contract award date.

c. If the results of the analysis under section IV. b. and c., indicate detectable levels of constituents then the Officer-in-Charge of Construction will be notified by phone immediately. An interm report will be submitted for the samples containing constituents within seven days of notification and will include all items identified in V. a. and an initial proposal to begin determining the vertical and lateral extent of the constituents. A report on the remaining samples will be submitted 30 days from the date of award.

Laboratories Approved For Organics

Acurex Analytical Chemistry
Lab
405 Clyde Avenue
Mountain View, CA 94042

Anatec Laboratories Inc
435 Tesconi Circle
Santa Rosa, CA 95401

Anlab
1914 S Street
Sacramento, CA 95814

Antelope Valley - East
Kern Water Agency
P.O. Box 3176
Quartz Hill, CA 93534

Associated Laboratories
N. Batavia
Orange, CA 92668

Brown and Caldwell
Environmental Sciences
Division
1255 Powell Street
Emeryville, CA 94608

California Analytical Labs
401 North 16th Street
Sacramento, CA 95814

Calif. Dept. Fish & Game
Fish and Wildlife WPC Lab
2005 Nimbus Road
Rancho Cordova, CA 95670

California Water Labs
1430 Carpenter Lane
Modesto, CA 95351

California Water Service
Co., Lab
N. First Street
San Jose, CA 95112

EAL Corporation
2030 Wright Avenue
Richmond, CA 94804

Environmental Research
Group Inc.
1400 53rd Street
Emeryville, CA 94608

Fireman's Fund Insurance
Company
Environmental Laboratory
3333 California Street
San Francisco, CA 94119

Foremost Research Center
6363 Clark Ave.
Dublin, CA 94566

CH2M Hill
P.O. Box 2088
Redding, CA 96001

I-Chem Research Corp.
23787 F Eichler
Hayward, CA 94545

Jacobs Laboratory
373 South Fair Oaks Ave
Pasadena, CA 91105

Los Angeles City Dept. of
Water and Power
Sanitary Engineering Water
Laboratory
Box 111
Los Angeles, CA 90051

Met-Chem Engineering Lab.
3127 "A" Fite Circle
Sacramento, CA 95827

Metropolitan Water District
Water Quality Laboratory
700 North Moreno Avenue
LaVerne, CA 91750

J.M. Montgomery
555 East Walnut Ave.
Pasadena, CA 91101

Morse Labs
1525 Fulton Ave
Sacramento, CA 95825

Multi- Tech Laboratories
14 W. 3rd Street
Santa Rosa, CA 95401

Radian Corporation
3401 LaGrande Avenue
Sacramento, CA 95823

City of San Buenaventura
Sanitation Laboratory
P.O. Box 99
Ventura, CA 93001

Santa Barbara Wastewater
Treatment Plant
402 East Mason
Santa Barbara, CA 93102

Science Applications, Inc
Trace Environmental Chemi
Lab
464 Prospect Street
La Jolla, CA 92038

Scientific Cleaner & Labor
2284 Old Middlefield Way
Mt. View, CA 94043

Stoner Labs
397 Mathew St.
Santa Clara, CA 95050

Tetra Tech, Inc.
630 No. Rosemead Blvd.
Pasadena, CA 91107

Truesdail Laboratories, I
4101 North Figueroa St.
Los Angeles, CA 90065

Water Testing And Consulting Laboratory
Avalon Avenue
a Barbara, CA 93110

Mock Laboratories, Inc
14859 East Clark Ave.
Industry, CA 91745

West Coast Tech. Serv., Inc
17605 Fabrica Way, Suite D
Cerritos, CA 90701

TMI only

Arco Ventures, Technical Center
P.O. Box 2600
Dublin, CA 94566

Contra Costa Water Dist.
Bollman Filtration Plant
P.O. Box H20
Concord, CA 94524

Ecological Systems Corp.
3200 Colorado Ave.
a Monica, CA 90404

Escondido City Water Control Lab
100 Valley Blvd.
Escondido, CA 92025

Kern County Water Agency
P.O. Box 58
Bakersfield, CA 93302

Long Beach City Water Dept.
1900 E. Wardlow Rd.
Long Beach, CA 90807

No. Marin Co. Water Dist.
P.O. Box 146
Novato, CA 94947

San Diego City Utility Dept.
Water Quality Div., Water Lab.
7100 Colorado Avenue
La Mesa, CA 92041

San Francisco Water Dept.
El Camino Real
Millbrae, CA 94030

Santa Clara Valley Water Dist.
400 More Ave.
Los Gatos, CA 95030

Sweetwater Authority
386 Third Avenue
Chula Vista, CA 92010

DBCP only

Carnation Research Labs
8015 Van Nuys Blvd.
Van Nuys, CA 91412

Certified Testing Labs
2905 E. Century Blvd.
South Gate, CA 90280

Dellavalle Laboratory, Inc
1910 W. McKinley #110
Fresno, CA 93728

PCB only

Lawrence Livermore National Laboratory
Hazards Control Laboratory
P.O. Box 5505
Livermore, CA 94550

U.S. Naval Energy & Environmental Support Activity
Environmental Water Quality Laboratory
Port Hueneme, CA 93043

Except TMI

IT Corporation
Environmental Division
4575 Pacheco Blvd.
Martinez, CA 94553

Soil Control - Marine Bioassay
1234 Highway 1
Watsonville, CA 95076

Twining Labs
2527 Fresno Street
Fresno, CA 93721

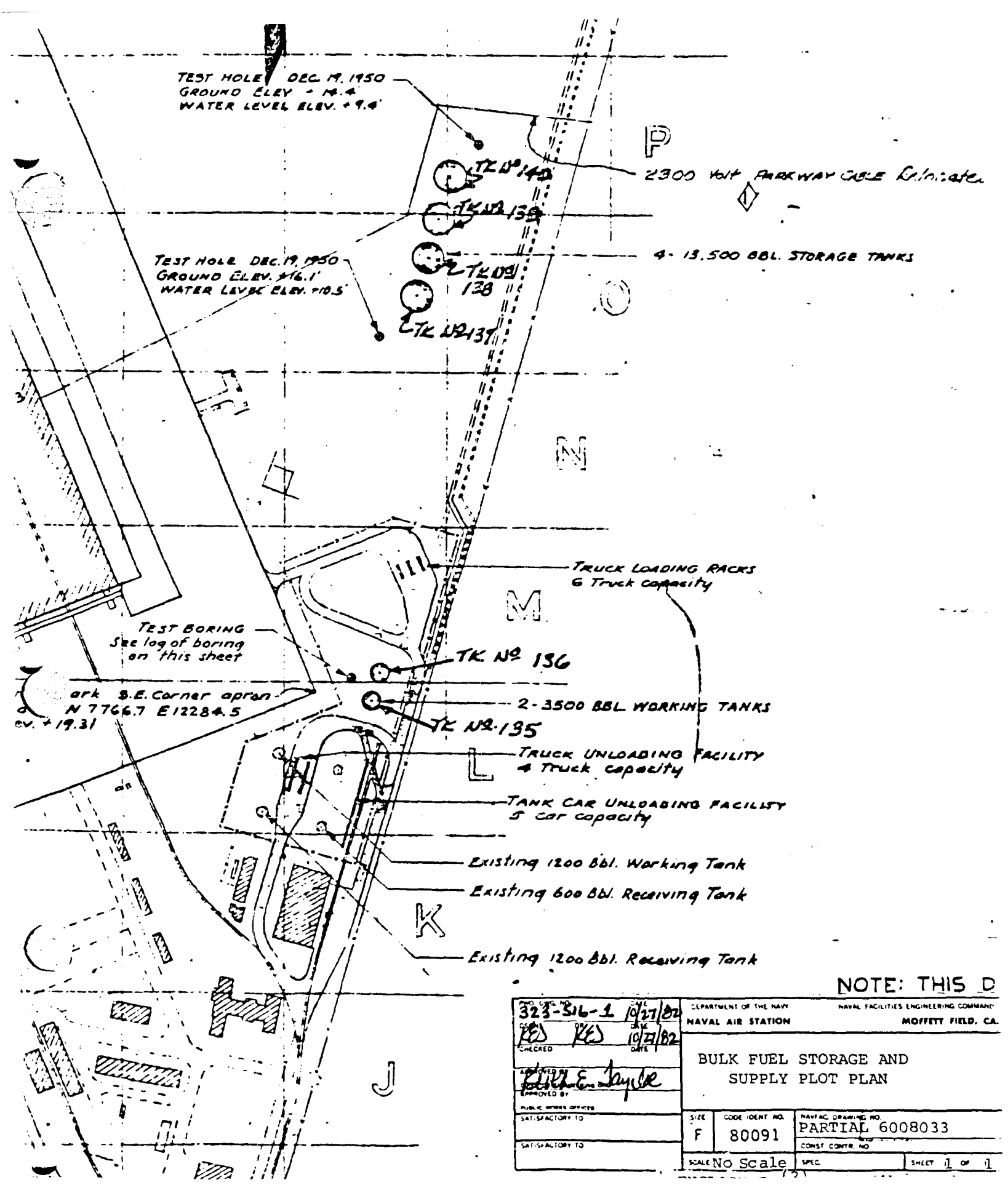
Except DBCP

Analytical Research Lab. Inc.
160 Taylor Street
Monrovia, CA 91016

Fruit Growers Lab. Inc
P.O. Box 272
Santa Paula, CA 93060

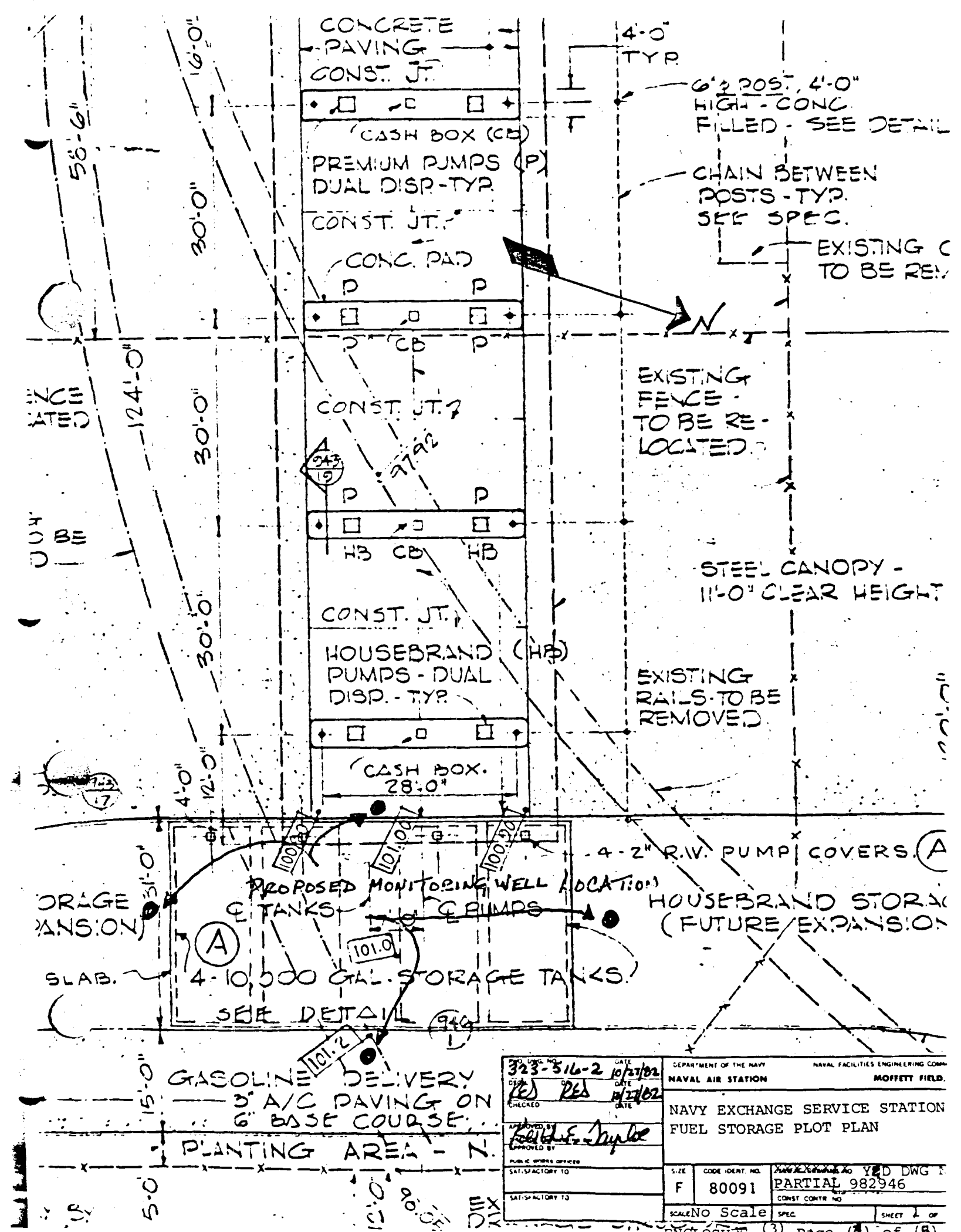
Except DBCP and PCB

City of Sacramento
Div. of Water Laboratory
1301 Jedsmith Drive
Sacramento, CA 95819



NOTE: THIS D

DRG. LIST NO. 323-516-1	DATE 10/27/82	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
DESIGNED KES	DRAWN KES	DATE 10/27/82 — NAVAL AIR STATION — MOFFETT FIELD, CA.
CHECKED	DATE	
APPROVED BY Edward E. Taylor Jr.		BULK FUEL STORAGE AND SUPPLY PLOT PLAN
PUBLIC WORKS OFFICER		
SATISFACTORY TO		SIZE F — CODE IDENT NO. 80091 — NAVFAC DRAWING NO. PARTIAL 6008033
SATISFACTORY TO		CONST CONTR. NO.
		SCALE No Scale — SPEC. — SHEET 1 OF 1



JOB ORDER NO. 323-516-2	DATE 10/27/02	DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND
DESIGN (CE)	DRAWN RES	NAVAL AIR STATION	MOFFETT FIELD,
CHECKED	DATE 10/27/02	NAVY EXCHANGE SERVICE STATION	
APPROVED BY Robert E. Taylor		FUEL STORAGE PLOT PLAN	
PUBLIC WORKS OFFICER			
SATISFACTORY TO			
SATISFACTORY TO			

SIZE	CODE IDENT. NO.	XXXXXXXXXX NO YARD DWG NO.
F	80091	PARTIAL 982946
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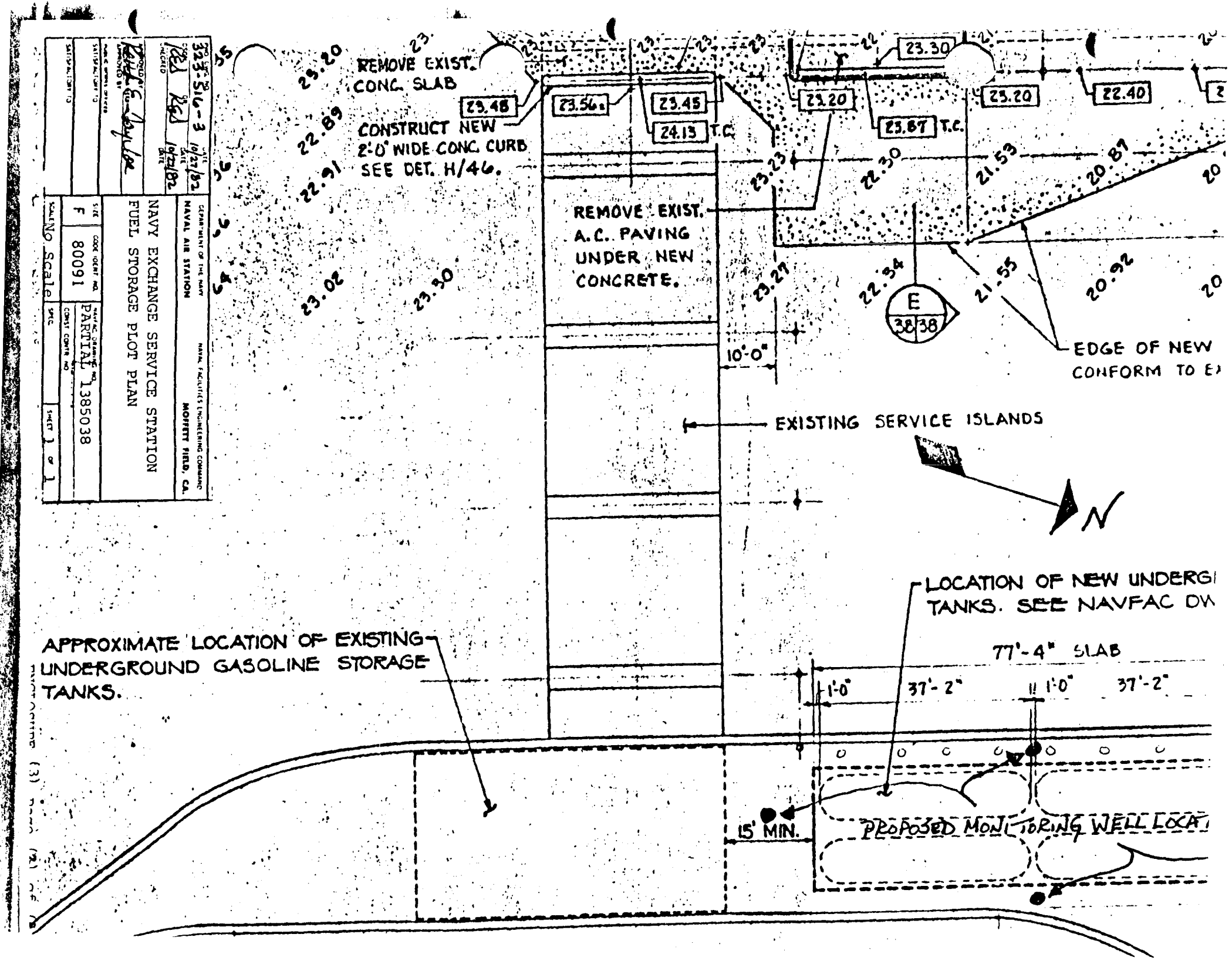

REMOVE EXIST. CONC. SLAB
CONSTRUCT NEW 2'-0" WIDE CONC. CURB SEE DET. H/46.
REMOVE EXIST. A.C. PAVING UNDER NEW CONCRETE.
EXISTING SERVICE ISLANDS
EDGE OF NEW
CONFORM TO E
APPROXIMATE LOCATION OF EXISTING UNDERGROUND GASOLINE STORAGE TANKS.
LOCATION OF NEW UNDERG
TANKS. SEE NAVFAC DW
77'-4" SLAB
1'-0"
37'-2"
1'-0"
37'-2"
15' MIN.
PROPOSED MONITORING WELL LOCA
23.48
23.56
23.45
24.13 T.C.
23.20
23.67 T.C.
23.30
23.20
22.40
23.20
22.89
22.91
23.02
23.30
23.23
22.30
21.53
20.87
23.27
22.34
21.55
20.92
10'-0"
E
38/38
N
NAVY EXCHANGE SERVICE STATION
FUEL STORAGE PLOT PLAN
NAVAL AIR STATION
MOFFETT FIELD, CA.
NAVAL FACILITIES ENGINEERING COMMAND
F
80091
PARTIAL 1385038
No Scale
SHEET 1 of 1
10/27/82
10/27/82

See detail A

PROPOSED MONITORING WELL LOCATION

2" suction lines

See detail B

3 H.P. compressor

SERVICE STATION

See detail C

See detail D

3/4"

H.B.

8" Water line

3/4" Water line

F.H.

NAVAL AIR STATION	DEPARTMENT OF THE NAVY
MOFFETT FIELD, CA.	NAVAL FACILITIES ENGINEERING COMMAND
TRANSPORTATION FUEL STORAGE PLOT PLAN	
SIZE F	CAGE IDENT NO. 80091
SCALE NO Scale	CONTRACT NO. PARTIAL 502111
	SUPERSEDED DRW NO. #

325-216-4

Keith L. Taylor

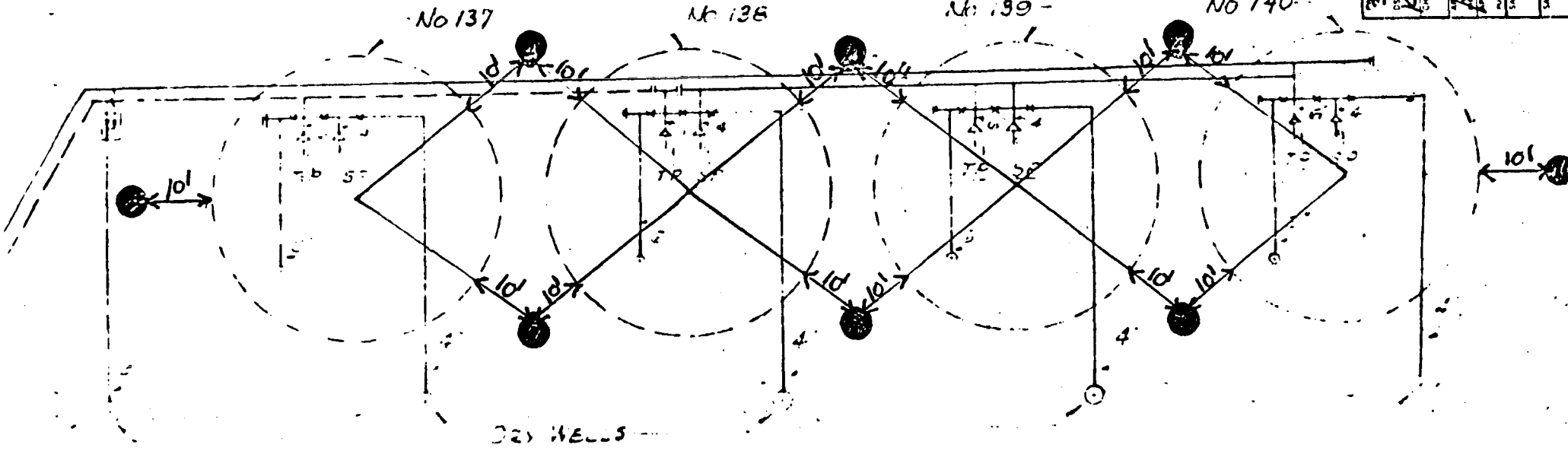
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMA
NAVAL AIR STATION — MOFFETT FIELD,

FUEL FARM BULK STORAGE
TANKS PLOT PLAN

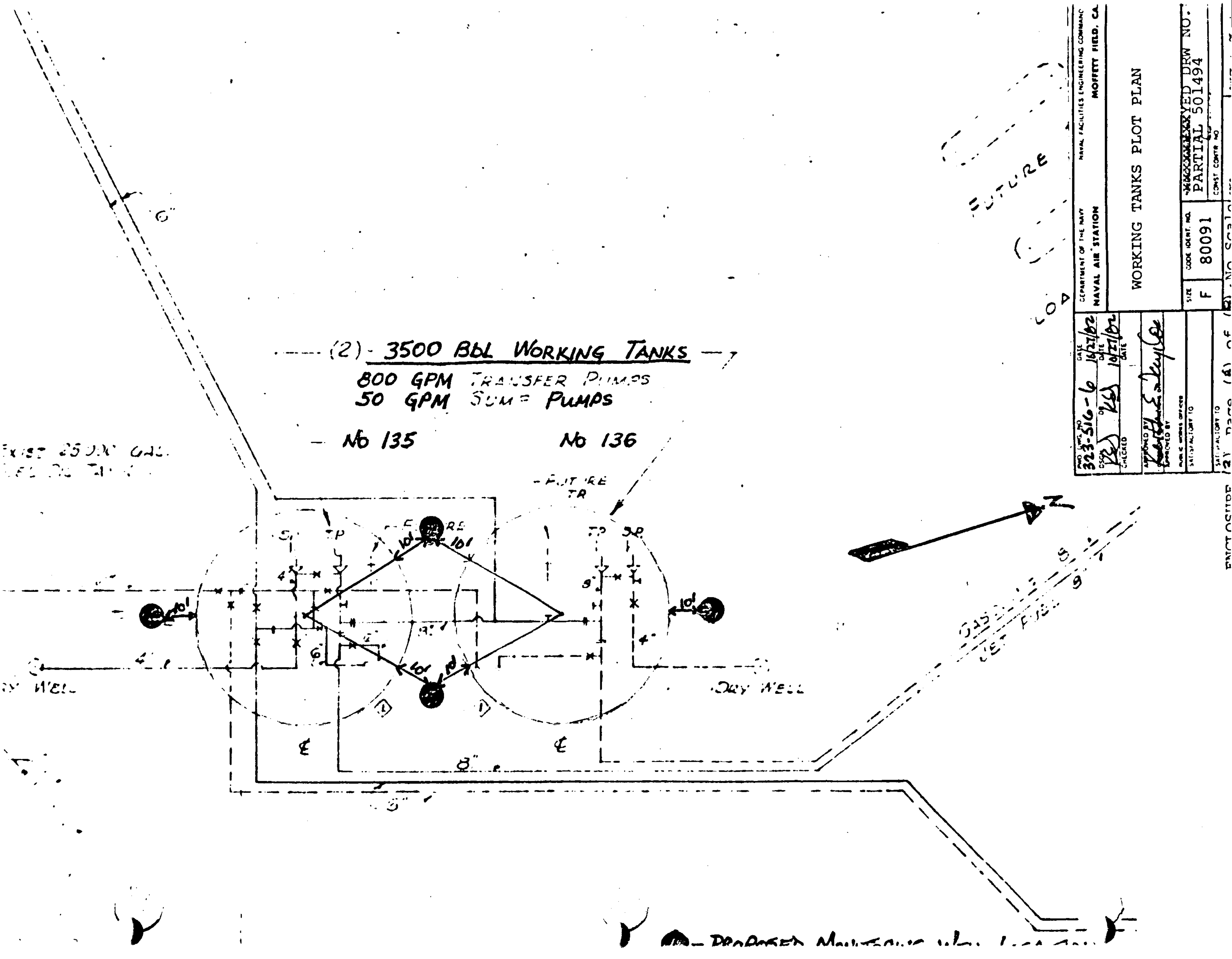
SIZE F | CODE IDENT. NO. 80091 | PARTIAL 501494

323-316-5 — DATE 9/27/62 — CHECKED KES — DATE 10/23/62

(4) STORAGE TANKS @ FUEL FARM BULK STORAGE
13,500 BBL'S EACH
800 GPM TRANSFER PUMPS
50 GPM SUMP PUMPS



● - PROPOSED MONITORING WELL LOC.


(2) - 3500 BbL WORKING TANKS
800 GPM TRANSFER PUMPS
50 GPM SUMP PUMPS
No 135
No 136
FUTURE
DRY WELL
8"
6"
4"
10'
FUTURE
WORKING TANKS PLOT PLAN
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION
MOFFETT FIELD, CA
323-516-6
10/27/82
F
80091
PARTIAL 501494
No Scale
ENCLOSURE

EX. ST 200 BBL.
RECEIVING TANK NO 59
800 GPM TRANSFER PUMP
25 GPM SUMP PUMP (EXIST)
4"
4"
DAY TANK
SP
TP
8'
EXIST 200 BBL
WORKING TANK
800 GPM TRANSFE
25 GPM SUMP
6"
4 TRUCK UNITS
250 GPM EACH
TRUCK
LOADING
STATIONS
ENTRANCE
EXIST 25000 GAL
FUEL OIL TANK
EXIST 600 BBL
RECEIVING TANK NO 60
600 GPM TRANSFER PUMP
25 GPM SUMP PUMP (EXIST)
DAY TANK
GASOLINE
JET FUEL
10'
TANK CAR
5 CAR
6 200
323-516-7
10/27/82
RED
RED
10/27/82
CHECKED
DATE
APPROVED BY
PUBLIC WORKS OFFICER
SATISFACTORY TO
SATISFACTORY TO
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMA
NAVAL AIR STATION
MOFFETT FIELD.
FUEL TRUCK LOADING FACILITY
TANK PLOT PLAN
SIZE
F
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PARTIAL 6099484
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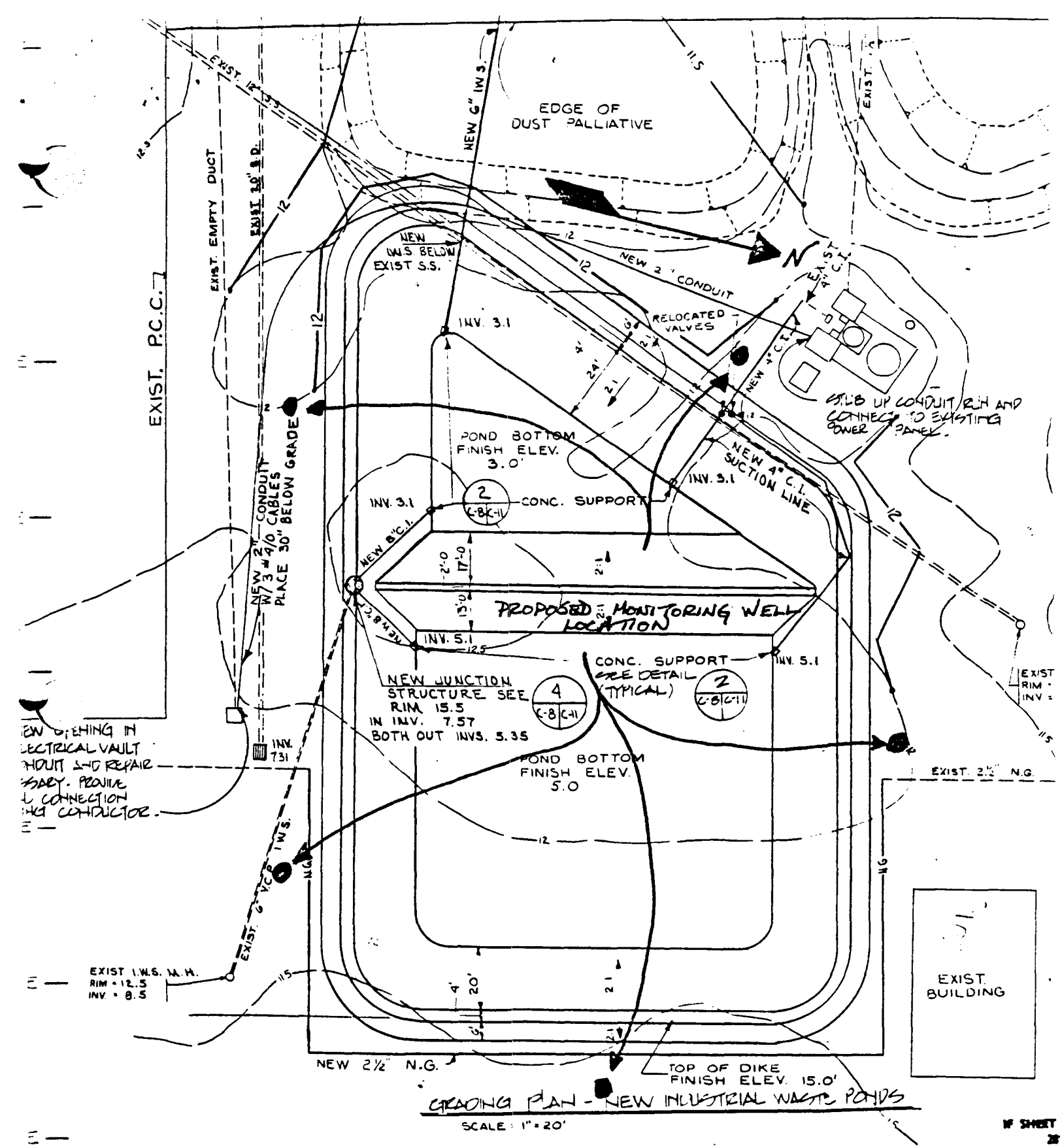
SHEET 1 OF



GRADING PLAN - NEW INDUSTRIAL WASTE PONDS

SCALE: 1" = 20'

IF SHEET 28 IT IS A RE SCALE REDUC

GRAPHIC SC

0 10 20 40

Note:

see sheet T-2

PWD SYS. NO. 323-516-8	DATE 10/22/02	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COM
DES. PES	DR. PES	DATE 10/22/02 — NAVAL AIR STATION — MOFFETT FIELD
CHECKED	DATE	
APPROVED BY Public Works Officer		INDUSTRIAL WASTE PONDS (FLUC PONDS) PLOT PLAN
SATISFACTORY TO		SIZE F — CODE IDENT. NO. 80091 — NAVFAC DRAWING NO. PARTIAL 6099484
SATISFACTORY TO		CONST CONTR NO.
		SCALE No Scale — SHEET 1 OF