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UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO

FAC/REA/hf
6280
3 JAN 1984

N.C. Division of Environmental Management
Groundwater Section
Attn: Mr. Arthur Mouberry
P. O. Box 27687
Raleigh, NC 27611

Re: Request for Approval
Groundwater Monitoring Wells
Camp Lejeune, NC

Dear Mr. Mouberry:

This letter follows the telephone discussion between you and Mr. Alexander of this office on 21 December 1983. The purpose of this letter is to request approval of construction of groundwater monitoring wells. These wells are described as follows:

Number: 55
Location: See attached maps of enclosures (1) and (2)
Depth: 25 ft
Diameter: 2 inches
Materials: See construction diagram of enclosure (3)

The proposed wells are being installed as part of the Marine Corps Base study of potential contamination from past hazardous materials operations. An Initial Assessment Study has been developed under the Navy Assessment and Control of Installation Pollutants (NACIP) Program. The initial screening, which has been completed for 76 potential sites, concludes that none of the 76 sites pose an immediate threat to human health or the environment. A copy of this report is being provided to the Division of Environmental Management under a separate letter.

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We request that copies of forms for well completion records be provided along with your response to this proposal. For further information regarding this matter, please contact Mr. Bob Alexander, MCB Environmental Engineer at 919-451-3034 or at the above address.

Sincerely,

M. G. LILLEY
Colonel, U.S. Marine Corps
Assistant Chief of Staff, Facilities
By direction of the Commanding General

Encl:(1) Fig 2-1, Site Locations at MCB, Camp Lejeune
(2) Camp Lejeune Special Map, Scale 1:50,000
(3) Appendix A - Monitoring Well Construction & Diagram

Copy to: (w/o encl (2))
CMC (Code LFF-2)
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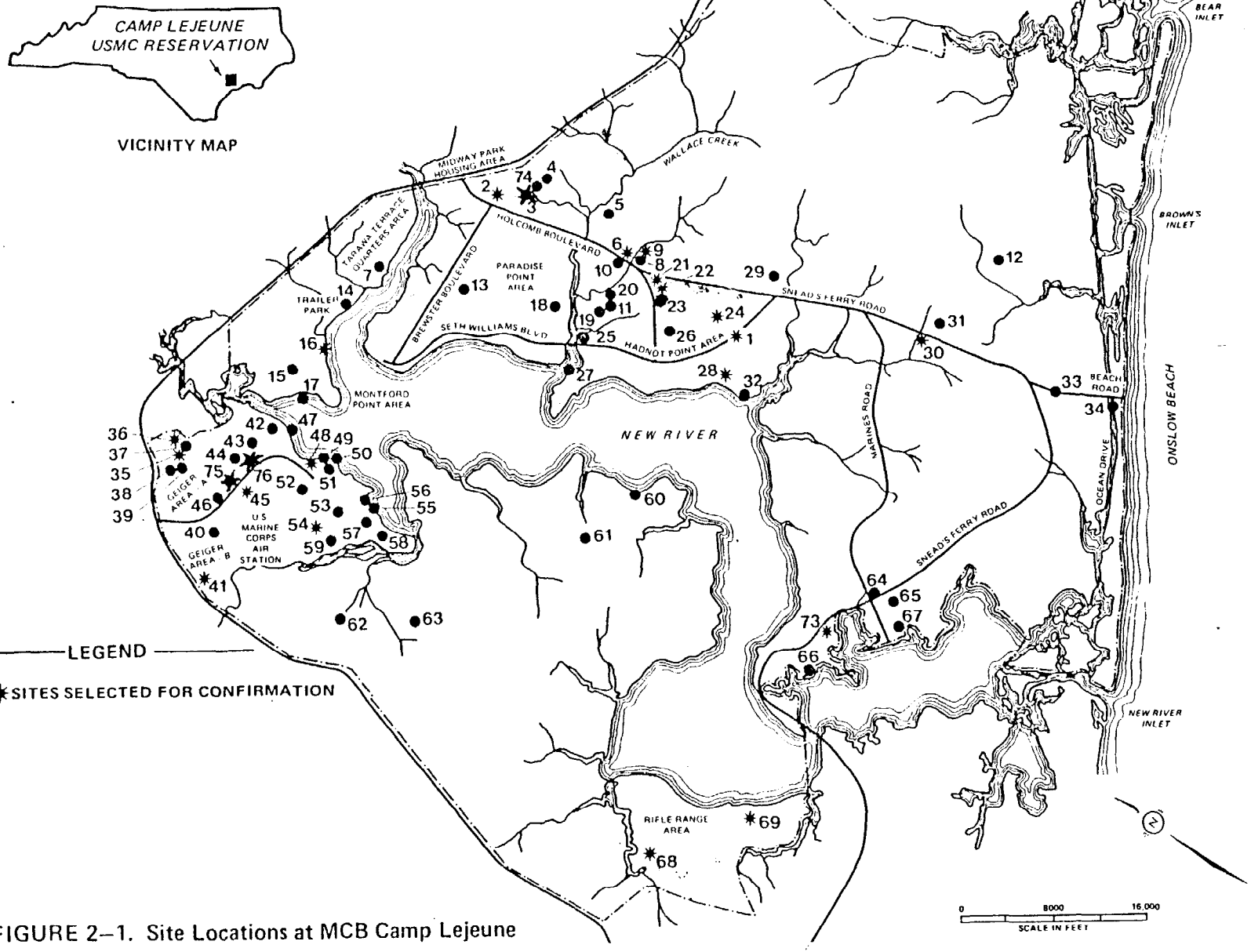

FIGURE 2–1. Site Locations at MCB Camp Lejeune

ENCL 1

2-3

APPENDIX A--MONITORING WELL CONSTRUCTION

A-1. RECOMMENDATIONS FOR GROUNDWATER MONITORING

A-1.1 Monitoring Well Inventory. Wells that have been improperly abandoned or that have been out of service for a long period are potential conduits for contamination from the water table aquifer to those deeper. Many of the wells at Camp Lejeune have been abandoned or are no longer in service, but there is not a complete inventory of the location or abandonment procedure.

It is recommended that the status of wells at the installation be clarified by determining the location of all the wells that have ever been drilled at the base. A comparison of the complete list of wells with the wells now in use will show those that have been abandoned or that are out of service. If these wells are close to and downgradient of a confirmed hazardous waste site, a further assessment of the wells' status should be made. This assessment should include the reason for abandonment or nonuse, the date when the well was last used, how it was abandoned (if applicable), future plans for the well (if not yet abandoned), and a review of any chemical/physical data available.

A satisfactory abandonment procedure involves filling the well and gravel pack with grout so that contaminants cannot migrate between aquifers.

A-1.2 Monitoring Well Installation. Each monitoring-well should be constructed so that it has both an efficient hydraulic connection to the surrounding water table aquifer and an effective seal against the migration of surface waters into the borehole.

The following techniques and materials are recommended to accomplish these two aims (Figure A-1):

1. Drill an 8-inch borehole to 10 feet below the water table, as noted during drilling. Collect representative lithologic samples every 5 feet during drilling for preparation of the lithologic log.
2. Install a string of threaded, flush-joint, 2-inch, schedule 40 PVC well casing and well screen. Set the top of a 10-foot length of PVC well screen at the water table if the water table is within approximately 5 feet of land surface. If the water table is encountered at greater depths, some portion of the well screen should be set above the water table. The recommended well-screen slot size is 0.010 inch. The top of the casing should extend approximately 12 to 18 inches above ground level.
3. After the well casing and screen have been installed in the borehole, place a filter pack of fine- to medium-grained quartz sand in the annular space from the bottom of the hole to approximately 2 feet above the top of the screen.

ENCL 3

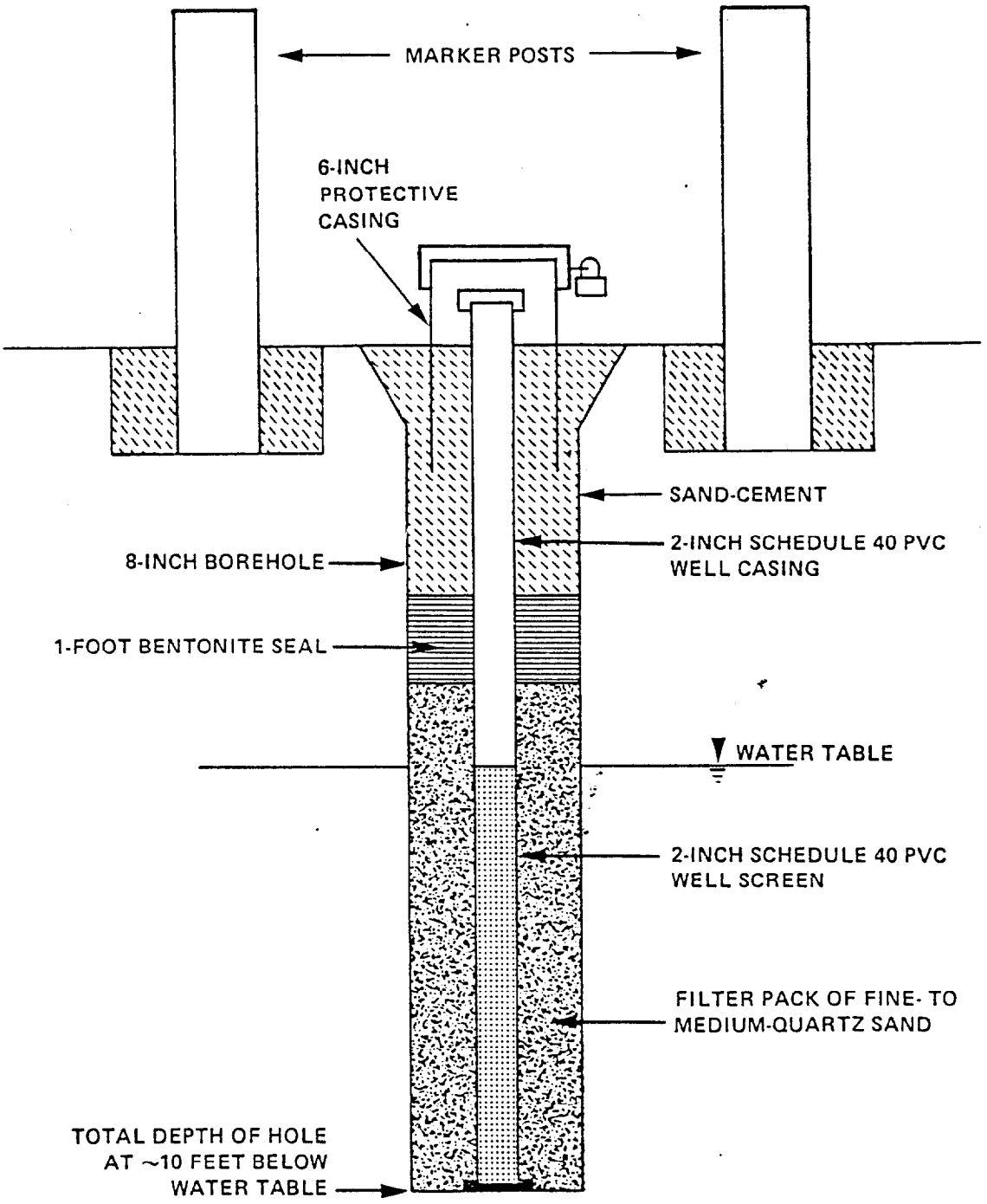

FIGURE A—1. Recommended Monitoring-Well Construction

4. Place a 1-foot seal of bentonite pellets in the annular space on top of the filter pack.
5. Fill the remainder of annular space with a sand-cement grout composed of two parts dry weight of sand to one part of cement with not more than 6 gallons of clean water per bag of cement (94 pounds or 1 cubic foot).
6. Install a 5-foot-long, 6-inch diameter, steel protective casing 3 feet into the grout. The protective casing should have a lockable steel cap and a padlock. The above-ground portions of both the protective casing and the PVC well casing should be vented with a 1/8-inch hole to permit the water in the well to fluctuate freely.
7. Install two 8-foot-long, 4-inch diameter, black steel marker posts adjacent to each well. Bury each marker post 3 feet and set it in sand-cement. Paint the upper 2 feet of each marker post day-glo orange.
8. Establish the vertical elevation and horizontal coordinates of the top of the casing (cap removed) to second order accuracy.

It may be necessary to vary the placement of the top of the screen and the thickness of the bentonite seal and the sand-cement grout if the water table is less than 5 feet below land surface.