

N91192.AR.001258  
NIROP FRIDLEY  
5090.3a

LETTER AND NOTIFICATION OF PROPOSED DISTURBANCE OF PLATING ROOM  
CONCRETE PIT FLOOR AND UNDERLYING SOIL NIROP FRIDLEY MN  
10/10/2014  
RESOLUTION CONSULTANTS

1500 Wells Fargo Building  
440 Monticello Avenue  
Norfolk, VA 23510  
T. 757/306.4000  
F. 757/306.4001

October 10, 2014

Ms. Sheila Desai  
U.S. Environmental Protection Agency Region 5  
77 West Jackson Blvd.  
Chicago, Illinois 60604

Ms. Shanna Schmitt  
Minnesota Pollution Control Agency  
520 Lafayette Road  
St. Paul MN 55155

**RE: Notification of Proposed Disturbance of Plating Room Concrete Pit Floor and Underlying Soil, Naval Industrial Reserve Ordnance Plant (NIROP), Fridley, Minnesota**

Dear Ms. Desai and Ms. Schmitt,

Resolution Consultants, on behalf of the Naval Facilities Engineering Command Atlantic (NAVFAC LANT), is submitting this letter regarding proposed additional soil boring advancement at the NIROP site in Fridley, MN (Site). The Navy has completed the first stage of the contributing area investigation (Investigation), which included completion of vertical profile borings and membrane interface probe borings at the Site. The second stage of the Investigation, including contingency vertical profile borings, was completed at the Site after reviewing preliminary data from the first stage of the Investigation. The Navy has identified the need for additional soil borings at the Site. The purpose of this letter is to notify the United States Environmental Protection Agency (USEPA) and Minnesota Pollution Control Agency (MPCA) of the proposed additional soil borings at the Site and to obtain USEPA and MPCA approval specifically for borings in the Plating Room. Approval to advance one soil boring inside the East Plating Room was previously provided by the USEPA and MPCA in a Resolution Consultants letter *Notification of Proposed Disturbance of Plating Room Concrete Pit Floor and Underlying Soil* dated December 5, 2014, approved December 5 and December 9, 2014, respectively. The East Plating Room soil boring will be completed as proposed in the December 5, 2014 letter with the exception of the total boring depth. The original proposed sampling depth was 50-feet below ground surface (bgs). The new proposed sampling depth is 80-feet bgs. In addition, the Navy proposes additional soil borings both inside and outside the Plating Room as described below. The proposed additional soil boring locations are illustrated on a figure included as Attachment A. A summary of proposed sampling depths and proposed sample types is provided on a table included as Attachment B.

Additional soil borings will be advanced in the area of the East Plating Room, West Plating Room, and near extraction wells AT-12 and AT-13. The borings advanced outside the Plating Room will be advanced by coring the concrete floor (where present) and advancing the Geoprobe Macrocore sampler and/or screen point sampler to the appropriate total depth in accordance with the Site *Sampling and Analysis Plan, Source Area Investigation, Naval Industrial Reserve Ordnance Plant (NIROP), Fridley, Minnesota*, by Resolution Consultants, dated July 2013 (SAP). The soil borings advanced inside the Plating Room will be advanced in general accordance with the SAP; however, the following modifications are required because of the buried sub-floor (pit floor). The upper concrete floor at the





Please contact me at (612) 376-2425 or Val Jurka at (207) 438-4094 with any questions regarding this submittal.

Sincerely,



Christina M. Boehm Carlson, PG  
Resolution Consultants Project Manager  
[Chris.Boehm@aecom.com](mailto:Chris.Boehm@aecom.com)



Daniel C. Phelps, PG  
Project Geologist  
[Daniel.C.Phelps@aecom.com](mailto:Daniel.C.Phelps@aecom.com)

Cc: Val Jurka, NAVFAC Atlantic

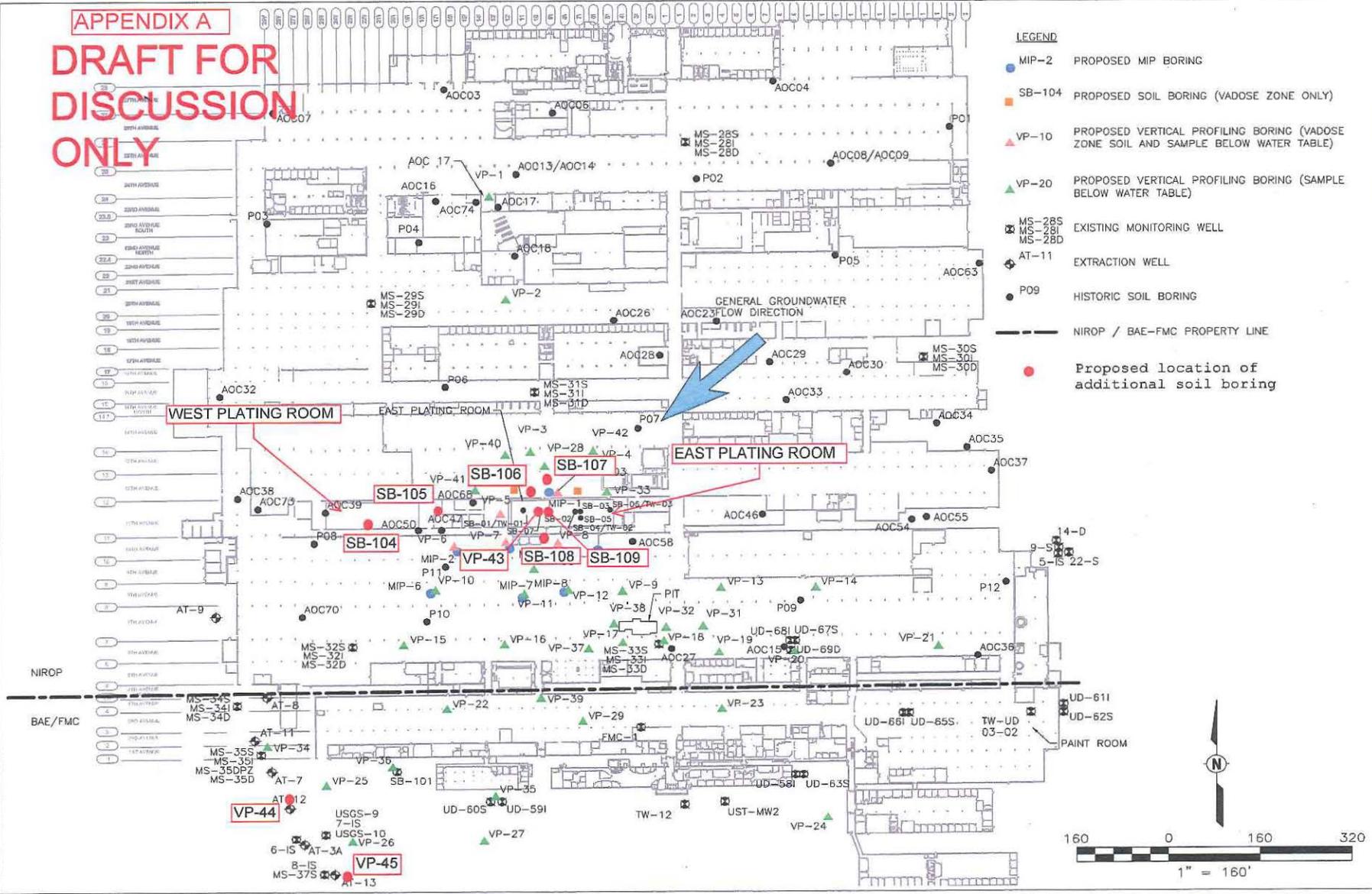
Attachments:

- Attachment A – Proposed Soil Boring Location Figure
- Attachment B – Proposed Additional Boring Summary
- Attachment C – Grout Information Sheet
- Attachment D – Concrete Information Sheet



Approved: ANSB 11"x17" Checked: Designer: Project Management Inside: LHM saved by: MUELLERLEKOR@BAE211 Last Print: 2014-09-21 Filename: J:\PROJECTS AND PROPOSALS\US NAVY\201409\NIPRP 2 DELIVERABLES\7 CAD & GIS\BORING LOCATION DIAGRAM\_VLDWG

**APPENDIX A**  
**DRAFT FOR DISCUSSION ONLY**



- LEGEND**
- MIP-2 PROPOSED MIP BORING
  - SB-104 PROPOSED SOIL BORING (VAPOSE ZONE ONLY)
  - ▲ VP-10 PROPOSED VERTICAL PROFILING BORING (VAPOSE ZONE SOIL AND SAMPLE BELOW WATER TABLE)
  - ▲ VP-20 PROPOSED VERTICAL PROFILING BORING (SAMPLE BELOW WATER TABLE)
  - ⊠ MS-28S EXISTING MONITORING WELL
  - ⊠ MS-28I
  - ⊠ MS-28D
  - ⊕ AT-11 EXTRACTION WELL
  - PO9 HISTORIC SOIL BORING
  - NIRD / BAE-FMC PROPERTY LINE
  - Proposed location of additional soil boring

**FIGURE 1**  
 BORING LOCATION DIAGRAM  
 Naval Industrial Reserve Ordnance Plant (NIRD)  
 Source Area Investigation UFP SAP  
 Fridley, Minnesota  
 Project No.: 60276080

Appendix B  
Proposed Additional Soil Boring Summary  
NIROP Contributing Area Investigation  
October 2014  
Fridley, MN

Boring ID	Target Depth (ft. bgs)	Lithology Sampling		Soil Samples	Groundwater Sampling		Groundwater Samples	Notes
		Top Depth	Bottom Depth		Top Depth	Bottom Depth		
SB-104	25	0	25	5	---	---	0	Inside WPR, double floor, chromium
SB-105	25	0	25	5	---	---	0	Inside WPR, double floor, chromium
SB-106	25	0	25	5	---	---	0	North of EPR, chromium
SB-107	25	0	25	5	---	---	0	North of EPR, chromium
SB-108	25	0	25	5	---	---	0	South of EPR, chromium
SB-109	25	0	25	5	---	---	0	Inside EPR, near SB-02, double floor, chromium
VP-43	80	0	40	8	40	80	8	Inside EPR, near SB-07, double floor, chromium in top 25 feet of soil only
VP-44	80	---	---	0	40	80	8	Near extraction well AT-12
VP-45	80	---	---	0	40	80	8	Near extraction well AT-13
<b>TOTALS</b>	<b>390</b>	<b>0</b>	<b>190</b>	<b>38</b>	<b>120</b>	<b>240</b>	<b>24</b>	

**Notes**

ft. bgs = feet below ground surface

--- = no sampling completed

EPR = East Plating Room

WPR = West Plating Room

All samples will be analyzed for Volatile Organic Compounds analysis

chromium = soil samples will be submitted for total chromium and hexavalent chromium analysis



# QUIK-GROUT®

One-Sack Borehole Grouting and Plugging Material

**Description** QUIK-GROUT® one-sack grouting and plugging material is a sodium bentonite-based grout designed for grouting water wells, monitoring wells, and for plugging boreholes. QUIK-GROUT grouting and plugging material does not contain any polymers.

**Applications/Functions**

- Can seal or grout plastic and steel casings
- Can seal downhole instrumentation in test and observation holes
- Can plug abandoned boreholes and earthen cavities
- Not recommended for use as a cement additive

**Advantages**

- Easy-to-use one sack grout
- Dust-free mixing
- Can be mixed and pumped using conventional rig equipment
- Rehydratable
- No heat of hydration
- Can develop a 20% active solids slurry weighing 9.4 lb/gal (1.13 g/cm<sup>3</sup>) with hydrostatic gradient of 0.489 psi/ft (11.1 kPa/meter)
- Can create a low permeability seal to prevent entry of contaminants from the surface
- Can develop a permanent, flexible seal to prevent commingling between aquifers
- NSF/ANSI Standard 60 certified

**Typical Properties**

• Appearance	Beige to tan granules
• Specific gravity	2.6
• pH (8% slurry)	8.2
• Electrical Resistivity	0.98 ohm-meter
• Yield Volume	26.3 gallons per 50-lb sack 99.5 liters per 23-kg sack
• Permeability (in fresh water)	$2.5 \times 10^{-8}$ cm/sec

**Recommended Treatment** For maximum results, pre-treat make-up water with Soda Ash to less than or equal to 100 mg/l total hardness and to a pH range of 8.5 – 9.5.

The recommended mixing rate is one 50-lb (23-kg) sack of QUIK-GROUT grouting and plugging material per 24 gallons (91 liters) of fresh water to create a 20% active solids by weight grout with a density of 9.4 lb/gal or 1.13 g/cm<sup>3</sup>.

**Recommended Mixing Procedure**

---

**Do not over mix and do not use a centrifugal pump.**

1. Using a mixing device, blend one sack of QUIK-GROUT® grouting and plugging material into 24 gallons (91 liters) of fresh water. Rate of addition should be about 20 to 30 seconds per 50-lb (23-kg) bag.

**Note:** The resulting slurry should have an oatmeal consistency containing unyielded or partially yielded bentonite.

2. Pump slurry through tremie pipe into hole without delay. Grout slurry should be pumped through tremie pipe from bottom of interval to surface to ensure effective displacement. Maintain submergence of tremie pipe a minimum of 10-feet within grout column for uniform displacement.

---

**Additional Information**

- The grouting material and method selected will depend upon the specific subsurface environment including all prevailing geological and hydrological factors and any existing regulatory requirements. The grouting process may not be complete until the grout is static at the desired level.
- The use of bentonite may not be appropriate in environments where the formation water chemistry has a total hardness greater than 500 parts per million and/or a chloride content of greater than 1500 parts per million.
- If questions arise regarding subsurface environments it is always best to consult your local Baroid IDP representative to determine if the Baroid product of choice is appropriate for the given conditions.

---

**Packaging**

QUIK-GROUT grouting and plugging material is packaged in 50-lb (23-kg) multiwall paper bags, containing 0.7 ft<sup>3</sup> (0.02 m<sup>3</sup>).

---

**Availability**

QUIK-GROUT grouting and plugging material can be purchased through any Baroid Industrial Drilling Products Retailer. To locate the retailer nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

**Baroid Industrial Drilling Products**

**Product Service Line, Halliburton**

3000 N. Sam Houston Pkwy E.

Houston, TX 77032

**Customer Service** (800) 735-6075 Toll Free (281) 871-4612

**Technical Service** (877) 379-7412 Toll Free (281) 871-4613

---



# QUIKRETE® 5000 CONCRETE MIX

PRODUCT No. 1007

**DIVISION 3**

Structural Concrete  
03 31 00

## PRODUCT DESCRIPTION

QUIKRETE® 5000 Concrete Mix is a commercial grade blend of stone or gravel, sand and cement specially designed for higher early strength.

## PRODUCT USE

QUIKRETE® 5000 Concrete Mix is suitable for any concrete use requiring high early strength and rapid strength gains. QUIKRETE® 5000 sets quickly, making it ideal for cold weather applications. It has a walk-on time of 10 - 12 hours. QUIKRETE® 5000 can be used for any application requiring concrete in a minimum thickness of 2" (51 mm), such as slabs, footings, steps, columns, walls and patios.

## SIZES

- QUIKRETE® 5000 Concrete Mix –
  - 80 lb (36.3 kg) bags
  - 60 lb (27.2 kg) bags

## YIELD

- Each 80 lb (36.3 kg) bag yields approximately 0.60 cu ft (17 L). A 60 lb (27.2 kg) bag yields approximately 0.45 cu ft (12.7 L).

## TECHNICAL DATA

### APPLICABLE STANDARDS

ASTM International - ASTM C387 Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete

### PHYSICAL/CHEMICAL PROPERTIES

QUIKRETE® 5000 High Early Strength Concrete Mix exceeds the compressive strength requirements of ASTM C387, as shown in Table 1.

TABLE 1 TYPICAL PHYSICAL PROPERTIES<sup>1</sup>

### Compressive strength, ASTM C39

1 day	1500 psi (10.3 MPa)
3 day	2500 psi (17.2 MPa)
7 days	3500 psi (24.1 MPa)
28 days	5000 psi (34.5 MPa)
Slump range 2" - 3" (51 - 76 mm)	

<sup>1</sup> Tested under standard laboratory conditions in accordance with ASTM C387.



## INSTALLATION

### SITE PREPARATION

Stake out the area and remove sod or soil to the desired depth. Nail and stake forms securely in place. Tamp the sub-base until firm.

### MIXING

#### MACHINE MIXING

- QUIKRETE® 5000 can be mixed in a barrel-type concrete mixer or a mortar mixer. Choose the mixer size most appropriate for the size of the job to be done. Allow at least 1 cu ft (28 L) of mixer capacity for each 80 lb (36.3 kg) bag of QUIKRETE® 5000 to be mixed at a time
  - For each 80 lb (36.3 kg) bag of QUIKRETE® 5000 to be mixed, add approximately 6 pt (2.8 L) of fresh water to the mixer. Turn on the mixer and begin adding the bags of concrete to the mixer
  - If the material becomes too difficult to mix, add additional water until a workable mix is obtained
  - If a slump cone is available, adjust water to achieve a 2" - 3" (51 - 76 mm) slump
- Note - Final water content should be approximately 6 - 10 pt (2.8 - 4.7 L) per 80 lb (36.3 kg) bag and 4.5 - 7 pt (2.1 - 3.3 L) per 60 lb (27.2 kg) bag.

#### HAND MIXING

- Empty bags into a suitable mixing container
- Add approximately 6 pt (2.8 L) of clean water for each 80 lb (36.3 kg) bag
- Work the mix with a shovel, rake or hoe and add water as needed until a stiff, moldable consistency is achieved
- Do not exceed a total volume of 10 pt (4.7 L) per 80 lb (36.3 kg) bag or 7 pt (3.3 L) per 60 lb (27.2 kg) bag
- Be sure all material is wet; do not leave unabsorbed puddles of water

#### TEMPERATURE OF WATER

Set times will fluctuate in extremely hot or cold weather. Use cold water or water mixed with ice cubes in severely hot weather; use hot water when mixing in severely cold weather.



## APPLICATION

- Dampen the sub-grade before concrete is placed. Do not leave standing puddles
  - Shovel or place the concrete into the form. Fill to the full depth of the form
  - After the concrete has been compacted and spread to completely fill the forms, strike off and float immediately
  - To strike off, use a straight board (screed), moving the edge back and forth with a saw-like motion to smooth the surface. Then use a darby or bull float to float the surface. This helps level any ridges and fill voids left by the straight edge
  - Cut the concrete away from the forms by running an edging tool or trowel along the forms to compact the slab edges
  - Cut 1" (25.4 mm) control joints into the slab every 6' - 8' (1.8 - 2.4 m) using a grooving tool
  - Allow the concrete to stiffen slightly, waiting until all water has evaporated from the surface before troweling or applying a broom finish
- Note - For best results, do not overwork the material.

## CURING

### GENERAL

Curing is one of the most important steps in concrete construction. Proper curing increases the strength and durability of concrete, and a poor curing job can ruin an otherwise well-done project. Proper water content and temperature are essential for good curing. In near freezing temperatures, the hydration process slows considerably. When weather is too hot, dry or windy, water is lost by evaporation from the concrete and hydration stops resulting in finishing difficulties and cracks. The ideal circumstances for curing are ample moisture and moderate temperature and wind conditions. Curing should be started as soon as possible and should continue for a period of 5 days in warm weather, 70°F (21°C) or higher, or 7 days in colder weather, 50 – 70°F (10 - 21°C).

### SPECIFIC CURING METHODS

QUIKRETE® Acrylic Cure & Seal – Satin Finish (#8730) provides the easiest and most convenient method of curing concrete.

- Apply by sprayer or roller after the final finishing operation when the surface is hard. The surface may be damp, but not wet, when applying curing compound. Complete coverage is essential.
- Other methods of providing proper curing include covering the surface with wet burlap, keeping the surface wet with a lawn sprinkler and sealing the concrete surface with plastic sheeting

- If burlap is used, it should be free of chemicals that could weaken or discolor the concrete. New burlap should be washed before use. Place it when the concrete is hard enough to withstand surface damage and sprinkle it periodically to keep the concrete surface continuously moist
- Water curing with lawn sprinklers or hoses must be continuous to prevent interruption of the curing process
- Curing with plastic sheets is convenient. They must be laid flat, thoroughly sealed at joints and anchored carefully along edges

### PRECAUTIONS

- When used in structural elements, comply with the steel reinforcing and additional requirements of applicable building codes.
- Curing compounds should not be applied if rain or temperatures below 50°F (10°C) are expected within 24 hours
- Curing with plastic or burlap can cause patchy discoloration in colored concrete. For colored concrete, wet curing or chemical curing compounds are recommended
- Use of Acrylic Cure & Seal – Satin Finish (#8730) or other curing compounds is not recommended during late fall in northern climates on surfaces where de-icers will be used to melt ice and snow. Using curing compounds at that time may prevent proper air curing of the concrete, which is necessary to enhance its resistance to damage caused by deicers
- Protect concrete from freezing during the first 48 hours. Plastic sheeting and insulation blankets should be used if temperatures are expected to fall below 32°F (0°)

### WARRANTY

The QUIKRETE® Companies warrant this product to be of merchantable quality when used or applied in accordance with the instructions herein. The product is not warranted as suitable for any purpose or use other than the general purpose for which it is intended. Liability under this warranty is limited to the replacement of its product (as purchased) found to be defective, or at the shipping companies' option, to refund the purchase price. In the event of a claim under this warranty, notice must be given to The QUIKRETE® Companies in writing. This limited warranty is issued and accepted in lieu of all other express warranties and expressly excludes liability for consequential damages.

The QUIKRETE® Companies  
One Securities Centre  
3490 Piedmont Rd., NE, Suite 1300, Atlanta, GA 30305  
(404) 634-9100 • Fax: (404) 842-1425

\* Refer to [www.quikrete.com](http://www.quikrete.com) for the most current technical data, MSDS, and guide specifications

