# LOG OF BORING C-07



Rock Engineering & Testing Lab., Inc.
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CLIENT: HDR, Inc.
PROJECT: Prop. Large Scale Beach Nourishment Project
LOCATION: S. Jetty Borrow Source Area; Galveston, TX
NUMBER: G108558
DATE(S) DRILLED: 07/31/08 - 07/31/08

DRILLING METHOD(S):
Hollow Stem Auger

GROUNDWATER INFORMATION:

SURFACE ELEVATION: -8.7' NAVD

| FIELD DATA | | | | | LABORATORY DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOIL SYMBOL | Elevation, Ft. [NAVD] | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION | MOISTURE CONTENT (%) | ATTERBERG LIMITS: LIQUID LIMIT LL | ATTERBERG LIMITS: PLASTIC LIMIT PL | ATTERBERG LIMITS: PLASTICITY INDEX PI | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | DESCRIPTION OF STRATUM |
| | 5 | | | | | | | | | | | |
| | 10 | SS S-1 | | N= 3 | 30 | | | | | | 15 | **SILTY CLAYEY SAND**, with shell, dark gray, very moist, very loose. |
| | | SS S-2 | | N= 6 | | | | | | | | Same as above, loose. |
| | | SS S-3 | | N= 9 | 30 | | | | | | 21 | Same as above. |
| | 15 | SS S-4 | | N= 20 | | | | | | | | **SILTY CLAYEY SAND**, with shell, dark gray, moist, medium. |
| | | SS S-5 | | N= 18 | 21 | | | | | | 12 | Same as above. |
| | 20 | SS S-6 | | N= 10 | | | | | | | | Same as above. |
| | | SS S-7 | | N= 4 | 28 | | | | | | 19 | **SILTY CLAYEY SAND**, with shell, dark gray, moist, loose. |
| | | SS S-8 | | N= 3 | 52 | | | | | | 68 | **SANDY CLAY**, with shell, gray, very moist, soft. |
| | 25 | SS S-9 | | N= 30 | 34 | | | | | | 37 | **CLAYEY SAND**, with shell, gray, very moist, very stiff. |
| | | SS S-10 | | N= 9 | 24 | | | | | | 6 | **POORLY GRADED SAND**, with clay and shell, gray, moist, loose. |
| | 30 | SS S-11 | | N= 1 | | | | | | | | Same as above, very loose. |
| | | SS S-12 | | N= 0 | | | | | | | | **SANDY CLAY**, with shell, gray, moist, very soft. |
| | | SS S-13 | | N= WOH | | | | | | | | Same as above. |
| | | | | | | | | | | | | Boring was extended to an elevation of -33.7-feet NAVD during the drilling operations. |

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

REMARKS:
Boring depth and location was determined by HDR, Inc. Boring operations were performed by RETL.
GPS Coord. N. 29.33395 W. 94.72095

· Geotechnical Engineering
· Construction Materials Testing

**PROJECT NAME:** West Galveston Island Large Scale Beach Nourishment Project
**CLIENT:** HDR, Inc.
**BORING ID.:** C-07
**DESCRIPTION:** South Jetty Borrow Source Area

| PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE) | | | |
|---|---|---|---|
| -8.7' TO -10.7' NAVD | -12.7' TO -14.7' NAVD | -16.7' TO -18.7' NAVD | -20.7' TO -22.7' NAVD |
| 2.62 | 1.64 | 1.33 | 1.16 |

| ASTM MESH | % FINER BY WEIGHT AFTER REMOVING SHELL | | | |
|---|---|---|---|---|
| | -8.7' TO -10.7' NAVD | -12.7' TO -14.7' NAVD | -16.7' TO -18.7' NAVD | -20.7' TO -22.7' NAVD |
| #10 | 100.00 | 100.00 | 100.00 | 100.00 |
| #18 | 98.40 | 98.90 | 98.66 | 98.80 |
| #35 | 97.20 | 98.20 | 97.52 | 97.98 |
| #60 | 95.50 | 97.50 | 95.83 | 65.71 |
| #120 | 38.90 | 40.60 | 35.51 | 25.18 |
| #170 | 18.70 | 23.10 | 19.03 | 20.04 |
| #200 | 15.30 | 20.50 | 12.05 | 18.94 |
| STATISTICS (EXCLUDING SHELL) | | | | |
| MEDIAN GRAIN SIZE (mm) | 0.15 | 0.15 | 0.11 | 0.20 |
| MEAN GRAIN SIZE (mm) | 0.14 | N/A | 0.11 | N/A |
| SORTING (σ) | N/A | N/A | N/A | N/A |

*The -#10 material was utilized as the total sample for Grain Size Distribution Curve calculations.

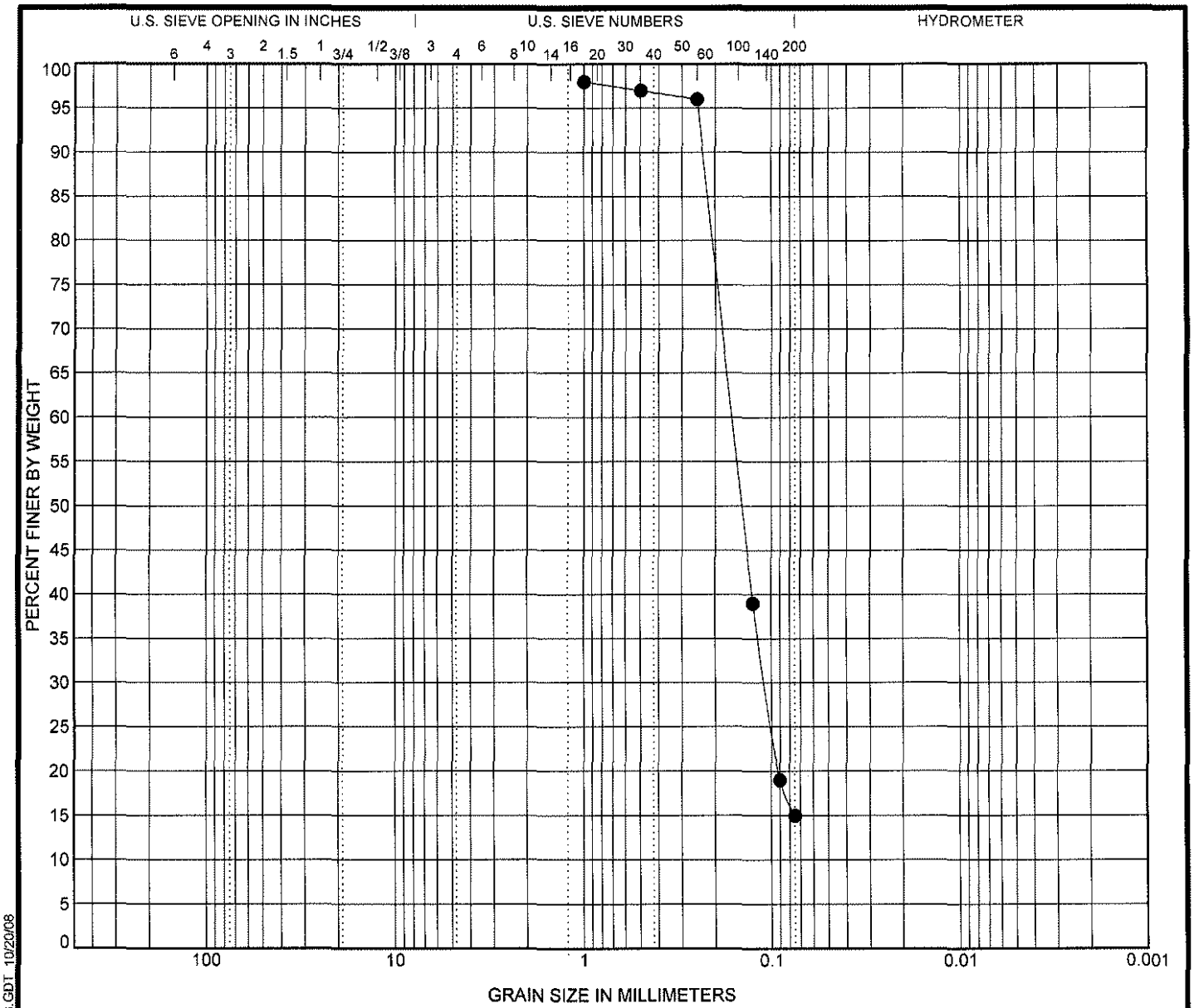
· Geotechnical Engineering
· Construction Materials Testing

**PROJECT NAME:** West Galveston Island Large Scale Beach Nourishment Project
**CLIENT:** HDR, Inc.
**BORING ID.:** C-07
**DESCRIPTION:** South Jetty Borrow Source Area

| PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE) | | |
|---|---|---|
| **-22.7' TO -24.7' NAVD** | **-24.7' TO -26.7' NAVD** | **-26.7' TO -28.7' NAVD** |
| **0.30** | **1.40** | **N/A** |

| ASTM MESH | % FINER BY WEIGHT AFTER REMOVING SHELL | | |
|---|---|---|---|
| | **-22.7' TO -24.7' NAVD** | **-24.7' TO -26.7' NAVD** | **-26.7' TO -28.7' NAVD** |
| #10 | 100.00 | 100.00 | N/A |
| #18 | 99.84 | 99.30 | N/A |
| #35 | 99.73 | 98.60 | N/A |
| #60 | 99.54 | 97.40 | N/A |
| #120 | 82.92 | 39.60 | N/A |
| #170 | 71.18 | 38.80 | N/A |
| #200 | 67.60 | 36.60 | 5.60 |
| **STATISTICS (EXCLUDING SHELL)** | | | |
| **MEDIAN GRAIN SIZE (mm)** | N/A | 0.15 | N/A |
| **MEAN GRAIN SIZE (mm)** | N/A | N/A | N/A |
| **SORTING (σ)** | N/A | N/A | N/A |

*C-07; -26.7' to -28.7' NAVD was only passed through the -#200 sieve.
*The -#10 material was utilized as the total sample for Grain Size Distribution Curve calculations.




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Specimen ID | Depth | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | C-07 | (-8.7' to -10.7' NAVD) | **Borrow Area (-8.7' to -10.7' NAVD)** | | | | | |

| | Specimen ID | Depth | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | C-07 | (-8.7' to -10.7' NAVD) | **1** | **0.161** | **0.108** | | **0.0** | **83.0** | **15.0** | |

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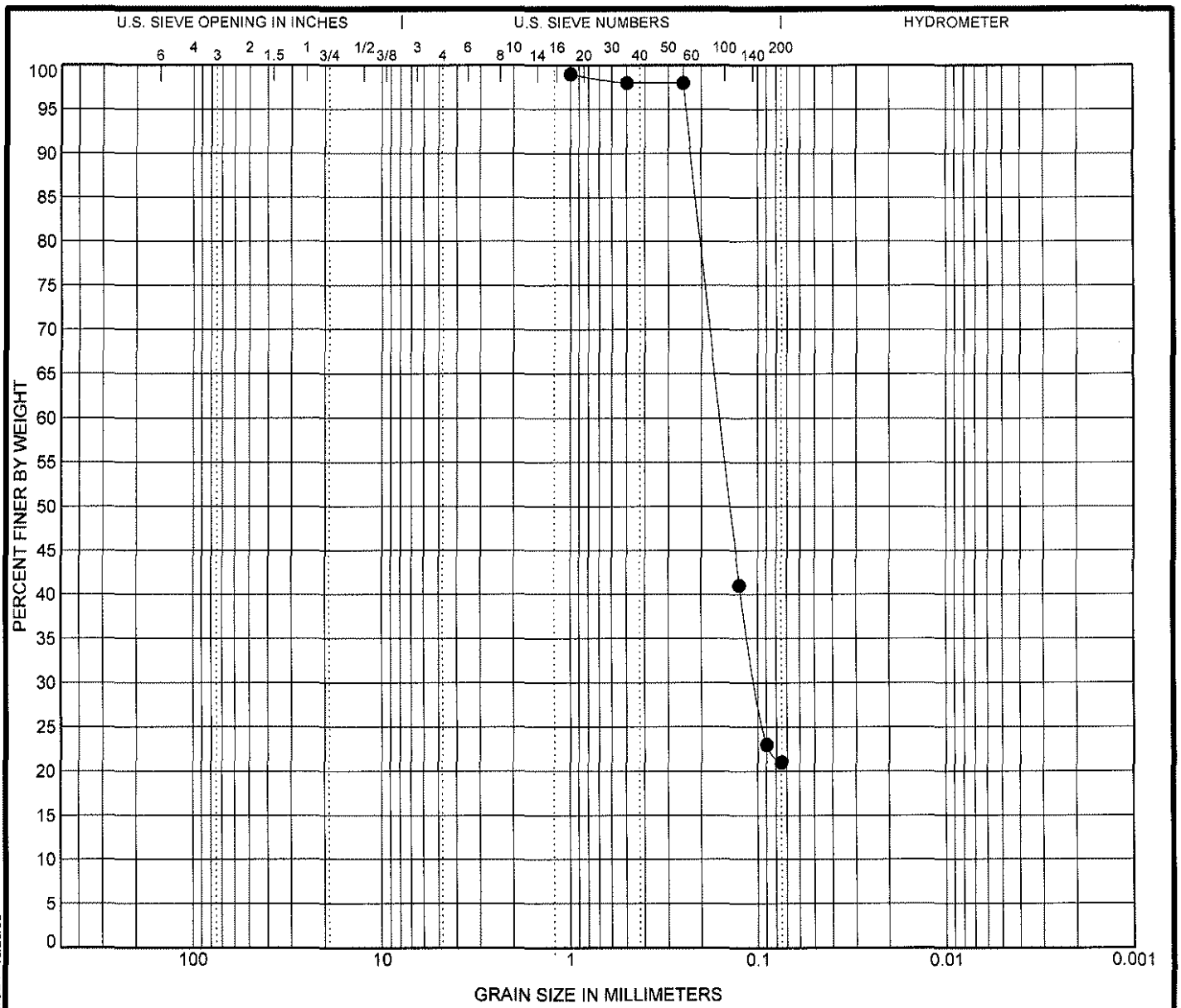
# GRAIN SIZE DISTRIBUTION

Project: Prop. Large Scale Beach Nourishment Project

Location: South Jetty Borrow Source Area; Galveston, Texas

Number: G108558

US_GRAIN_SIZE_G108558B PROP. LARGE SCALE BEACH NOURISHMENT PROJECT.GPJ US_LAB.GDT 10/20/08




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Specimen ID | Depth | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **C-07** | (-12.7' to -14.7' NAVD) | **Borrow Area (-12.7' to -14.7' NAVD)** | | | | | |

| | Specimen ID | Depth | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **C-07** | (-12.7' to -14.7' NAVD) | **1** | **0.157** | **0.102** | | **0.0** | **78.0** | **21.0** | |

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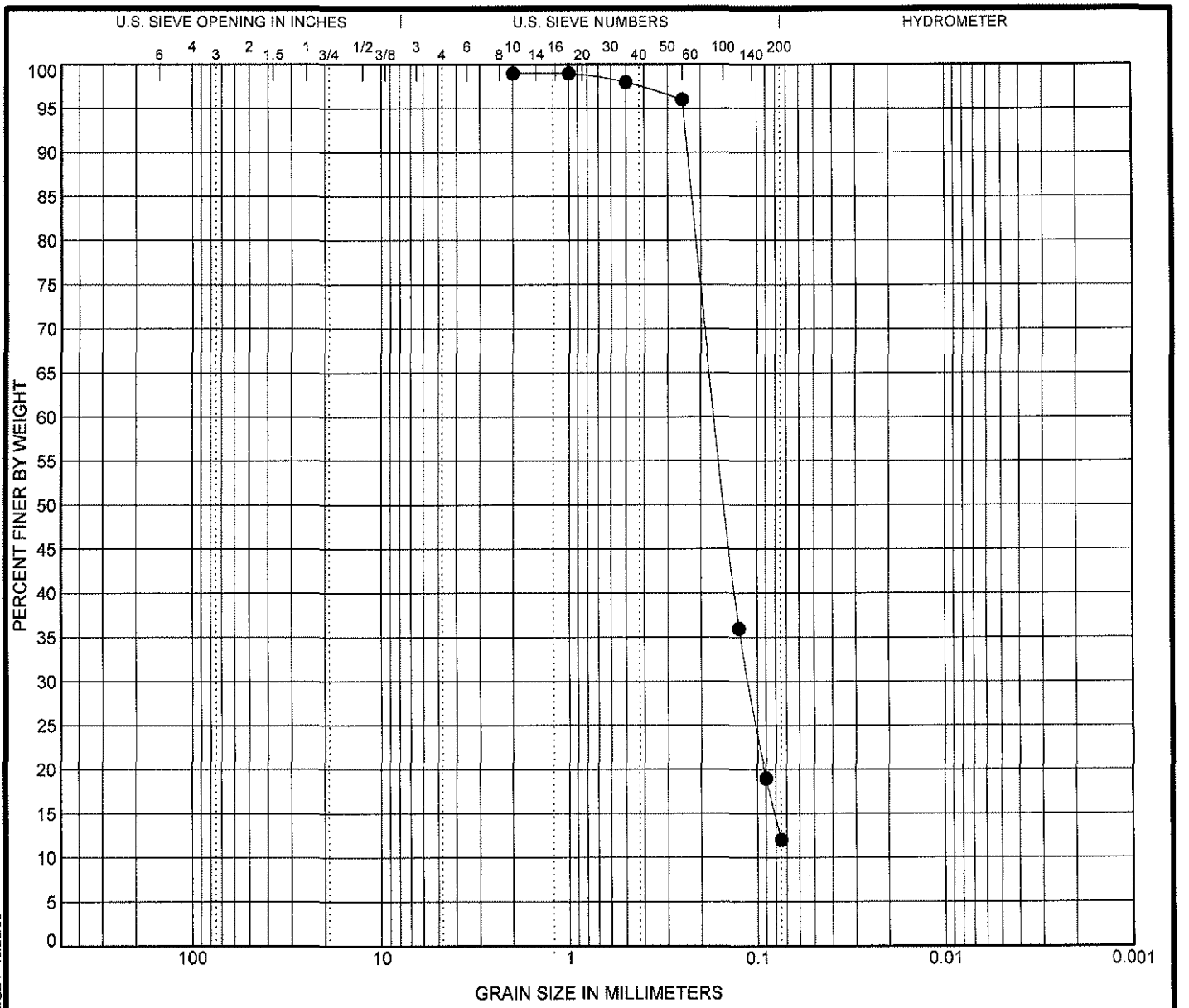


| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Specimen ID | Depth | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **C-07** | (-16.7' to -18.7' NAVD) | **Borrow Area (-16.7' to -18.7' NAVD)** | | | | **1.06** | **2.32** |

| | Specimen ID | Depth | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **C-07** | (-16.7' to -18.7' NAVD) | **2** | **0.165** | **0.111** | | **0.0** | **87.0** | **12.0** | |

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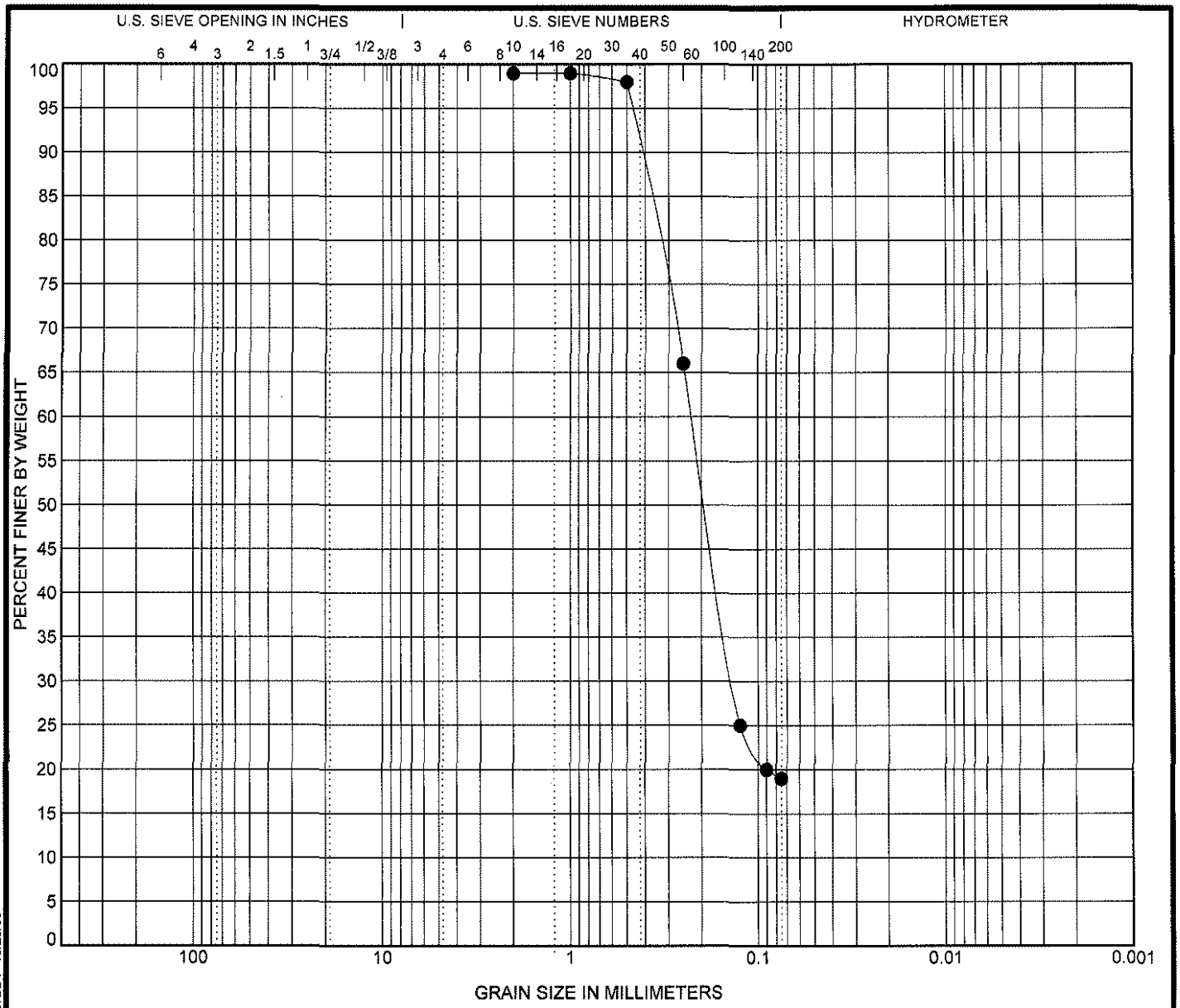


| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Specimen ID | Depth | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **C-07** | (-20.7' to -22.7' NAVD) | **Borrow Area (-20.7' to -22.7' NAVD)** | | | | | |

| | Specimen ID | Depth | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **C-07** | (-20.7' to -22.7' NAVD) | **2** | **0.226** | **0.136** | | **0.0** | **80.0** | **19.0** | |

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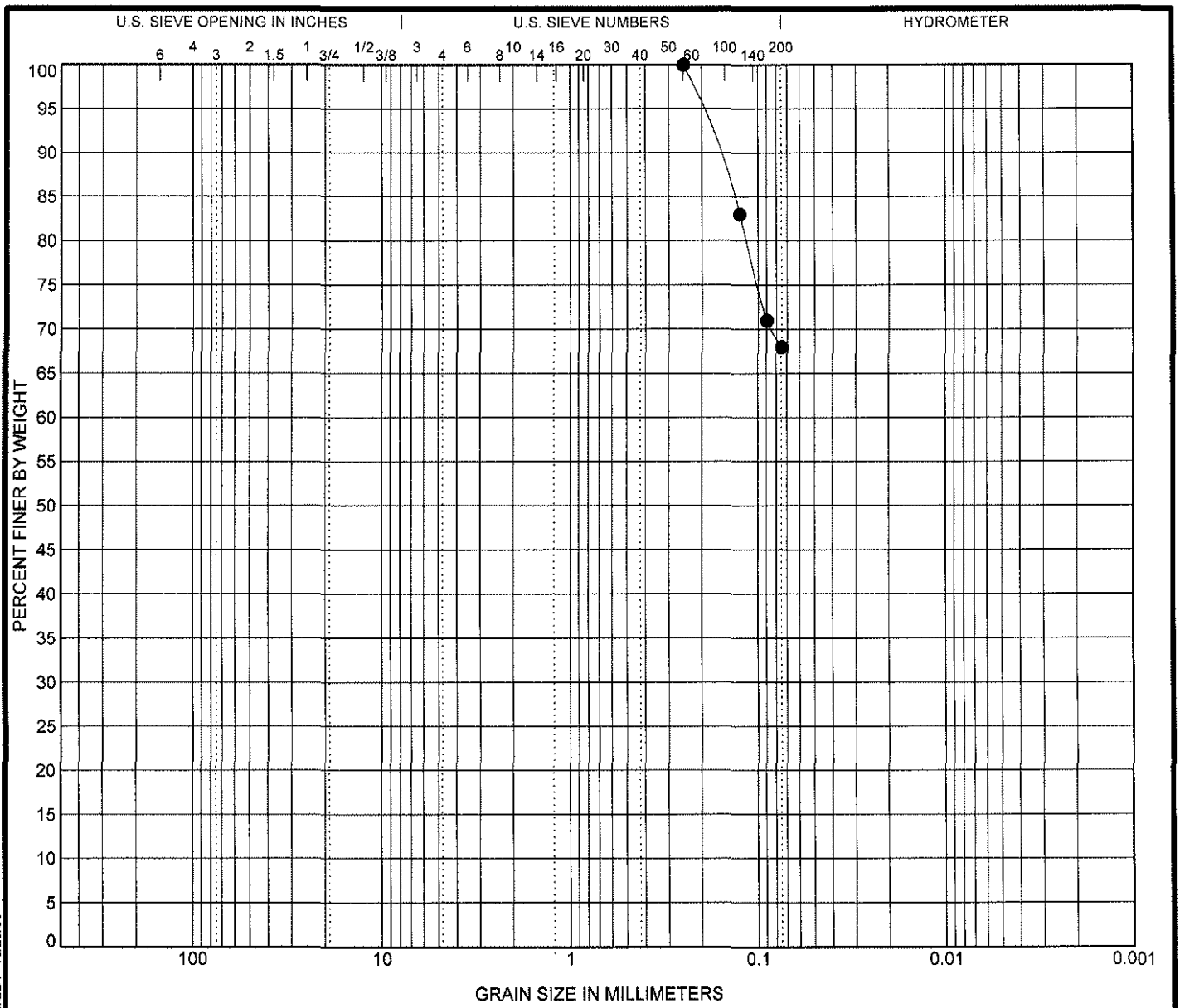


| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Specimen ID | Depth | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **C-07** | (-22.7 to -24.7 NAVD) | **Borrow Area (-22.7' to -24.7' NAVD)** | | | | | |

| | Specimen ID | Depth | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **C-07** | (-22.7 to -24.7 NAVD) | **0.25** | | | | **0.0** | **32.0** | **68.0** | |

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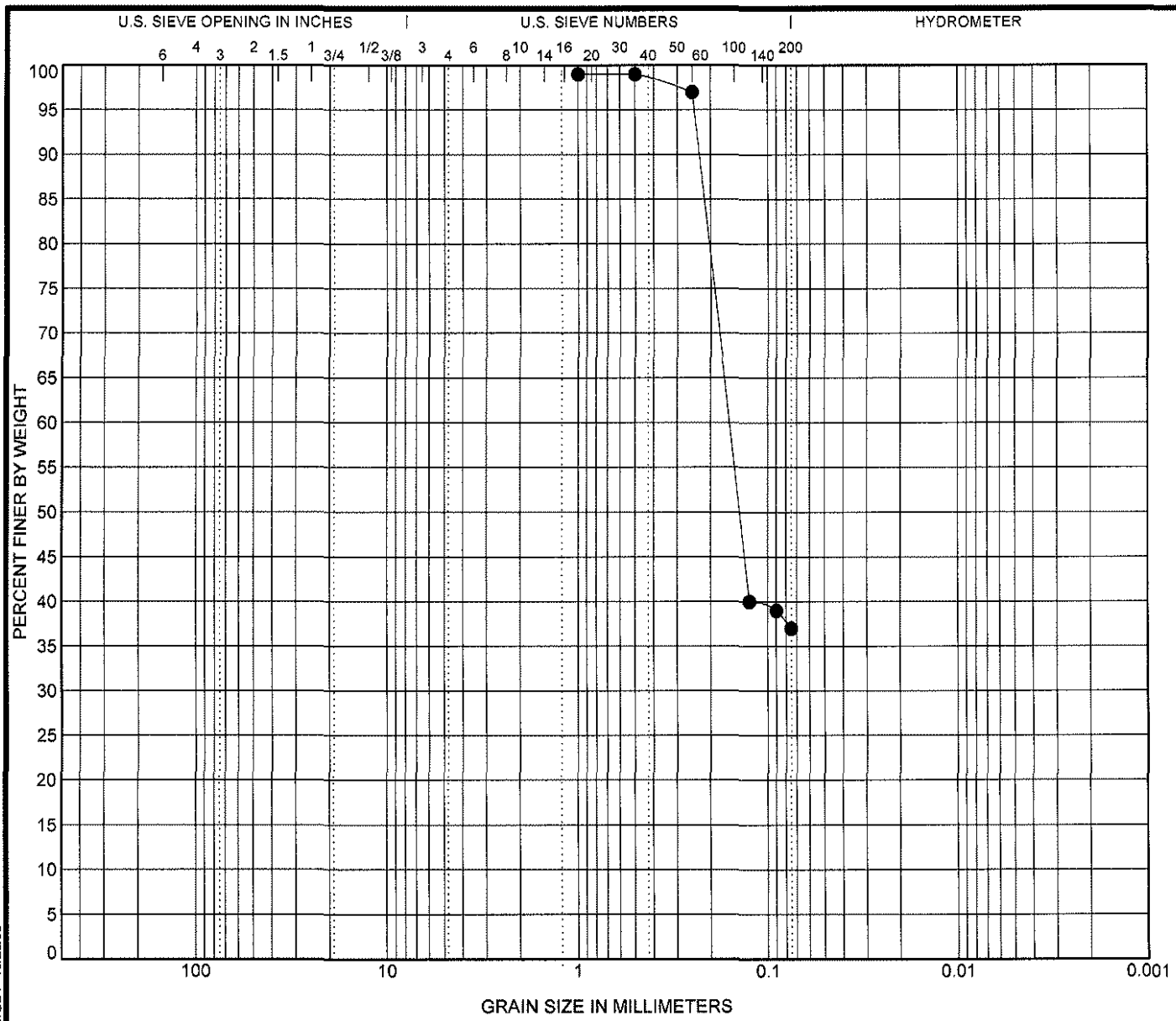


| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Specimen ID | Depth | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | C-07 | (-24.7 to -26.7 NAVD) | **Borrow Area (-24.7' to -26.7' NAVD)** | | | | | |

| | Specimen ID | Depth | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | C-07 | (-24.7 to -26.7 NAVD) | 1 | 0.159 | | | 0.0 | 62.0 | 37.0 | |

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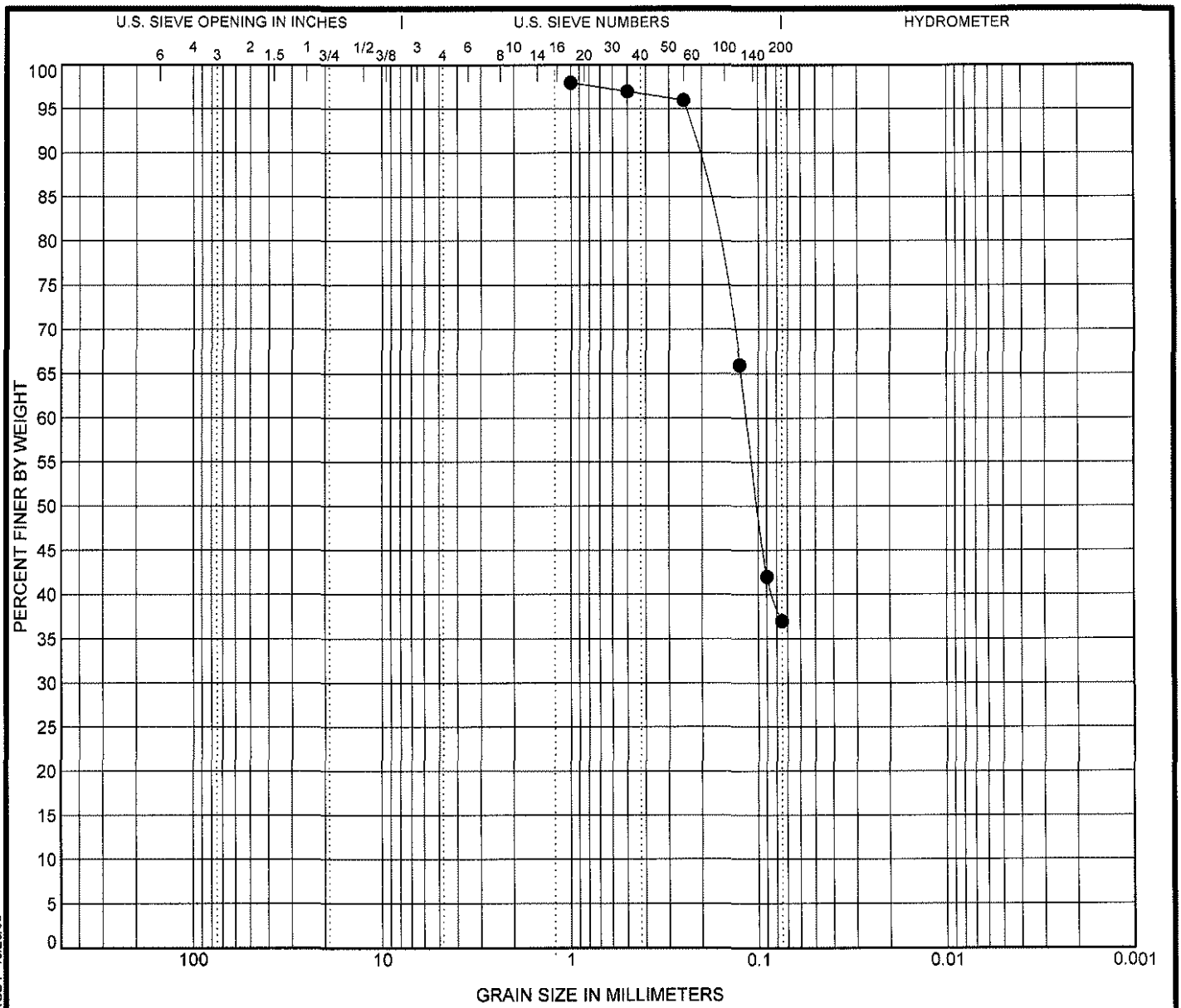


| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Specimen ID | Depth | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **C-08** | (-27.1 to -29.1' NAVD) | **Borrow Area (-27.1' to -29.1' NAVD)** | | | | | |

| | Specimen ID | Depth | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **C-08** | (-27.1 to -29.1' NAVD) | **1** | **0.115** | | | **0.0** | **61.0** | **37.0** | |

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