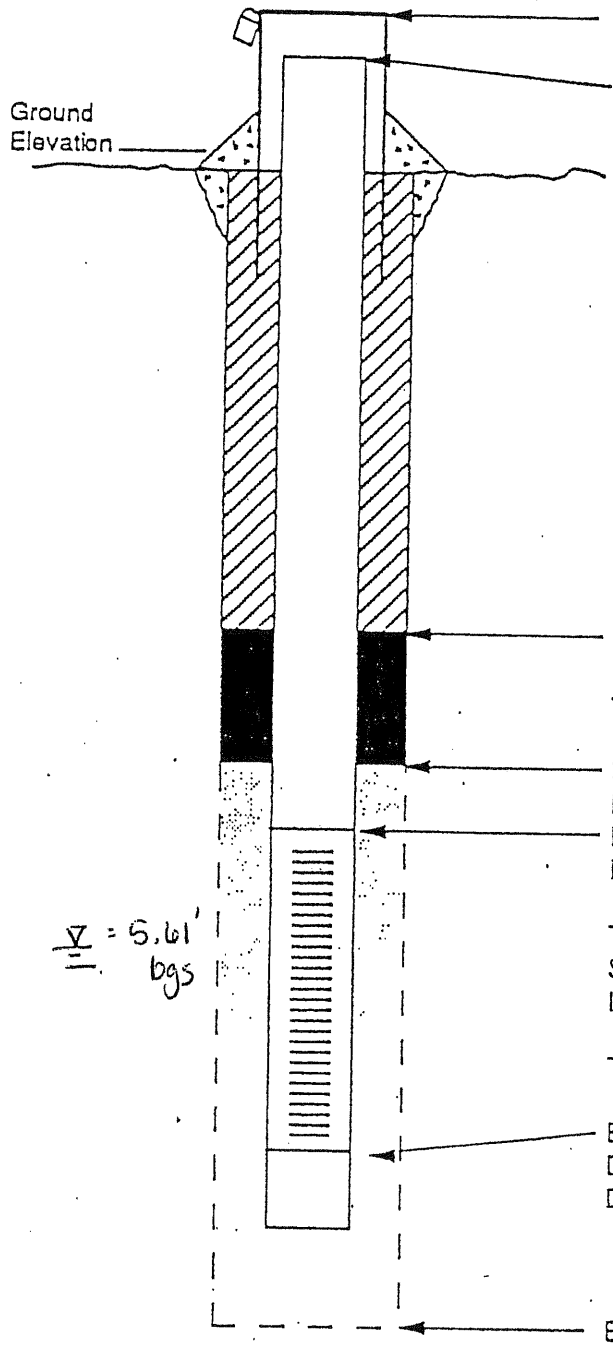
F-2

HARDING ESE MONITORING WELL CONSTRUCTION DIAGRAMS

MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome (SP-99-07)
Project No. 2842-00
Boring No. MWCR-99-01
Date Installed 1-8-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 0.5 feet
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 1.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 3.5 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 slot - 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

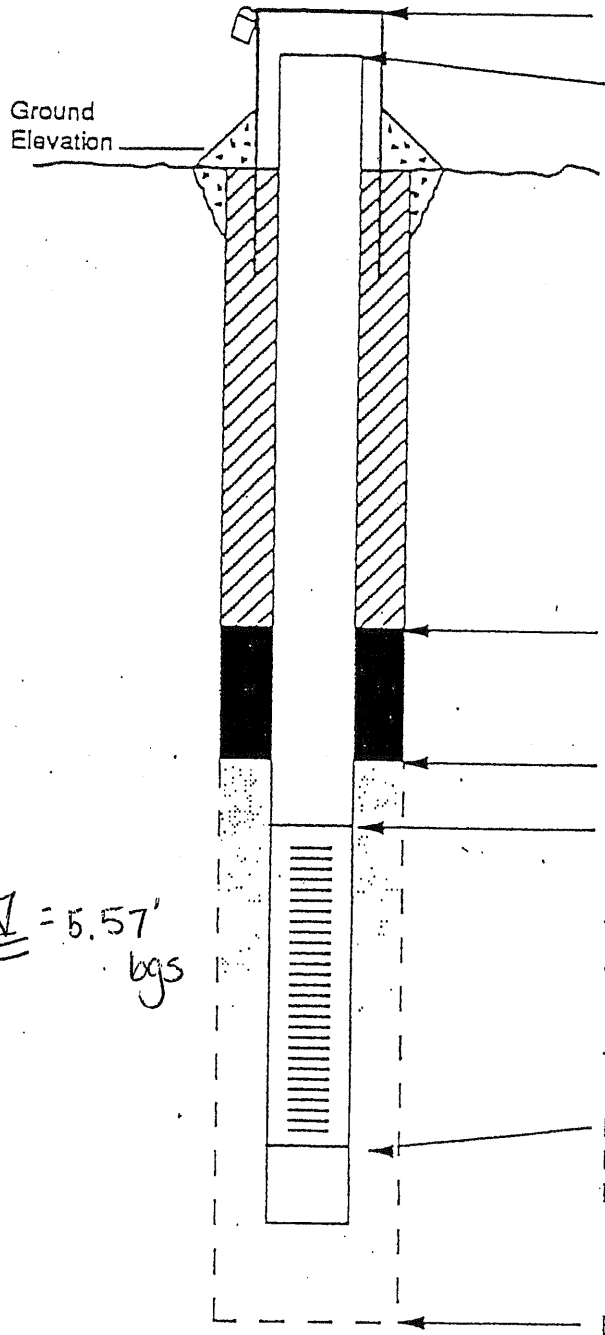
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 8.5 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 8.5 feet

Hach Kit Test (6'-8'): Total Cr = 0.3 mg/L, Hex Cr = 0 mg/L

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP Chrome
Project No.: 02842-00
Boring No.: MWCR-99-02 (SP-99-09)
Date Installed: 1-9-99
Field Geologist: G. Rustad
Driller: P. Craine
Drilling Method: Terraprobe
Development Method:



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 1.0 foot
Type of Seal:

Elevation of Top of Sand:
Depth of Top of Sand: 1.5 feet
Elevation of Top of Screen:
Depth of Top of Screen: 3.30 feet

Type of Screen: PVC SCH 40
Slot Size x Length: 10 Slot - 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in / Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 8.30 feet
Depth of Sediment Sump with Plug: N/A

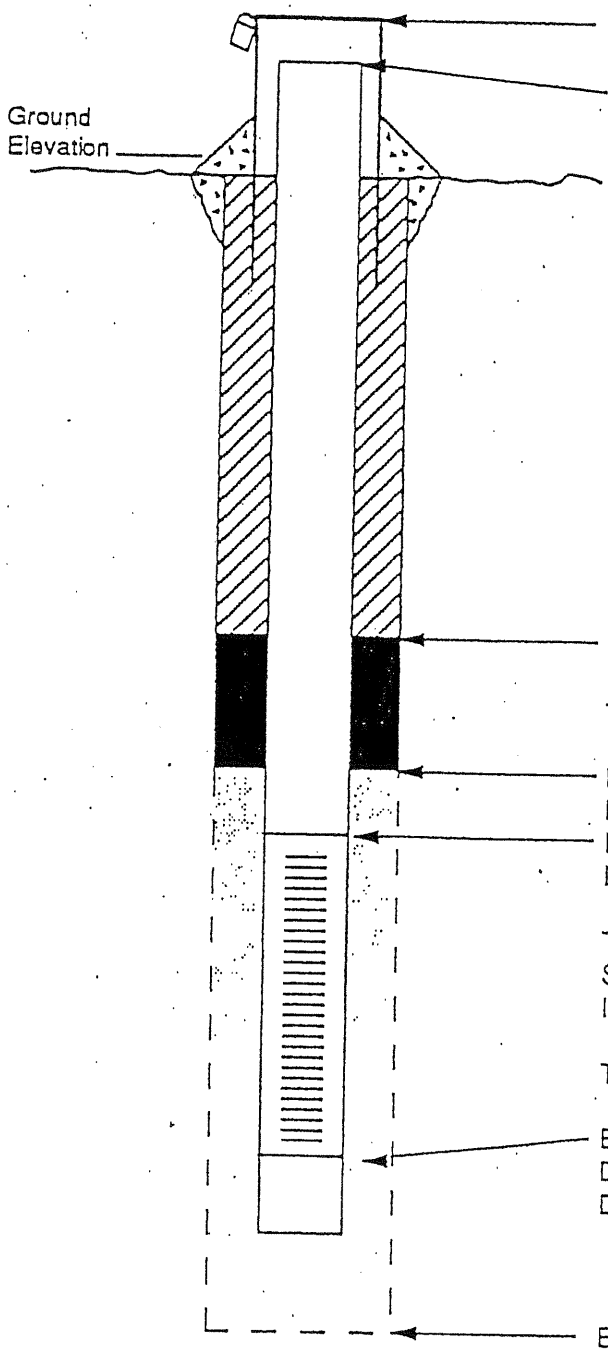
Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 8.30 feet

Hach Kit Test (6'-8'): Total Cr = 0.15 mg/L, Hex Cr = 0 mg/L

MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-99-04I
Date Installed 2-10-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing:
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole:

Riser Pipe ID: 1 INCH
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: CEMENT

Elevation of Top of Seal:
Depth of Top of Seal: 2 FEET bgs
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand:
Depth of Top of Sand: 14 FEET
Elevation of Top of Screen:
Depth of Top of Screen: 30

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010 INCH X 5 FEET
ID of Screen: 1 INCH

Type of Sandpack: CAVE-IN

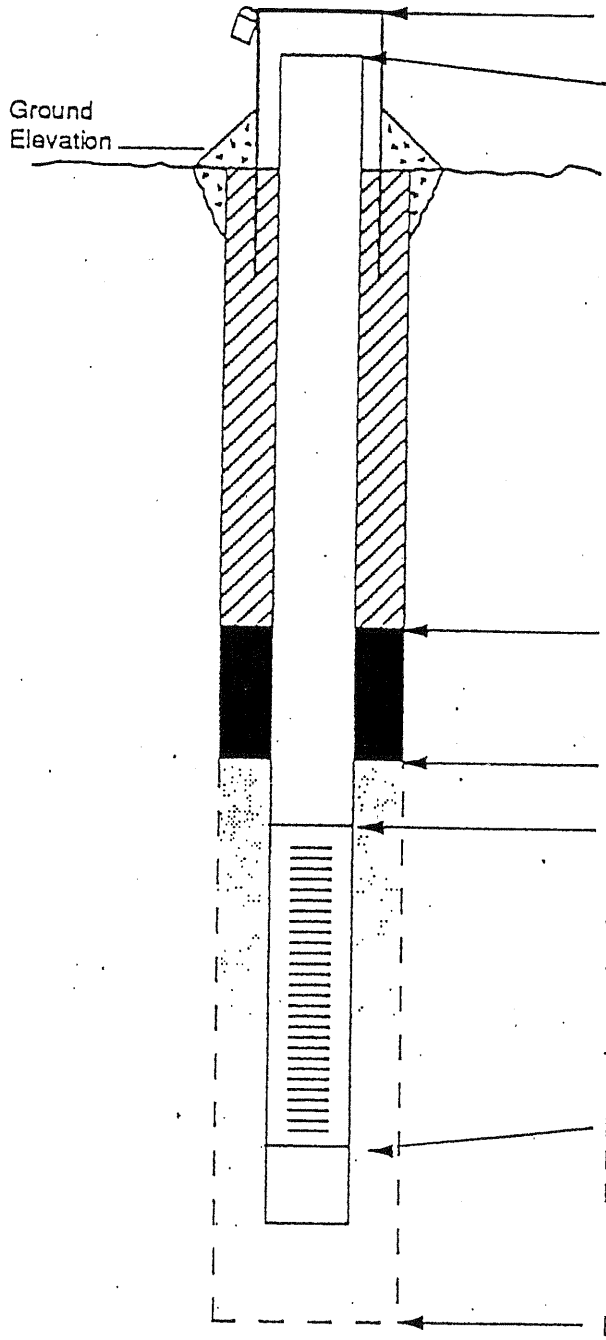
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 35
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 35.1

MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-99-12I
Date Installed 2-10-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing:
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole:

Riser Pipe ID: 1 INCH
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Cement

Elevation of Top of Seal:
Depth of Top of Seal: 2.0 feet bgs
Type of Seal: Bentonite chips

Elevation of Top of Sand:
Depth of Top of Sand: 12.0 feet bgs
Elevation of Top of Screen:
Depth of Top of Screen: 16.15 feet bgs

Type of Screen: SCH 40 PVC
Slot Size x Length:
ID of Screen: 1 INCH

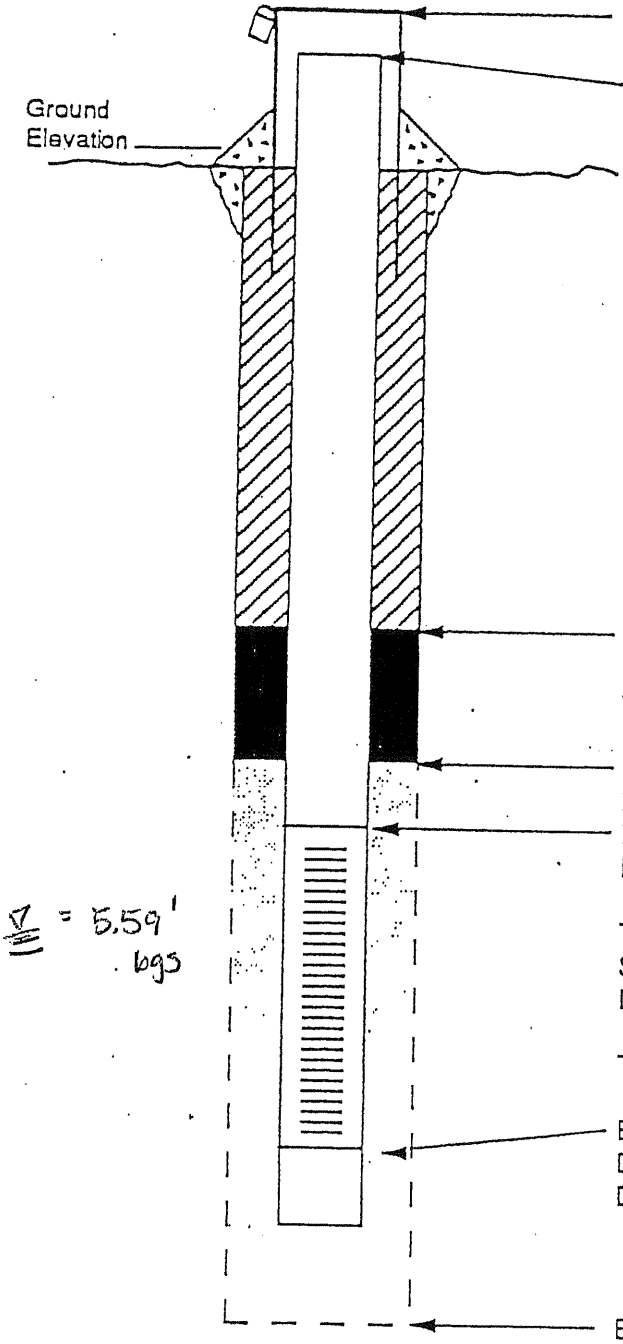
Type of Sandpack: CAVE-IN

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 21.15 feet bgs
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole: ~~21.15 ft~~ (6)
Depth of Bottom of Borehole: 21.15 feet bgs

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP Chrome
Project No.: 2842-00
Boring No.: PZ-PILOT-01
Date Installed: 1-10-99
Field Geologist: G. Rustad
Driller: P. Craine
Drilling Method: Terraprobe
Development Method:



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 0.5 foot
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 1.0 foot
Elevation of Top of Screen:
Depth of Top of Screen: 2.20 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in / Fine Sand

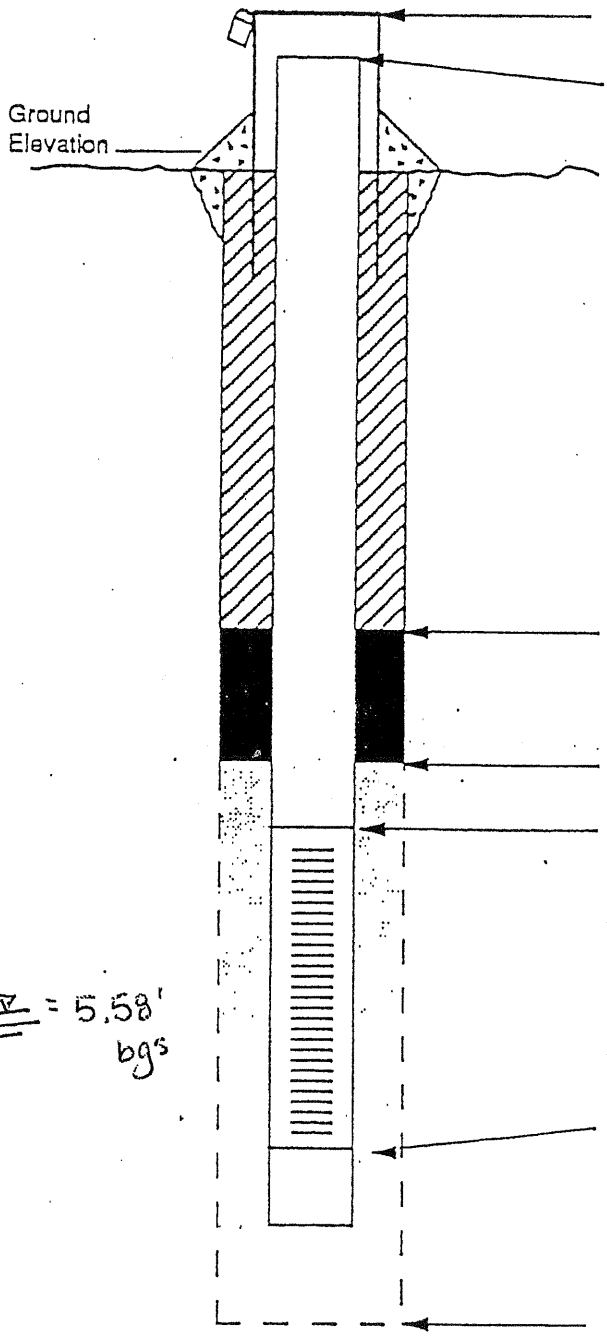
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 7.20 feet
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 7.20 feet

Hach Test (5'-7' bgs): Total Cr = 5 mg/L, Hex Cr = >1.5 mg/L

MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-02
Date Installed 1-10-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 0.5 foot
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 1.0 foot
Elevation of Top of Screen:
Depth of Top of Screen: 2.18 feet

Type of Screen: Sch 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 7.18 feet
Depth of Sediment Sump with Plug: N/A

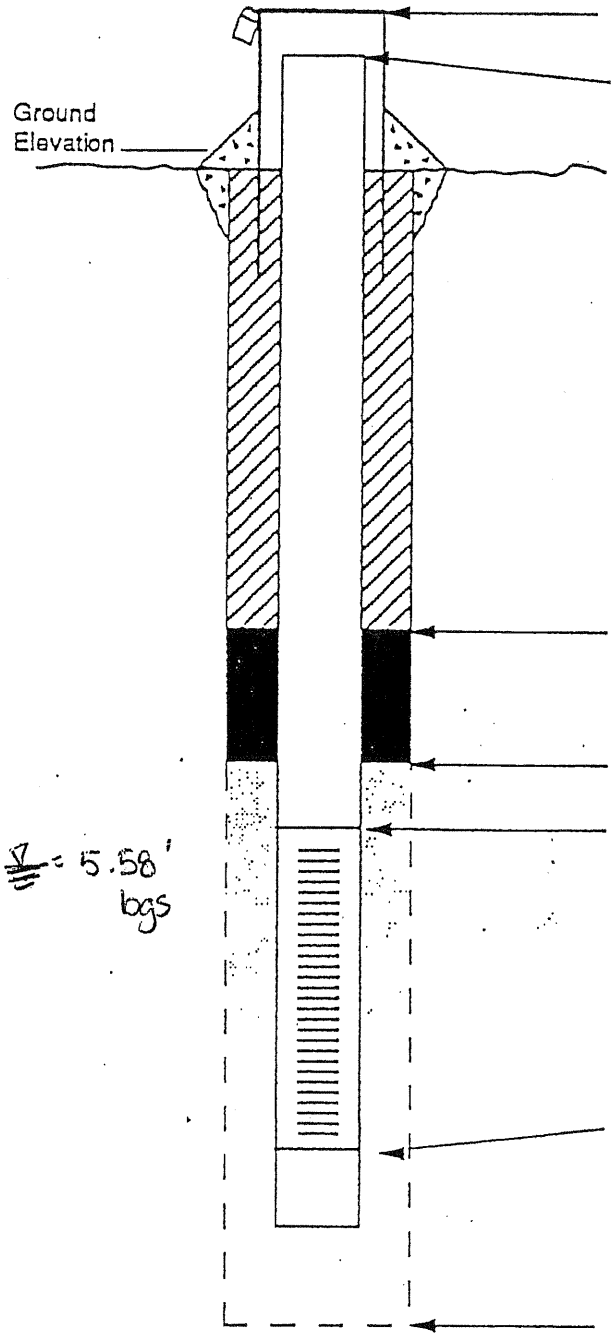
Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 7.18 feet

Hach Kit Test (5'-7' bgs): Total Cr = 13.5 mg/L, Hex = >1.5 mg/L

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP Chrome
Project No.: 02842-00
Boring No.: PZ-PILOT-03
Date Installed: 1-10-99
Field Geologist: G. Rustad

Driller: P. Craine
Drilling Method: Terraprobe
Development Method:



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 1.0 foot
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 2.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 2.80 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/ Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 7.80 feet
Depth of Sediment Sump with Plug: N/A

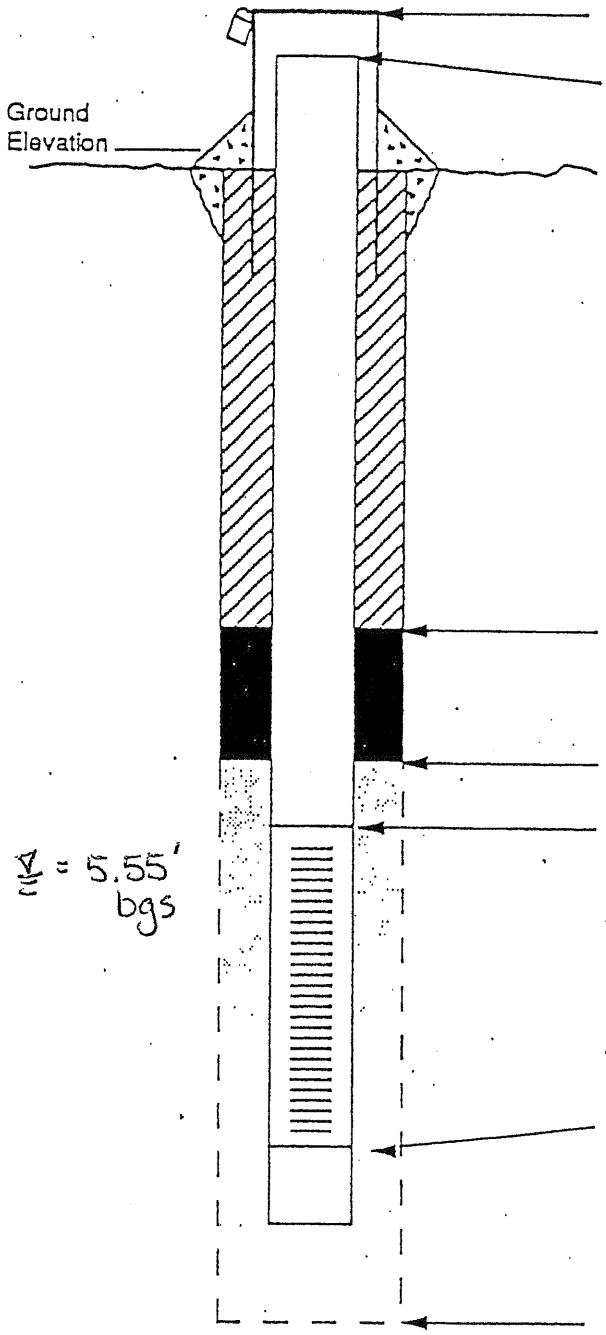
Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 7.80 feet

Hach Kit Test (6'-8' bgs): Total Cr = 22.5 mg/L, Hex Cr = >1.5 mg/L

MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-04
Date Installed 1-9-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 1.0 foot
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 2.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 4.45 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

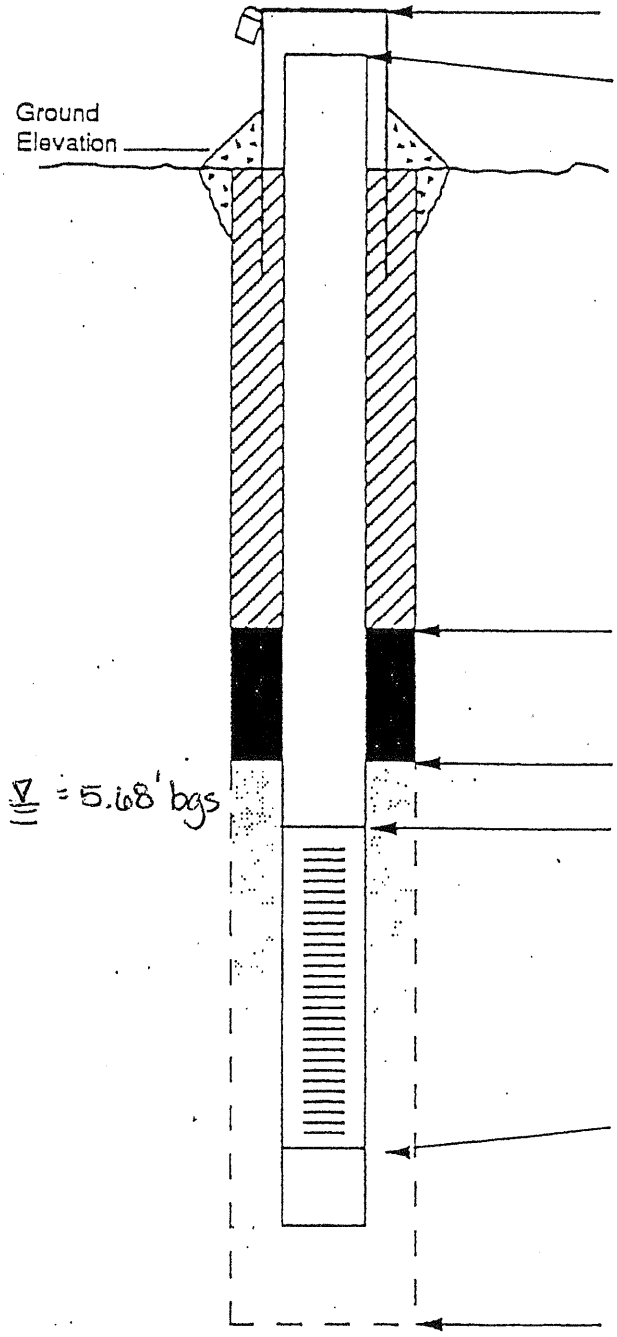
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 9.45 feet
Depth of Sediment Sump with Plug:

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 9.45 feet

Hach Test (7'-9' bgs): Total Cr = 13.5 mg/L, hex Cr = > 1.5 mg/L

MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-05
Date Installed 1-9-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 2.5 feet
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 3.5 feet
Elevation of Top of Screen:
Depth of Top of Screen: 6.23 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in / Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 11.23 feet
Depth of Sediment Sump with Plug: N/A

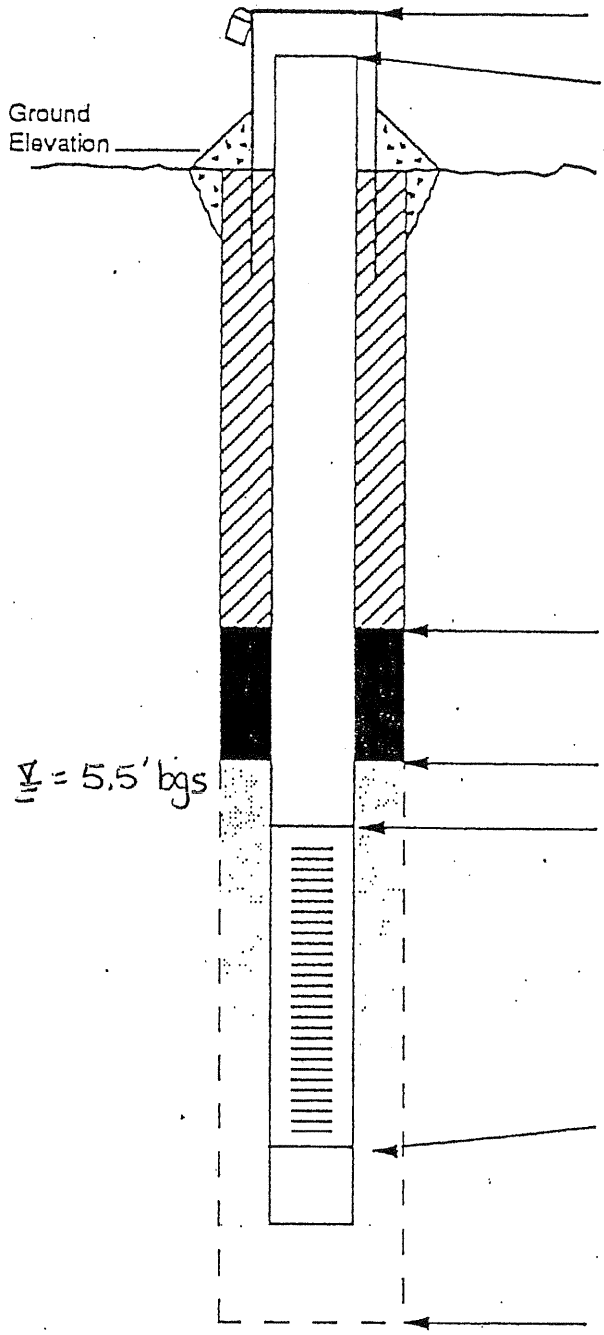
Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 11.23 feet

NOTES: Hach Test Kit: Total Cr = 18 mg/L, hex cr = >1.5 mg/L
(7'-11' bgs)

MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP/ Chrome
Project No. 2842-00
Boring No. PZ-PILOT-06
Date Installed 1-9-99
Field Geologist

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 4.5 feet
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 6.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 8.25 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/ Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 13.25 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 13.25 feet

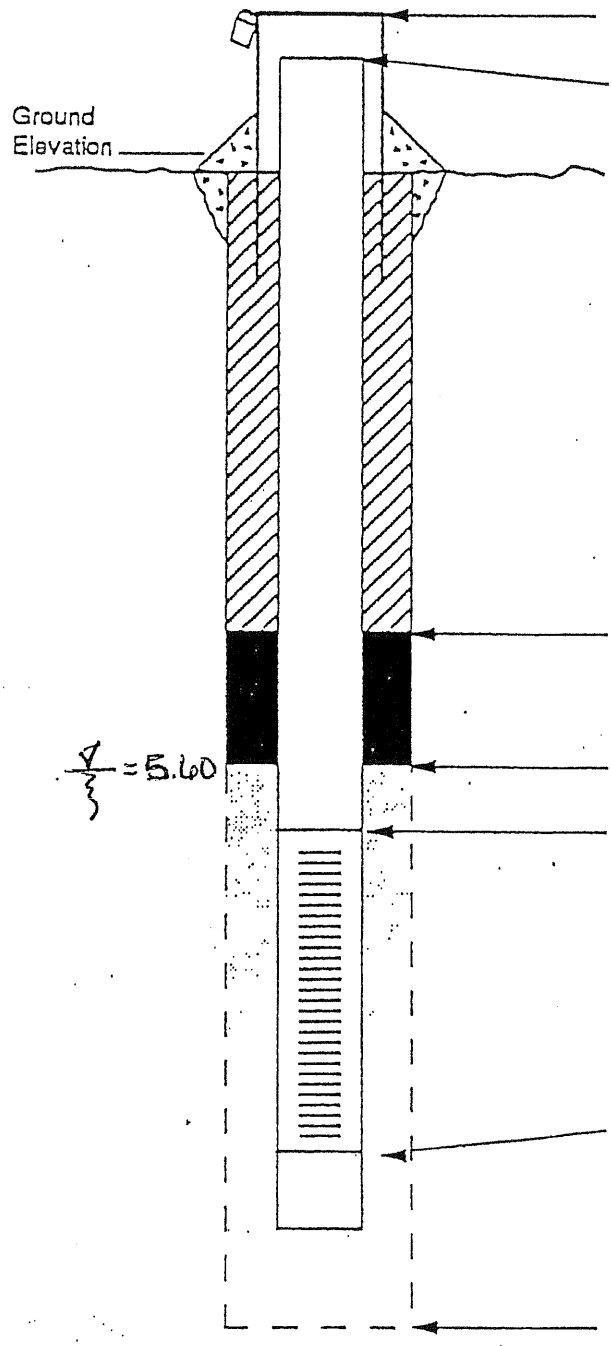
NOTES:
Hach Kit: 9'-13' bgs: Total Cr = 7 mg/L, Hex Cr = > 1.5 mg/L

See boring log for PZ-PILOT-06

MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Chrome
Project No. 2842-00
Boring No. PZ-PILOT-07
Date Installed 1-9-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 4.5 feet
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 5.5 feet bgs
Elevation of Top of Screen:
Depth of Top of Screen: 10.3 feet bgs

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 15.3 feet
Depth of Sediment Sump with Plug: N/A

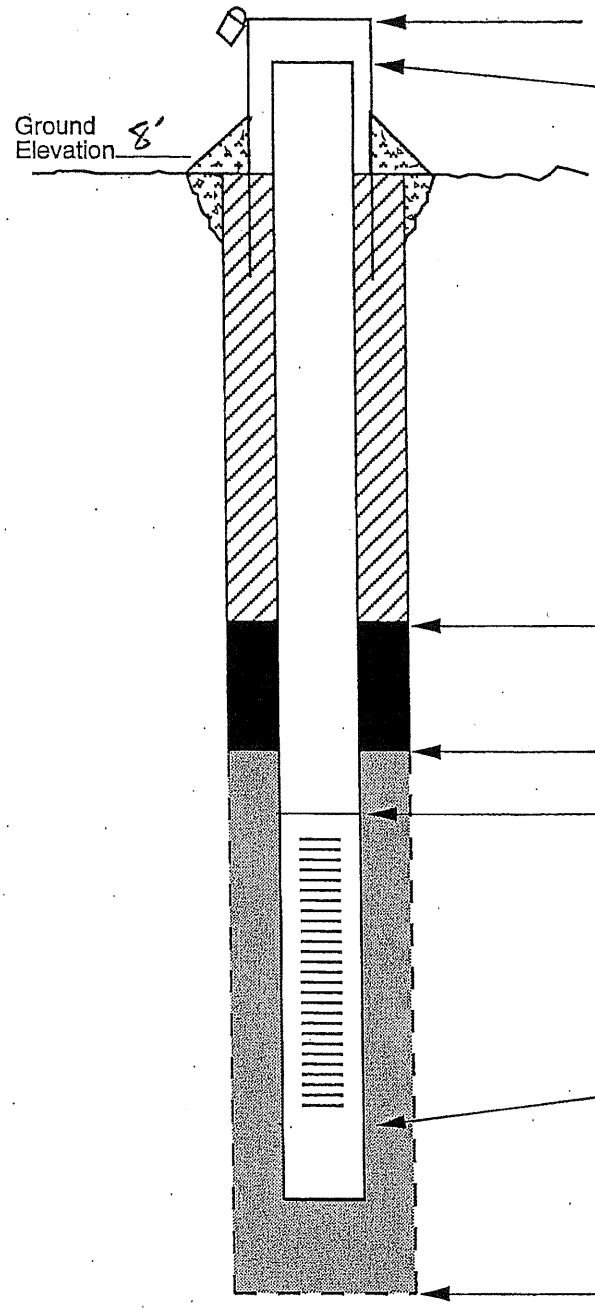
Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 15.3 feet

Notes:

Hach Kit: 10'-12' bgs: Total Chrome = 9 mg/L, Hex Chrome = >1.5 mg/L
17'-19' bgs: Total Chrome = 7 mg/L, Hex Chrome = >1.5 mg/L

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: OU-2
Driller: NFE
Project No.: 47254
Boring No.: EW-99-01
Drilling Method: HSA 6 5/8"
Date Installed: 8-25-99
Development Method: Pump & SURGE
Field Geologist: Mike Lounsbury



Elevation of Top of Surface Casing: _____
Stick-up of Casing Above Ground Surface: _____
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: _____
Type of Surface Casing: CONCRETE

ID of Surface Casing: 6"
Diameter of Borehole: ≈ 10"
Riser Pipe ID: 4"
Type of Riser Pipe: SCH 40 PVC
Type of Backfill: CONCRETE

Elevation of Top of Seal: 6
Depth of Top of Seal: 2'
Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -6.5
Depth of Top of Sand: 14.5
Elevation of Top of Screen: -11.5
Depth of Top of Screen: 19.5

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.020" X 20'
ID of Screen: 4"

Type of Sandpack: SILICA SAND

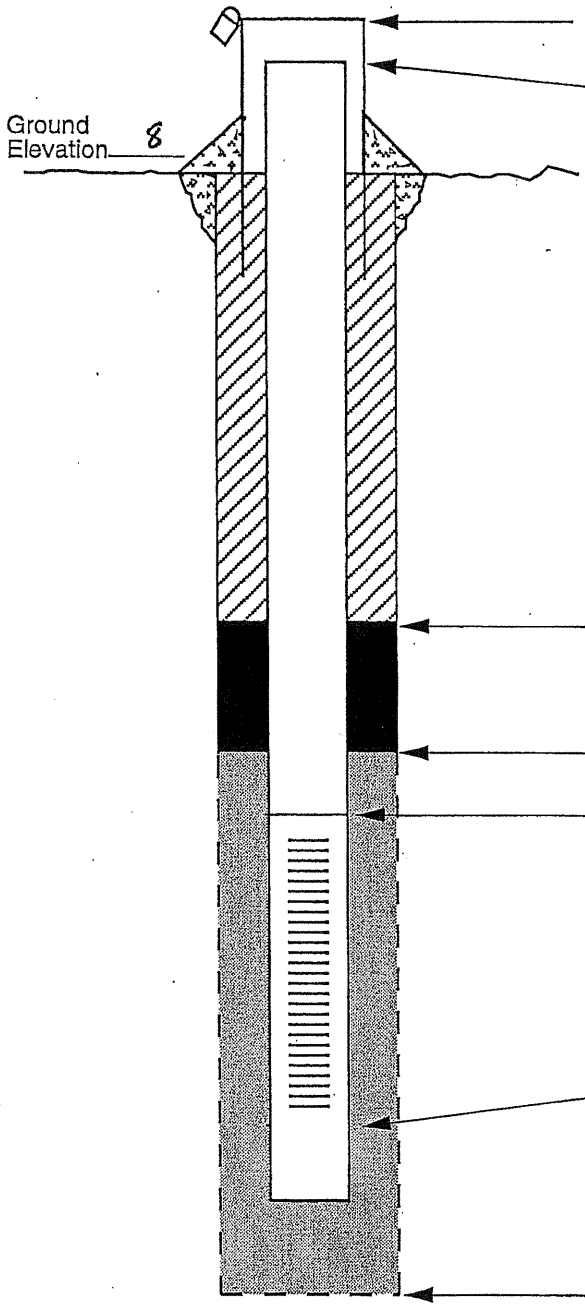
Elevation of Bottom of Screen: -31.5
Depth of Bottom of Screen: 39.5
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -34'
Depth of Bottom of Borehole: ~~50~~ 42'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: 04-2
Driller: NFE
Project No.: 47254
Boring No.: PZ-99-01A
Drilling Method: HSA 6 5/8"
Date Installed: 8-23-99
Development Method: PUMP & SURGE
Field Geologist: MIKE LAUNSBURY

1 OF 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 8.01
Stick-up of Casing Above Ground Surface: ——
Elevation of Top of Riser Pipe: 7.78
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH ROAD BOX

ID of Surface Casing: 8"

Diameter of Borehole: ~10"

Riser Pipe ID: 1"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: ——

Elevation of Top of Seal: 6.8
Depth of Top of Seal: 1.2'
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: 5
Depth of Top of Sand: 3'
Elevation of Top of Screen: 4
Depth of Top of Screen: 4'

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010"X5'
ID of Screen: 1"

Type of Sandpack: SILICA #2 FROM 11' TO 3'

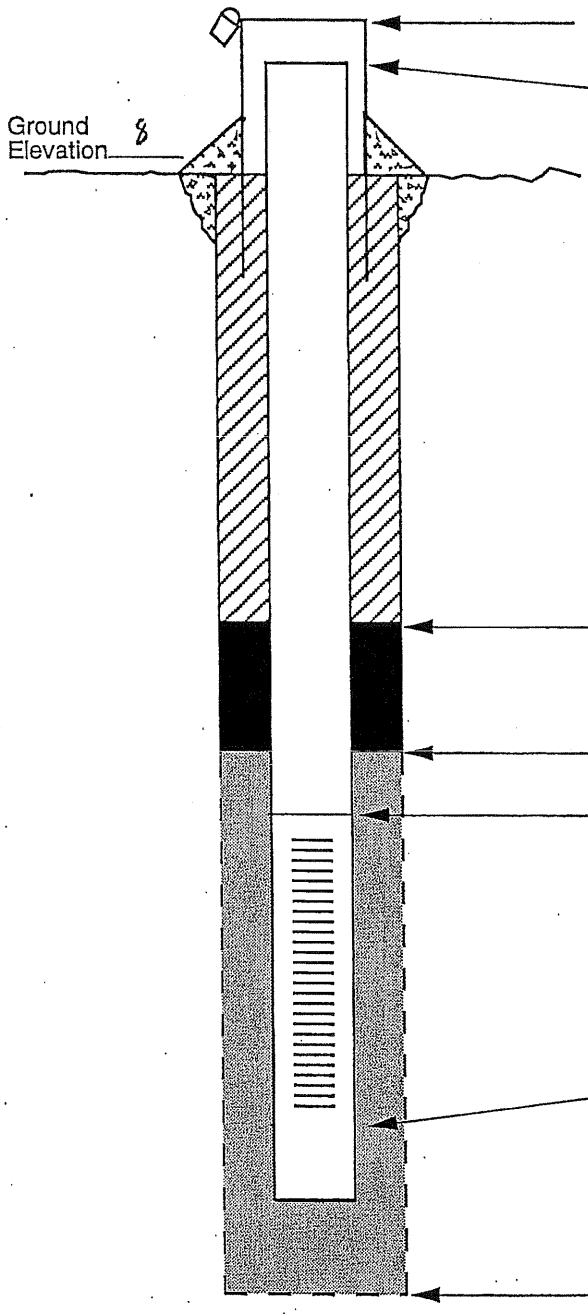
Elevation of Bottom of Screen: -1
Depth of Bottom of Screen: 9'
Depth of Sediment Sump with Plug: —

NATURAL CAVE TO 52'
FILTER SAND FROM 52' TO 58'
Elevation of Bottom of Borehole: -52
Depth of Bottom of Borehole: 60'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: OU-2
Driller: NFE
Project No.: 47254
Boring No.: PZ-99-01B
Drilling Method: HSA 6 5/8"
Date Installed: 8-23-99
Development Method: PUMP & SURGE
Field Geologist: MIKE LOUNSBURY

2 OF 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 8.01
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe: 7.83
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:
Diameter of Borehole:
Riser Pipe ID: SEE PZ-99-01A
Type of Riser Pipe:
Type of Backfill:

Elevation of Top of Seal: -3
Depth of Top of Seal: 11'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -17
Depth of Top of Sand: 25'
Elevation of Top of Screen: -22
Depth of Top of Screen: 30'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

Type of Sandpack: SILICA #2

Elevation of Bottom of Screen: -27
Depth of Bottom of Screen: 35'
Depth of Sediment Sump with Plug:
DEPTH BOTTOM OF SAND 37'

Elevation of Bottom of Borehole: -52
Depth of Bottom of Borehole: 60'

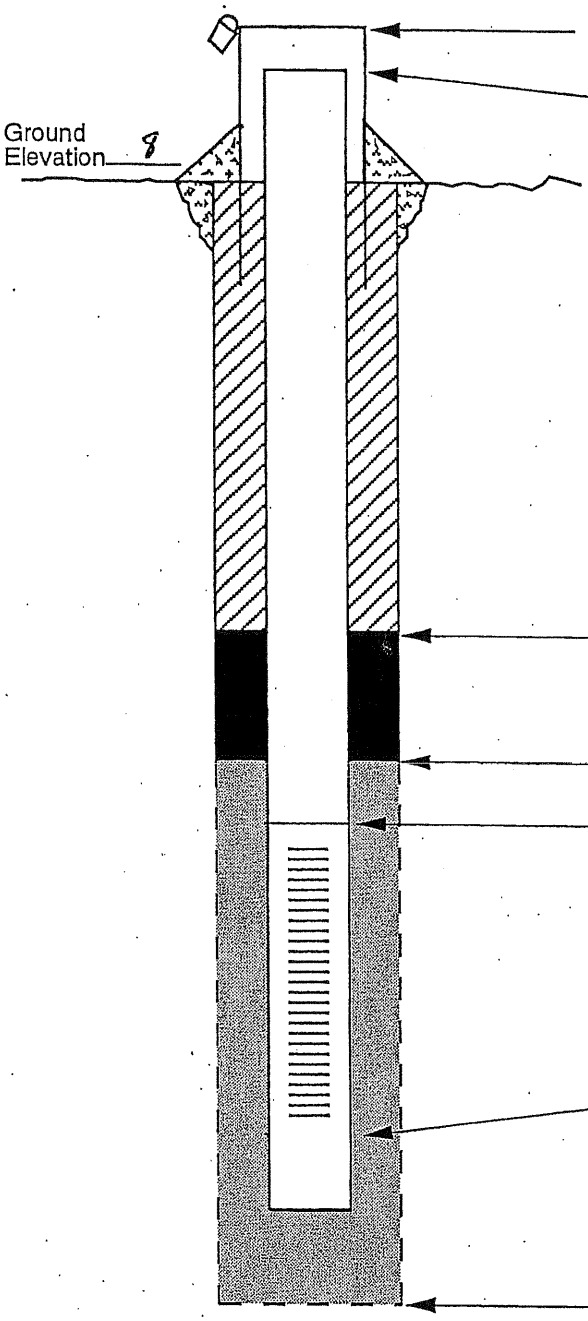
MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Project No.: 47254
Field Geologist: M. LOUNSBURY

Study Area: OU-2
Boring No.: PZ-99-01C
Date Installed: 8-23-99

Driller: NFE
Drilling Method: HSA 6 5/8"
Development Method: PUMP & SURGE

3 OF 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 8.01
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe: 7.78
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole: SEE PZ-99-01 A & B

Riser Pipe ID:
Type of Riser Pipe:

Type of Backfill:

Elevation of Top of Seal: -29
Depth of Top of Seal: 37'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -32
Depth of Top of Sand: 40'
Elevation of Top of Screen: -37
Depth of Top of Screen: 45'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" x 5'
ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -42
Depth of Bottom of Screen: 50'
Depth of Sediment Sump with Plug: —

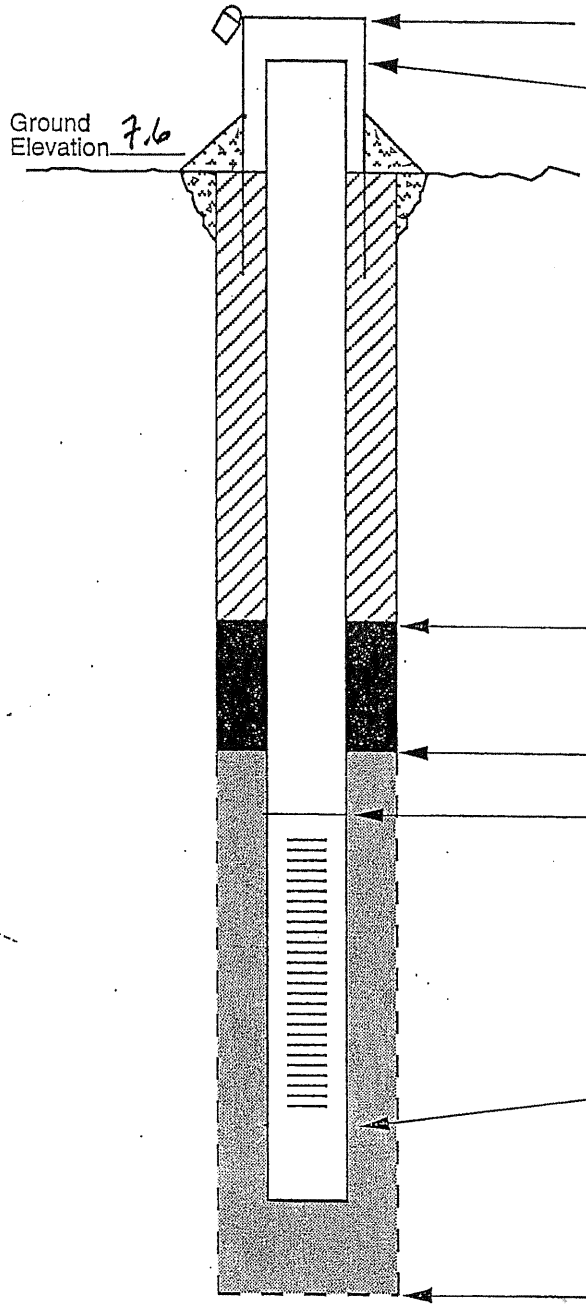
Elevation of Bottom of Borehole: -52
Depth of Bottom of Borehole: 60'

NATURAL CAVE TO 52'
FILTER SAND FROM 52' TO 50'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: OU-2
Driller: NFE
Project No.: 47254
Boring No.: PZ-99-02-A
Drilling Method: HSA - 6 5/8" ID.
Date Installed: 8-18-99
Development Method: PUMP & SURGE
Field Geologist: Tom Longley

1 of 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 7.56
Stick-up of Casing Above Ground Surface: —
Elevation of Top of Riser Pipe: 7.36
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH ROAD BOX

ID of Surface Casing: 8"
Diameter of Borehole: ~ 10"
Riser Pipe ID: 1"
Type of Riser Pipe: SCH 40 PVC
Type of Backfill: —

Elevation of Top of Seal: 5.6
Depth of Top of Seal: 2'
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: 4.6
Depth of Top of Sand: 3
Elevation of Top of Screen: 3.6
Depth of Top of Screen: 4

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1" I.D.

Type of Sandpack: SILICA #2 GRADE

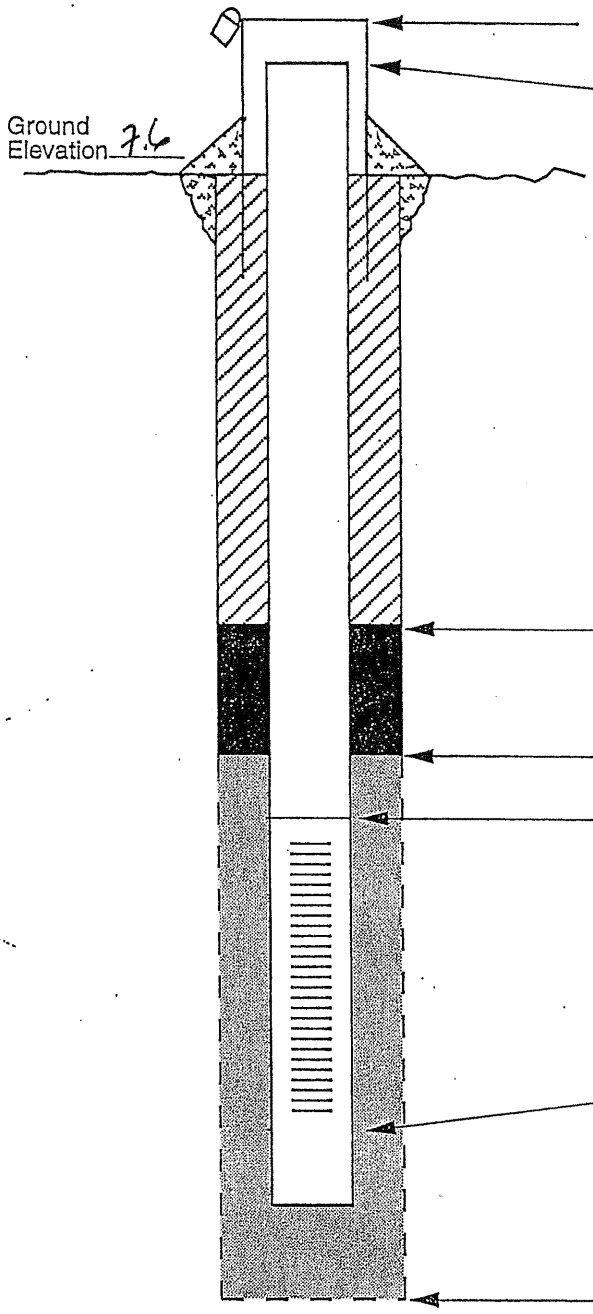
Elevation of Bottom of Screen: -1.4
Depth of Bottom of Screen: 9'
Depth of Sediment Sump with Plug: —
DEPTH BOTTOM OF SAND 11'

Elevation of Bottom of Borehole: -44.4
Depth of Bottom of Borehole: 52

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: OU-2
Driller: NFE
Project No.: 47254
Boring No.: PZ-99-02-B
Drilling Method: HSA - 6 5/8" ID
Date Installed: 8-18-99
Development Method: PUMP & SURGE
Field Geologist: Tom Longley

2 of 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 7.56
Stick-up of Casing Above Ground Surface: —
Elevation of Top of Riser Pipe: 7.37
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole:

See PZ-99-02-A

Riser Pipe ID:
Type of Riser Pipe:

Type of Backfill:

Elevation of Top of Seal: -3.4
Depth of Top of Seal: 11
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: -17.4
Depth of Top of Sand: 25
Elevation of Top of Screen: -22.4
Depth of Top of Screen: 30

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010" x 5'
ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -27.4
Depth of Bottom of Screen: 35
Depth of Sediment Sump with Plug: —
Depth Bottom of Sand 37'

Elevation of Bottom of Borehole: -44.4
Depth of Bottom of Borehole: 52

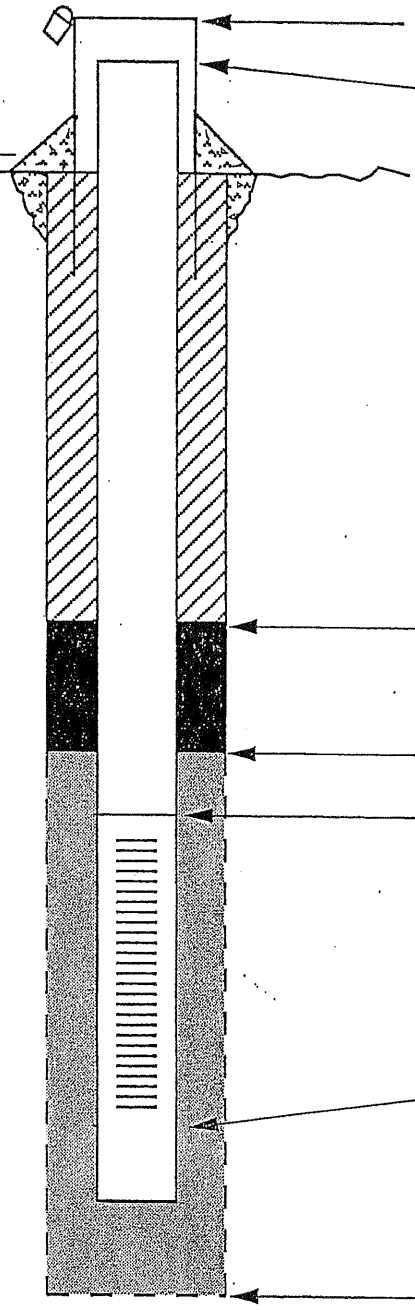
MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Project No.: 47254
Field Geologist: Tom Longley

Study Area: OU-2
Boring No.: PZ-99-02-C
Date Installed: 8-18-99

Driller: NFE
Drilling Method: HSA - 6 5/8" ID
Development Method: PUMP & SURGE

3 of 3 NESTED PIEZOMETERS



Ground Elevation: 7.6

Elevation of Top of Surface Casing: 7.56
Stick-up of Casing Above Ground Surface: —
Elevation of Top of Riser Pipe: 7.38
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing: — see PZ-99-02-B & A
Diameter of Borehole:
Riser Pipe ID:
Type of Riser Pipe:
Type of Backfill:

Elevation of Top of Seal: -29.4
Depth of Top of Seal: 37
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: -32.4
Depth of Top of Sand: 40'
Elevation of Top of Screen: -37.4
Depth of Top of Screen: 45'

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

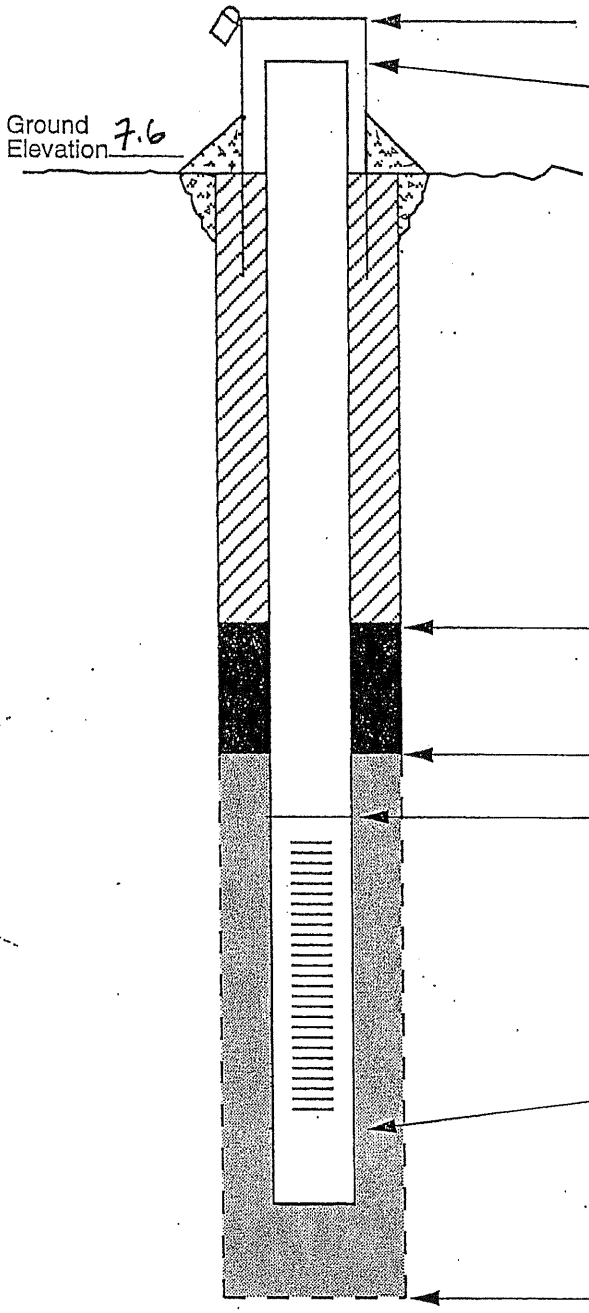
Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -42.4
Depth of Bottom of Screen: 50
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -44.4
Depth of Bottom of Borehole: 52

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area:
Driller: NFE - DAN FINEHAM
Project No.: 47254
Boring No.: PZ-99-03
Drilling Method: HSA
Date Installed: 8-17-99
Development Method: PUMP & SURGE
Field Geologist: TOM LONGLEY



Elevation of Top of Surface Casing: 7.63
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe: 7.35
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH-TO-GROUND ROAD BOX

ID of Surface Casing: 8"

Diameter of Borehole: ~6" (3 1/4" HSA)

Riser Pipe ID: 1"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: —

Elevation of Top of Seal: 6.4
Depth of Top of Seal: 14"
Type of Seal: BENT. PELLET

Elevation of Top of Sand: 4.6
Depth of Top of Sand: 3'
Elevation of Top of Screen: 3.6
Depth of Top of Screen: 4'

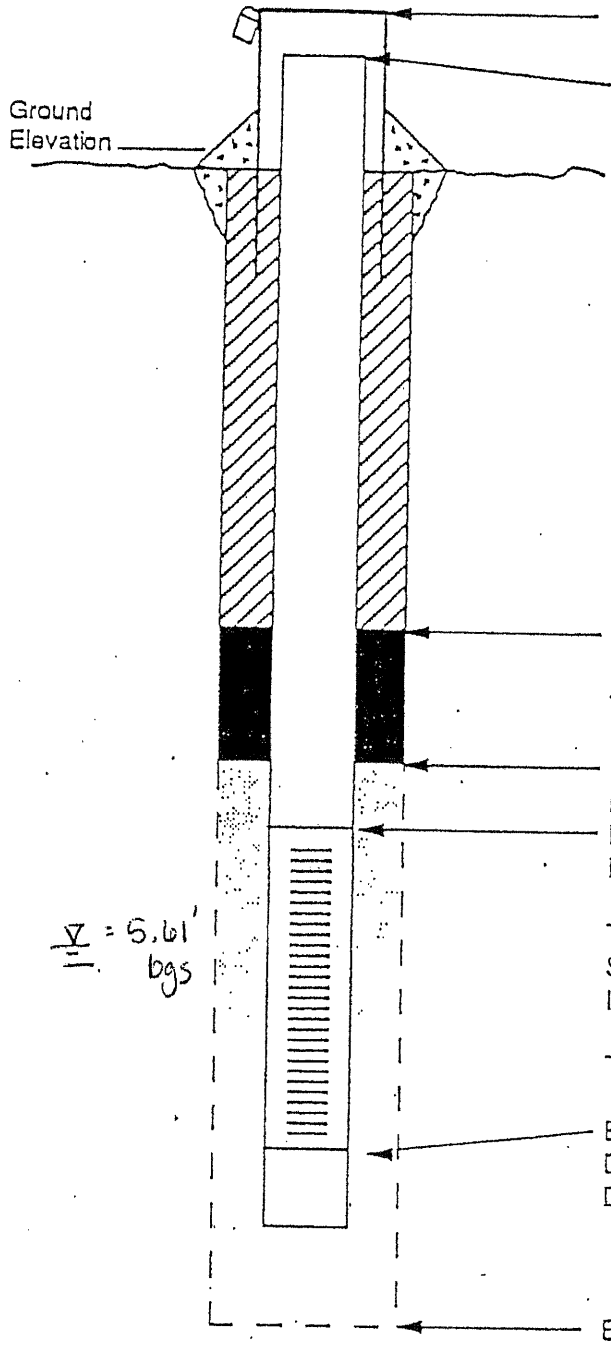
Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -1.4
Depth of Bottom of Screen: 9'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -34.4
Depth of Bottom of Borehole: 42'

Project SAEP Chrome (SP-99-07) Driller P. Craine
Project No. 2842-00 Boring No. MWCR-99-01 Drilling Method Terraprobe
Date Installed 1-8-99 Development Method
Field Geologist G. Rustad



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 0.5 feet
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 1.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 3.5 feet

Type of Screen: Sch 40 PVC
Slot Size x Length: 10 slot - 5 feet
ID of Screen: 1 inch

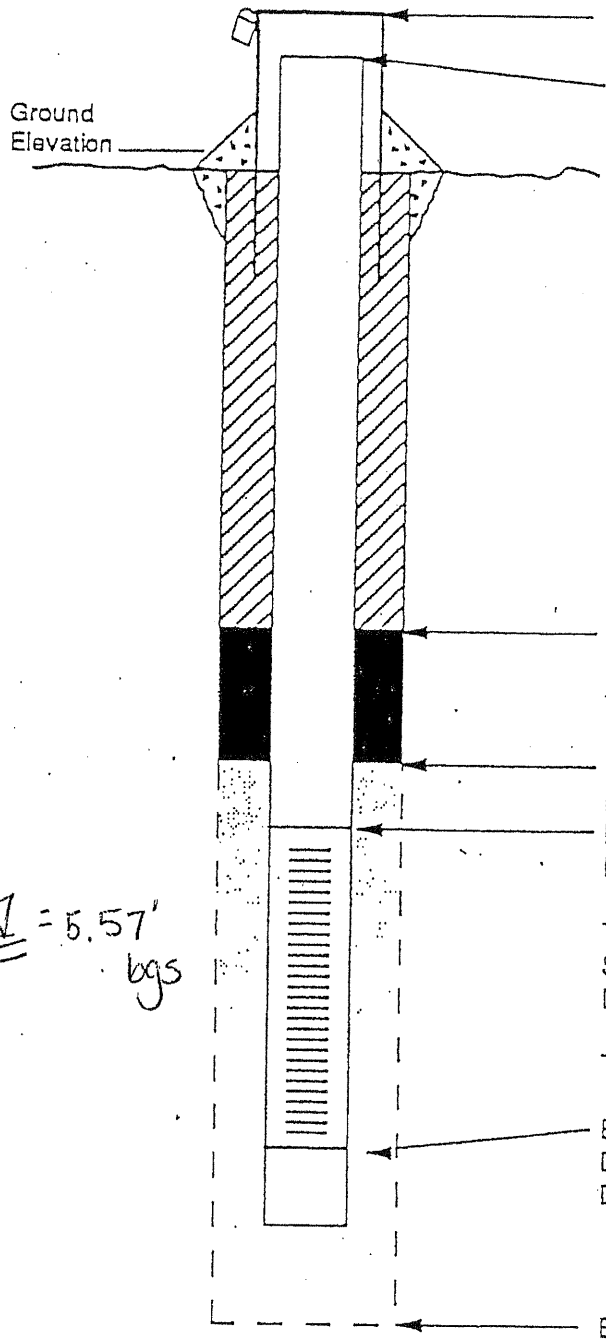
Type of Sandpack: Cave-in/Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 8.5 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 8.5 feet

Hach Kit Test (6'-8'): Total Cr = 0.3 mg/L, Hex Cr = 0 mg/L

Project SAEP Chrome
Project No. 02842-00
Boring No. MWCR-99-02 (SP-99-09)
Date Installed 1-9-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 1.0 foot
Type of Seal:

Elevation of Top of Sand:
Depth of Top of Sand: 1.5 feet
Elevation of Top of Screen:
Depth of Top of Screen: 3.30 feet

Type of Screen: PVC SCH 40
Slot Size x Length: 10 Slot - 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in / Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 8.30 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 8.30 feet

Hach Kit Test (6'-8'): Total Cr = 0.15 mg/L, Hex Cr = 0 mg/L

Project SAEP Chrome

Project No. 02842-00

Boring No. PZ-99-04I

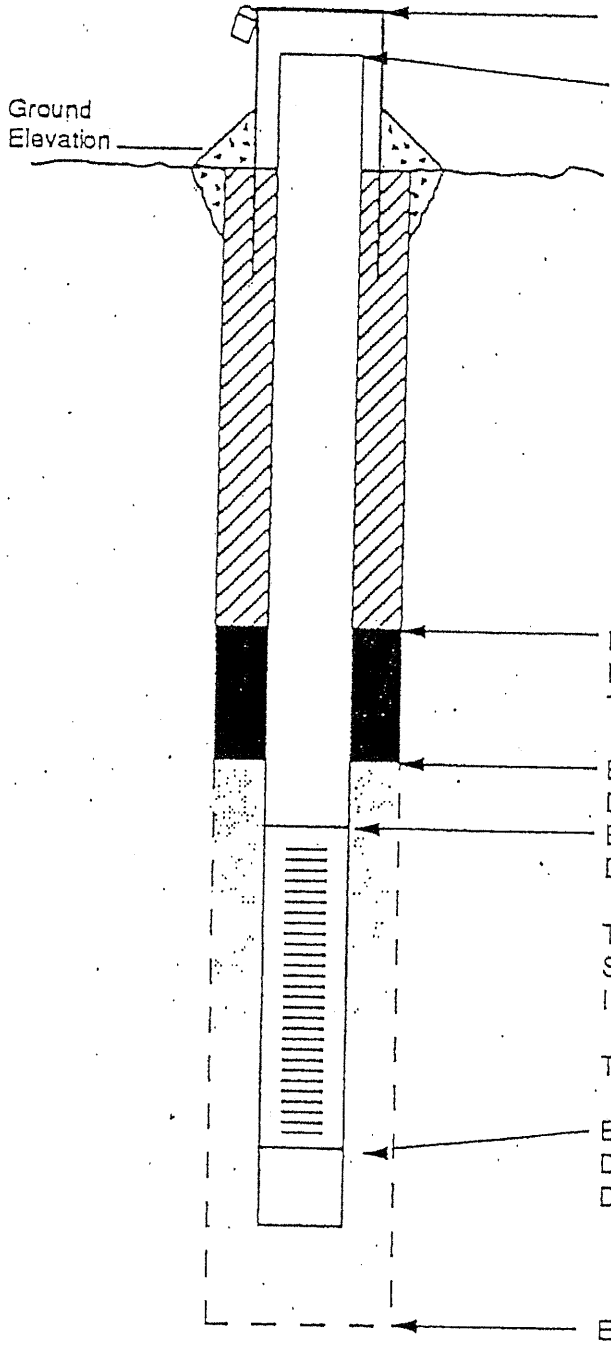
Date Installed 2-10-99

Field Geologist G. Rustad

Driller P. Craine

Drilling Method Terraprobe

Development Method



Elevation of Top of Surface Casing:

Stick-up of Casing Above Ground Surface:

Elevation of Top of Riser Pipe:

Type of Surface Seal:

Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole: 2 1/8"

Riser Pipe ID: 1 INCH

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: CEMENT

Elevation of Top of Seal:

Depth of Top of Seal: 2 FEET bgs

Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand:

Depth of Top of Sand: 14 FEET

Elevation of Top of Screen:

Depth of Top of Screen: 30

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010 INCH X 5 FEET

ID of Screen: 1 INCH

Type of Sandpack: CAVE-IN

Elevation of Bottom of Screen:

Depth of Bottom of Screen: 35

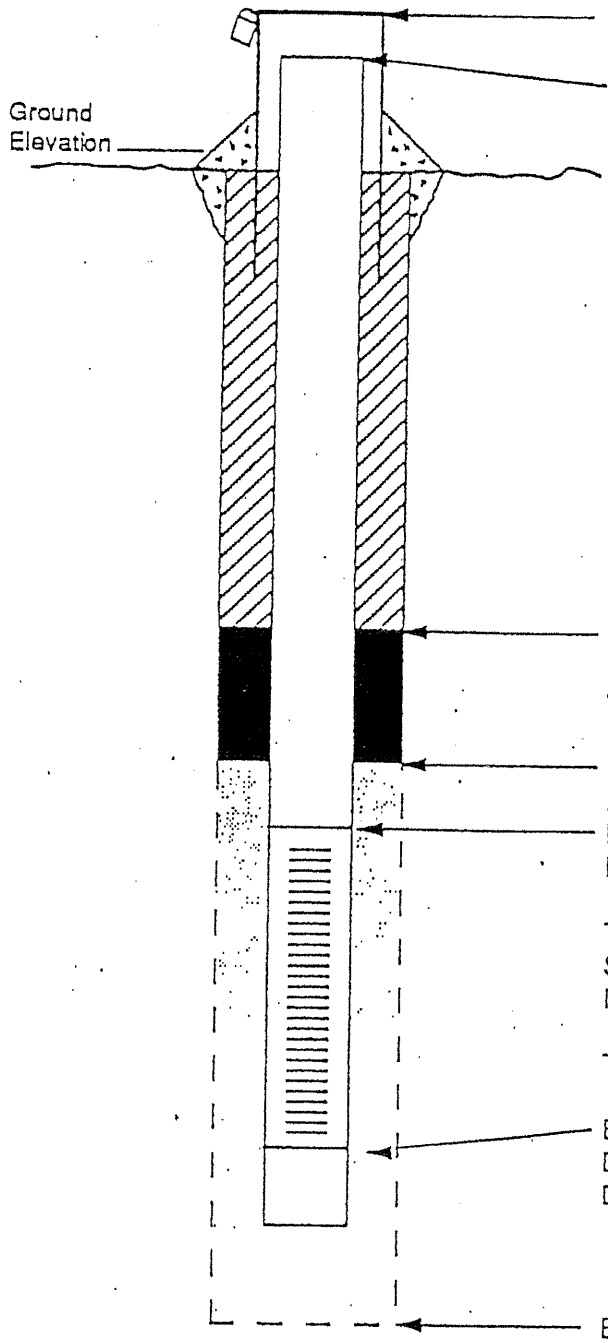
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:

Depth of Bottom of Borehole: 35.1

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-99-12I
Date Installed 2-10-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing:
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole: 2 1/8"

Riser Pipe ID: 1 INCH
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Cement

Elevation of Top of Seal:
Depth of Top of Seal: 2.0 feet bgs
Type of Seal: Bentonite chips

Elevation of Top of Sand:
Depth of Top of Sand: 12.0 feet bgs
Elevation of Top of Screen:
Depth of Top of Screen: 16.15 feet bgs

Type of Screen: SCH 40 PVC
Slot Size x Length:
ID of Screen: 1 INCH

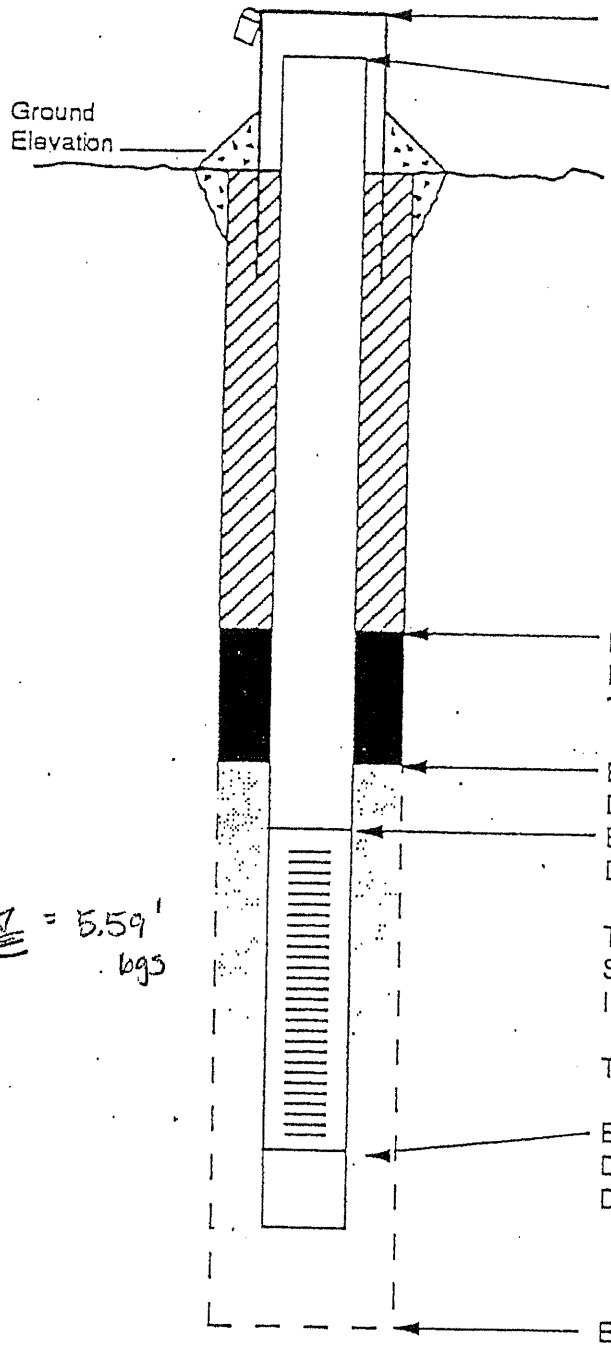
Type of Sandpack: CAVE-IN

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 21.15 feet bgs
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole: ~~21.15 ft~~ 6P
Depth of Bottom of Borehole: 21.15 feet bgs

Project SAEP Chrome
Project No. 2842-00
Boring No. PZ-PILOT-01
Date Installed 1-10-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 0.5 foot
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 1.0 foot
Elevation of Top of Screen:
Depth of Top of Screen: 2.20 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

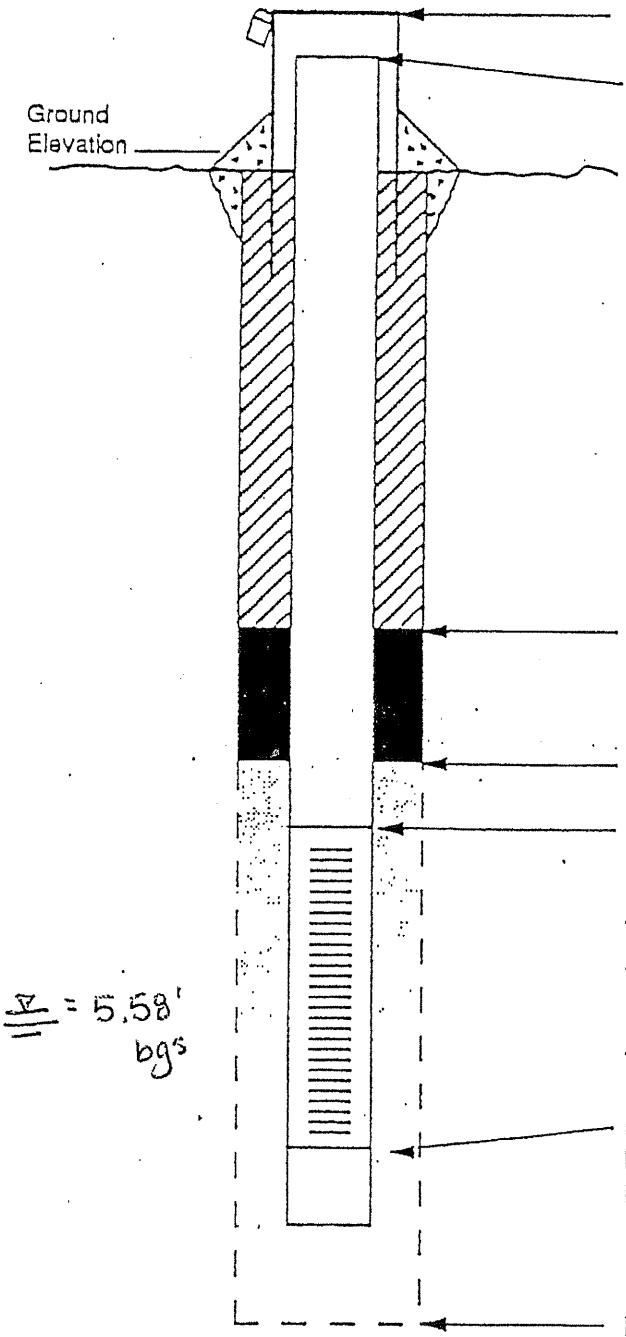
Type of Sandpack: Cave-in / Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 7.20 feet
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 7.20 feet

Hach Test (5'-7' bgs): Total Cr = 5 mg/L, Hex Cr = >1.5 mg/L

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-02
Date Installed 1-10-99
Field Geologist G. Rustad
Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 0.5 foot
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 1.0 foot
Elevation of Top of Screen:
Depth of Top of Screen: 2.18 feet

Type of Screen: Sch 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

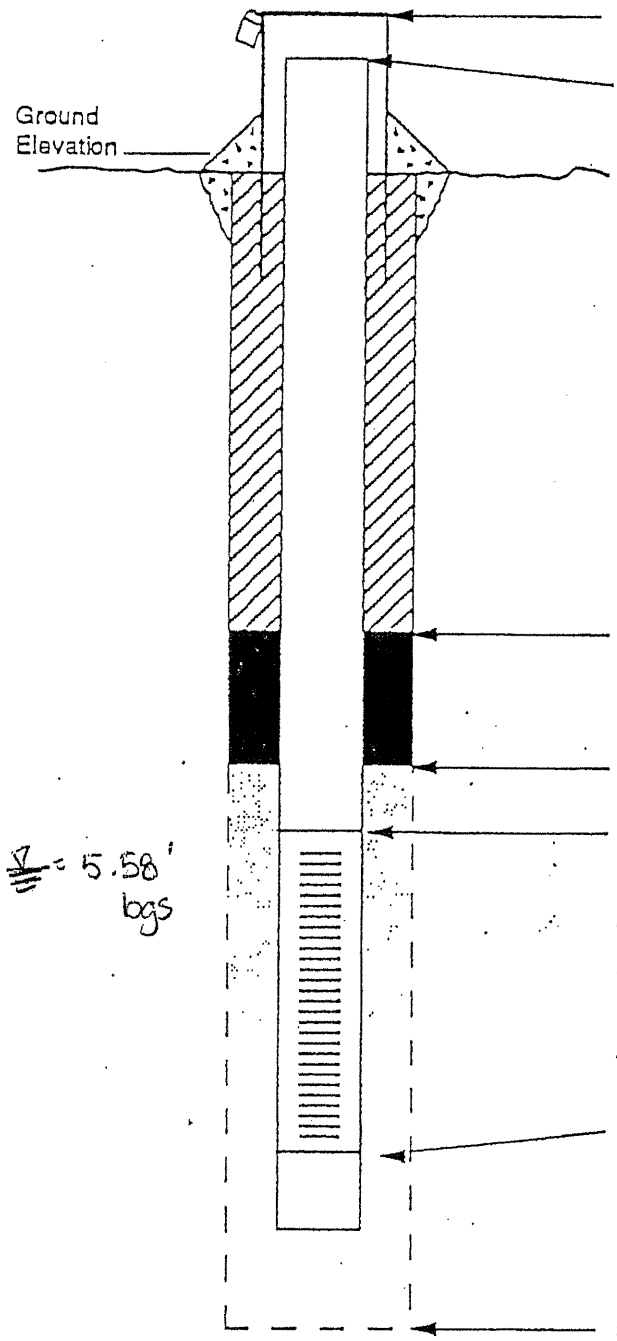
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 7.18 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 7.18 feet

Hach Kit Test (5'-7' bgs): Total Cr = 13.5 mg/L, Hex = >1.5 mg/L

Project: SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-03
Date Installed 1-10-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 1.0 foot
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 2.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 2.80 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

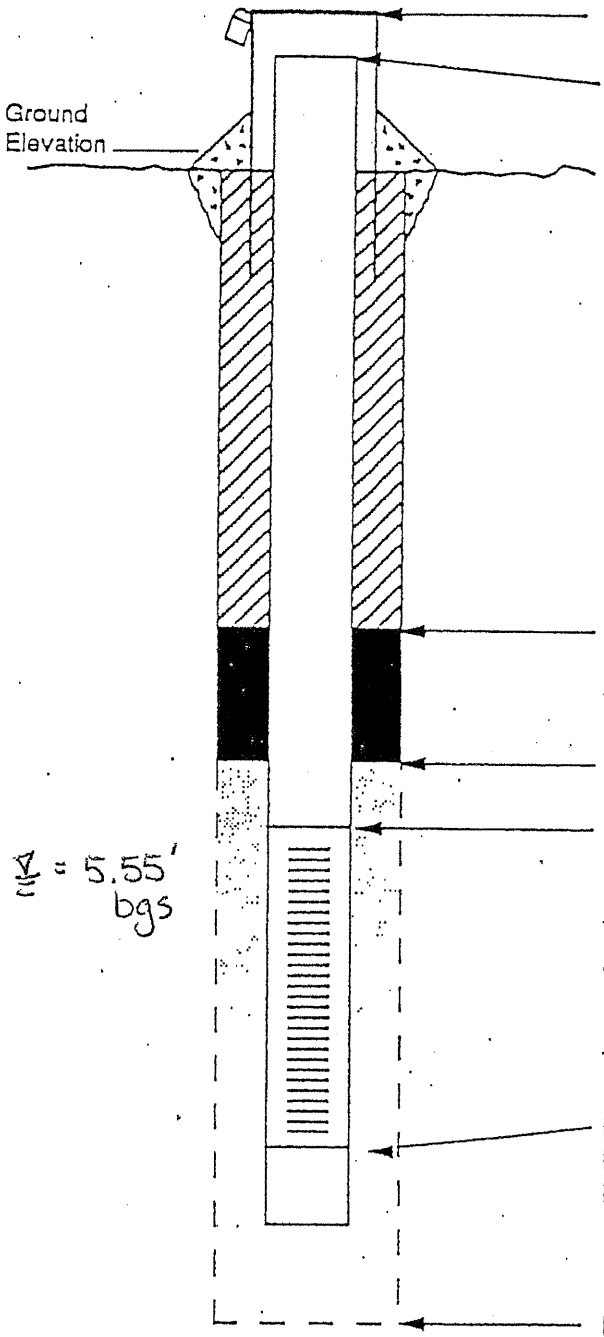
Elevation of Bottom of Screen:
Depth of Bottom of Screen: 7.80 feet
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 7.80 feet

Hach Kit Test (6'-8' bgs): Total Cr = 22.5 mg/L, Hex Cr = >1.5 mg/L

Project SAEP Chrome
Project No. 02842-00
Boring No. PZ-PILOT-04
Date Installed 1-9-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 1.0 foot
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 2.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 4.45 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 9.45 feet
Depth of Sediment Sump with Plug:

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 9.45 feet

Hach Test (7'-9' bgs): Total Cr = 13.5 mg/L, hex Cr = > 1.5 mg/L

Project SAEP Chrome

Project No. 02842-00 Boring No. PZ-PILOT-05

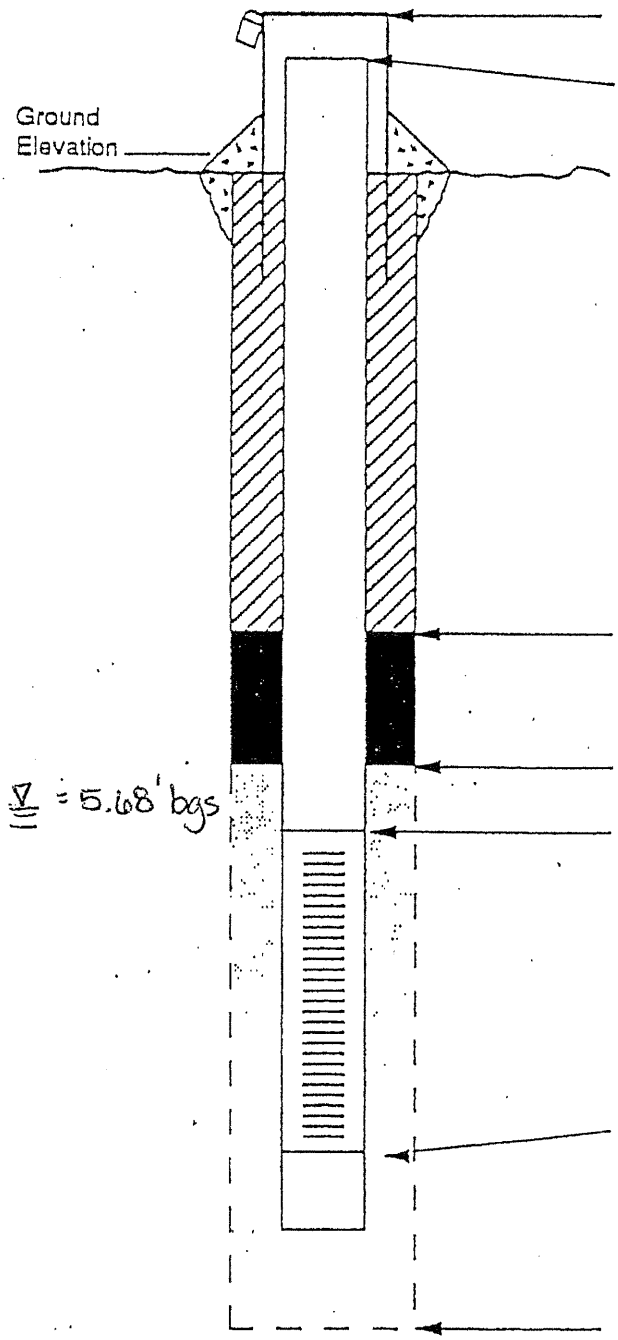
Date Installed 1-9-99

Field Geologist G. Rustad

Driller P. Craine

Drilling Method Terraprobe

Development Method



Elevation of Top of Surface Casing: N/A

Stick-up of Casing Above Ground Surface: N/A

Elevation of Top of Riser Pipe:

Type of Surface Seal:

Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:

Depth of Top of Seal: 2.5 feet

Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:

Depth of Top of Sand: 3.5 feet

Elevation of Top of Screen:

Depth of Top of Screen: 6.23 feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 10 Slot x 5 feet

ID of Screen: 1 inch

Type of Sandpack: Cave-in / Fine Sand

Elevation of Bottom of Screen:

Depth of Bottom of Screen: 11.23 feet

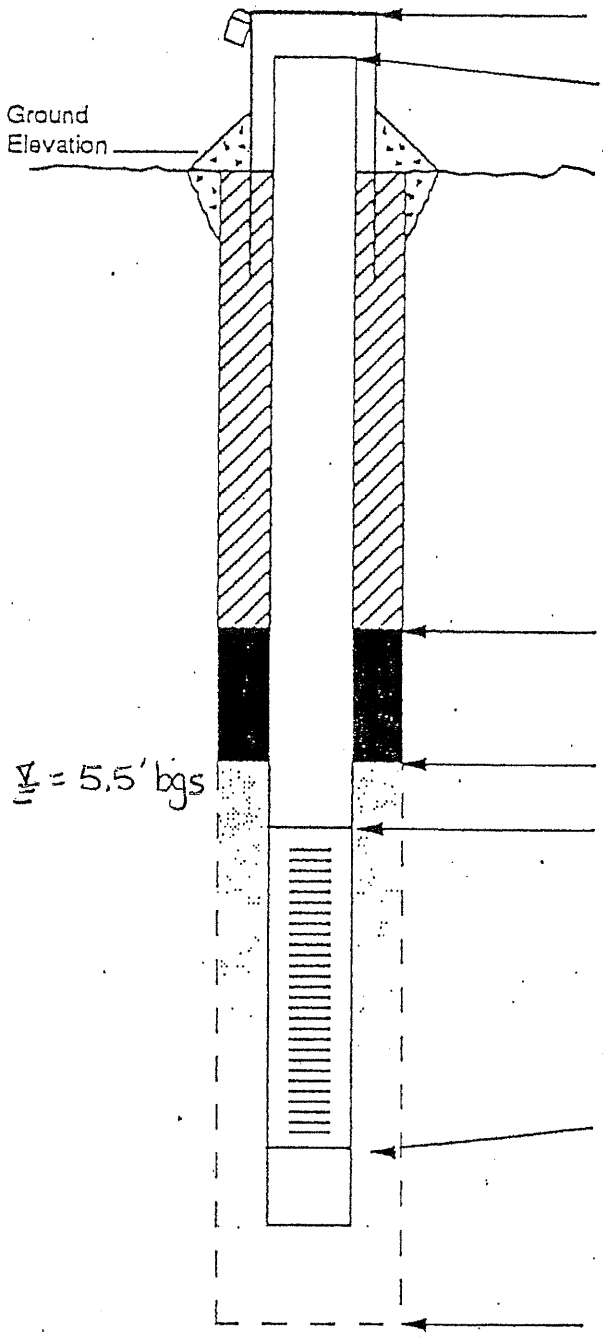
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole:

Depth of Bottom of Borehole: 11.23 feet

NOTES: Hach Test Kit: Total Cr = 18 mg/L, hex Cr = >1.5 mg/L (7'-11' bgs)

Project SAEP/ Chrome
Project No. 2842-00
Boring No. PZ-PILOT-06
Date Installed 1-9-99
Driller P. Craine
Drilling Method Terraprobe
Development Method
Field Geologist



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 4.5 feet
Type of Seal: Pure Gold Bentonite

Elevation of Top of Sand:
Depth of Top of Sand: 6.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 8.25 feet

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in/ Fine Sand

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 13.25 feet
Depth of Sediment Sump with Plug: N/A

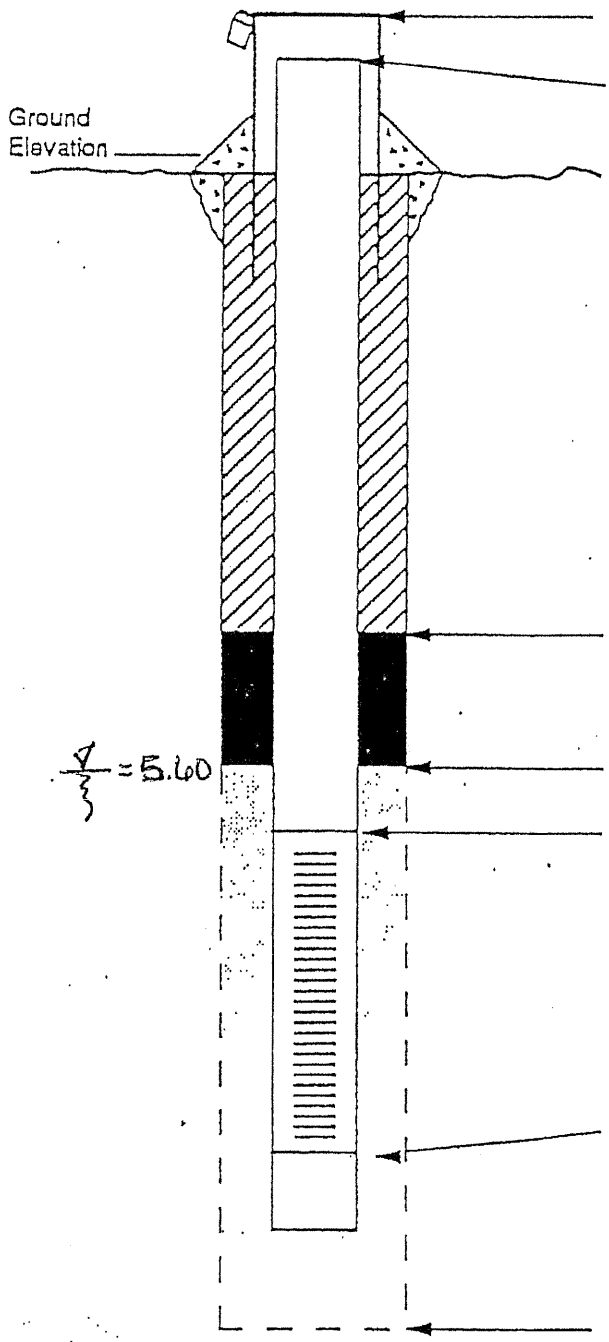
Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 13.25 feet

NOTES:
Hach Kit: 9'-13' bgs: Total Cr = 7 ~~ft~~ mg/L, Hex Cr = > 1.5 mg/L

See boring log for PZ-PILOT-06

Project SAEP Chrome
Project No. 2842-00
Boring No. PZ-PILOT-07
Date Installed 1-9-99
Field Geologist G. Rustad

Driller P. Craine
Drilling Method Terraprobe
Development Method



Elevation of Top of Surface Casing: N/A
Stick-up of Casing Above Ground Surface: N/A
Elevation of Top of Riser Pipe:
Type of Surface Seal:
Type of Surface Casing: N/A

ID of Surface Casing: N/A

Diameter of Borehole: 2 1/8 inch

Riser Pipe ID: 1 inch
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: Portland Cement

Elevation of Top of Seal:
Depth of Top of Seal: 4.5 feet
Type of Seal: Pure Gold Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 5.5 feet bgs
Elevation of Top of Screen:
Depth of Top of Screen: 10.3 feet bgs

Type of Screen: SCH 40 PVC
Slot Size x Length: 10 Slot x 5 feet
ID of Screen: 1 inch

Type of Sandpack: Cave-in

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 15.3 feet
Depth of Sediment Sump with Plug: N/A

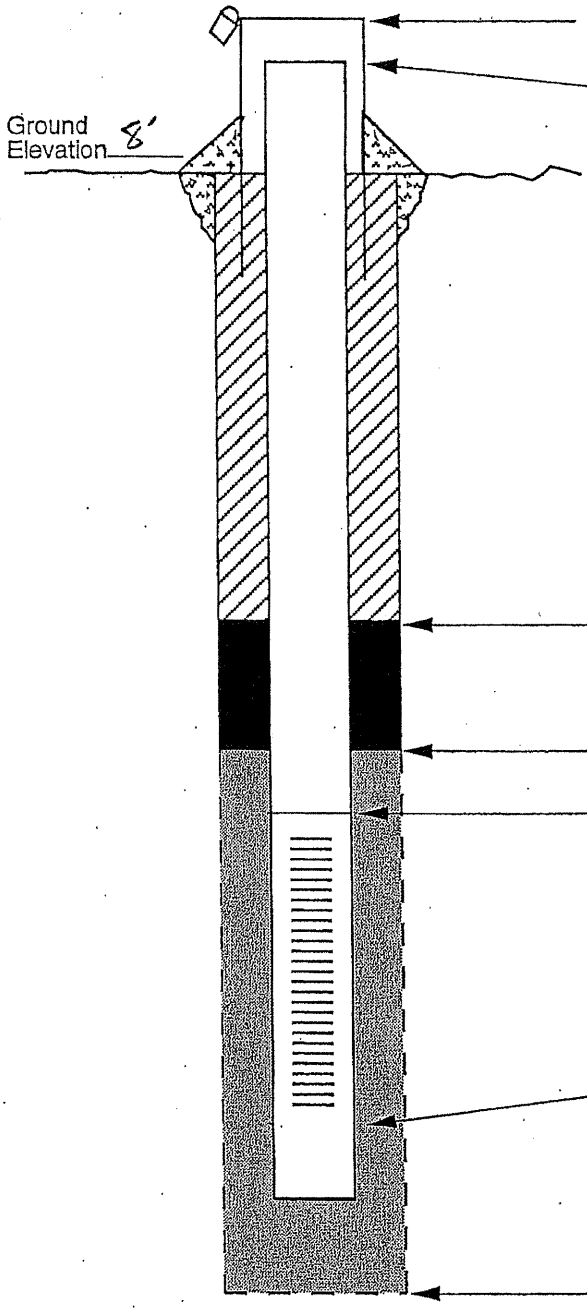
Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 15.3 feet

Notes:

Hach Kit: 10'-12' bgs: Total Chrome = 9 mg/L, Hex Chrome = >1.5 mg/L
17'-19' bgs: Total Chrome = 7 mg/L, Hex Chrome = >1.5 mg/L

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: OU-2
Driller: NFE
Project No.: 47254
Boring No.: EW-99-01
Drilling Method: HSA 6 5/8"
Date Installed: 8-25-99
Development Method: Pump & Surge
Field Geologist: Mike Lounsbury



Elevation of Top of Surface Casing: _____
Stick-up of Casing Above Ground Surface: _____
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: _____
Type of Surface Casing: CONCRETE

ID of Surface Casing: 6"
Diameter of Borehole: ≈ 10"
Riser Pipe ID: 4"
Type of Riser Pipe: SCH 40 PVC
Type of Backfill: CONCRETE

Elevation of Top of Seal: 6
Depth of Top of Seal: 2'
Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -6.5
Depth of Top of Sand: 14.5
Elevation of Top of Screen: -11.5
Depth of Top of Screen: 19.5

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.020" X 20'
ID of Screen: 4"

Type of Sandpack: SILICA SAND

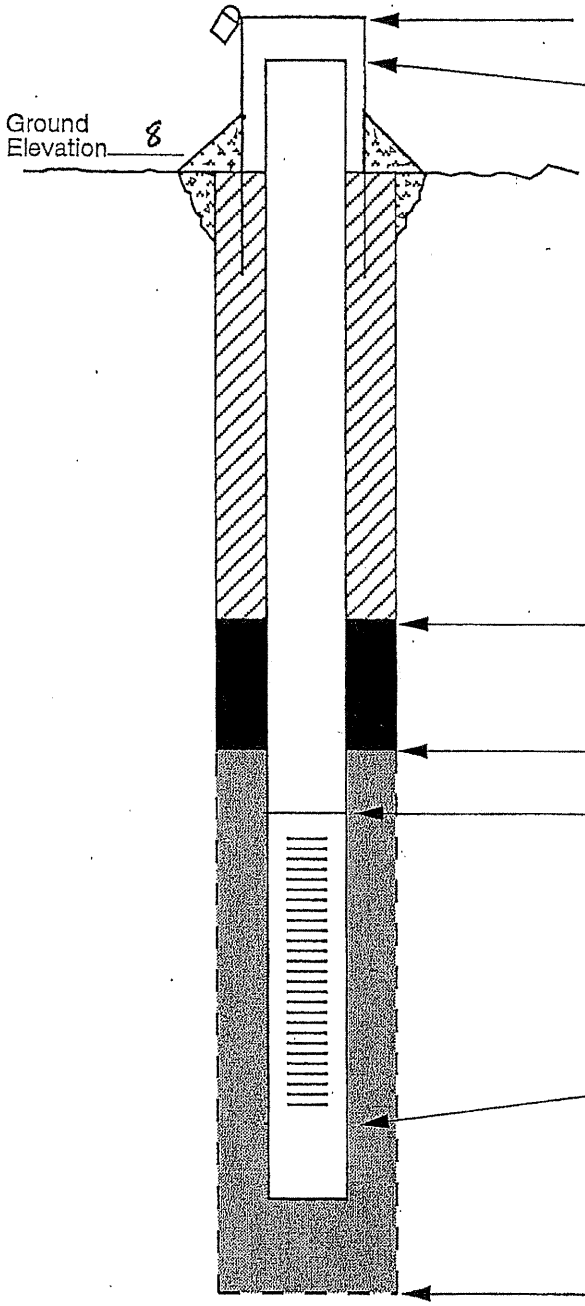
Elevation of Bottom of Screen: -31.5
Depth of Bottom of Screen: 39.5
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -34'
Depth of Bottom of Borehole: ~~50~~ 42'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: 04-2
Driller: NFE
Project No.: 47254
Boring No.: PZ-99-01A
Drilling Method: HSA 6 5/8"
Date Installed: 8-23-99
Development Method: PUMP & SURGE
Field Geologist: MIKE LAWSBURY

1 OF 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 8.01
Stick-up of Casing Above Ground Surface: —
Elevation of Top of Riser Pipe: 7.78
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH ROAD BOX

ID of Surface Casing: 8"

Diameter of Borehole: ~10"

Riser Pipe ID: 1"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: —

Elevation of Top of Seal: 6.8
Depth of Top of Seal: 1.2'
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: 5
Depth of Top of Sand: 3'
Elevation of Top of Screen: 4
Depth of Top of Screen: 4'

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010"X5'
ID of Screen: 1"

Type of Sandpack: SILICA #2 FROM 11' TO 3'

Elevation of Bottom of Screen: -1
Depth of Bottom of Screen: 9'
Depth of Sediment Sump with Plug: —

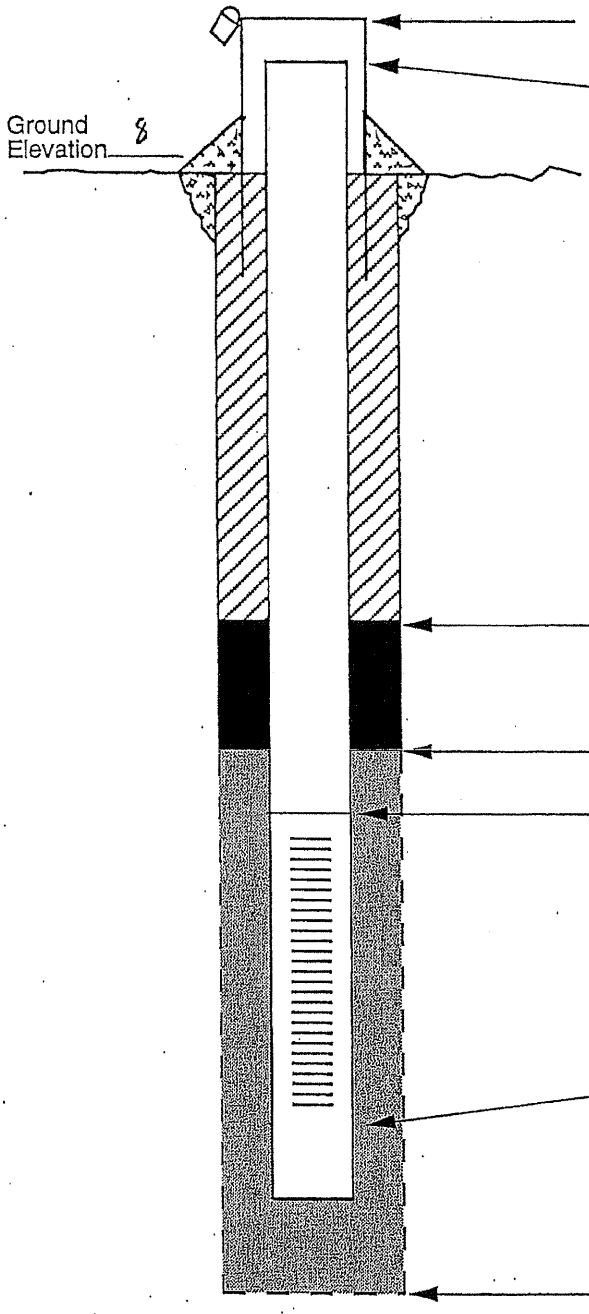
NATURAL CAVE TO 52'
FILTER SAND FROM 52' TO 58'

Elevation of Bottom of Borehole: -52
Depth of Bottom of Borehole: 60'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: OU-2
Driller: NFE
Project No.: 47254
Boring No.: PZ-99-01B
Drilling Method: HSA 6 5/8"
Date Installed: 8-23-99
Development Method: PUMP & SURGE
Field Geologist: MIKE LOUNSBURY

2 OF 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 8.01
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe: 7.83
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole:

Riser Pipe ID: SEE PZ-99-01A
Type of Riser Pipe:

Type of Backfill:

Elevation of Top of Seal: -3
Depth of Top of Seal: 11'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -17
Depth of Top of Sand: 25'
Elevation of Top of Screen: -22
Depth of Top of Screen: 30'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

Type of Sandpack: SILICA #2

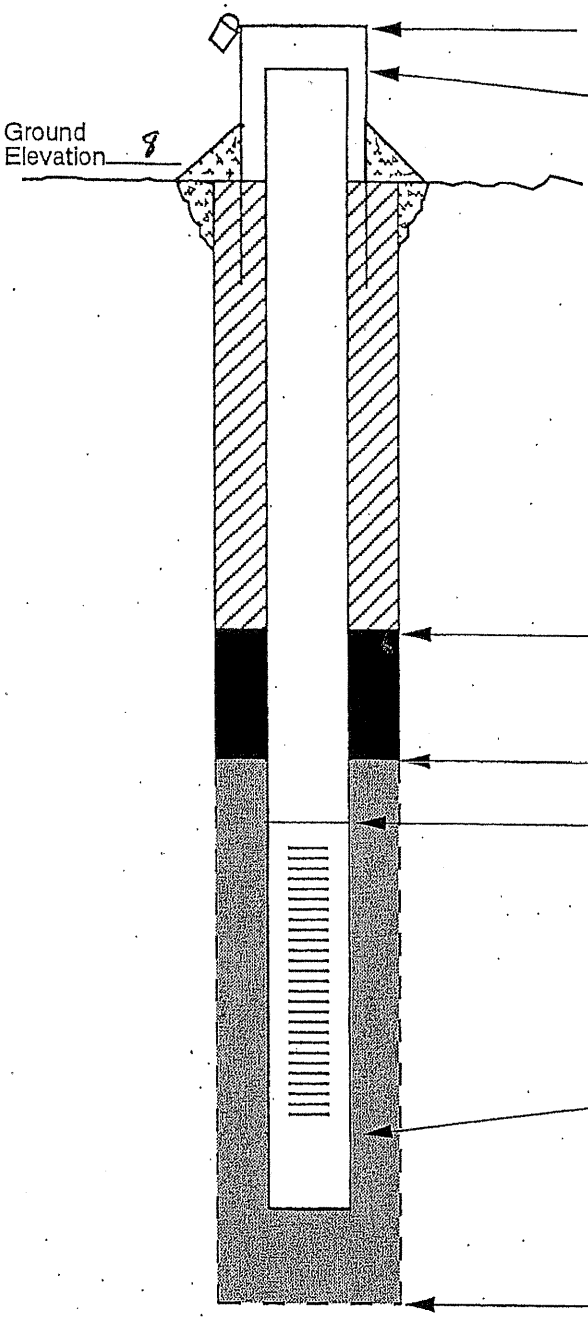
Elevation of Bottom of Screen: -27
Depth of Bottom of Screen: 35'
Depth of Sediment Sump with Plug:
DEPTH BOTTOM OF SAND 37'

Elevation of Bottom of Borehole: -52
Depth of Bottom of Borehole: 60'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: OU-2
Driller: NFE
Project No.: 47254
Boring No.: PZ-99-01C
Drilling Method: HSA 6 5/8"
Date Installed: 8-23-99
Development Method: PUMP & SURGE
Field Geologist: M. LAUNSBURY

3 OF 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 8.01
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe: 7.78
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole: SEE PZ-99-01 A & B

Riser Pipe ID:
Type of Riser Pipe:

Type of Backfill:

Elevation of Top of Seal: -29
Depth of Top of Seal: 37'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -32
Depth of Top of Sand: 40'
Elevation of Top of Screen: -37
Depth of Top of Screen: 45'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -42
Depth of Bottom of Screen: 50'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -52
Depth of Bottom of Borehole: 60'

NATURAL CAVE TO 52'
FILTER SAND FROM 52' TO 50'

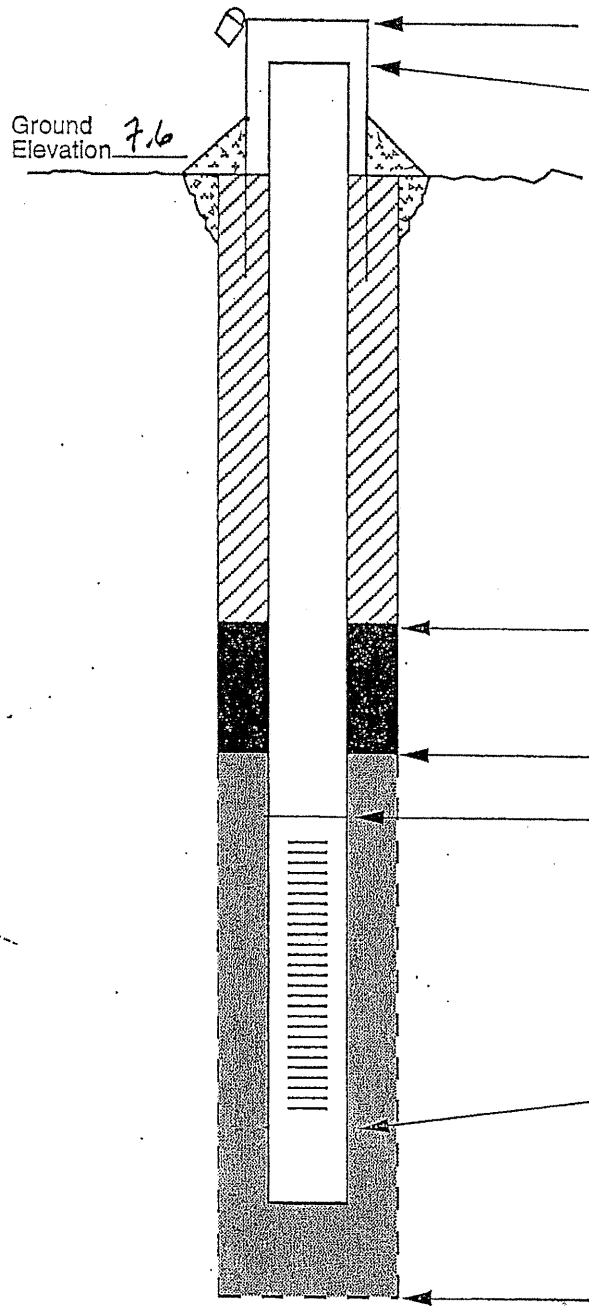
MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Project No.: 47254
Field Geologist: Tom Longley

Study Area: OU-2
Boring No.: PZ-99-02-A
Date Installed: 8-18-99

Driller: NFE
Drilling Method: HSA - 6 5/8" ID
Development Method: PUMP & SURGE

1 of 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 7.56
Stick-up of Casing Above Ground Surface: —
Elevation of Top of Riser Pipe: 7.36
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH ROAD BOX

ID of Surface Casing: 8"
Diameter of Borehole: ~ 10"
Riser Pipe ID: 1"
Type of Riser Pipe: SCH 40 PVC
Type of Backfill: —

Elevation of Top of Seal: 5.6
Depth of Top of Seal: 2'
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: 4.6
Depth of Top of Sand: 3
Elevation of Top of Screen: 3.6
Depth of Top of Screen: 4

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010" X 5"
ID of Screen: 1" I.D.

Type of Sandpack: Silica #2 GRADE

Elevation of Bottom of Screen: -1.4
Depth of Bottom of Screen: 9'
Depth of Sediment Sump with Plug: —
Depth Bottom of Sand: 11'

Elevation of Bottom of Borehole: -44.4
Depth of Bottom of Borehole: 52

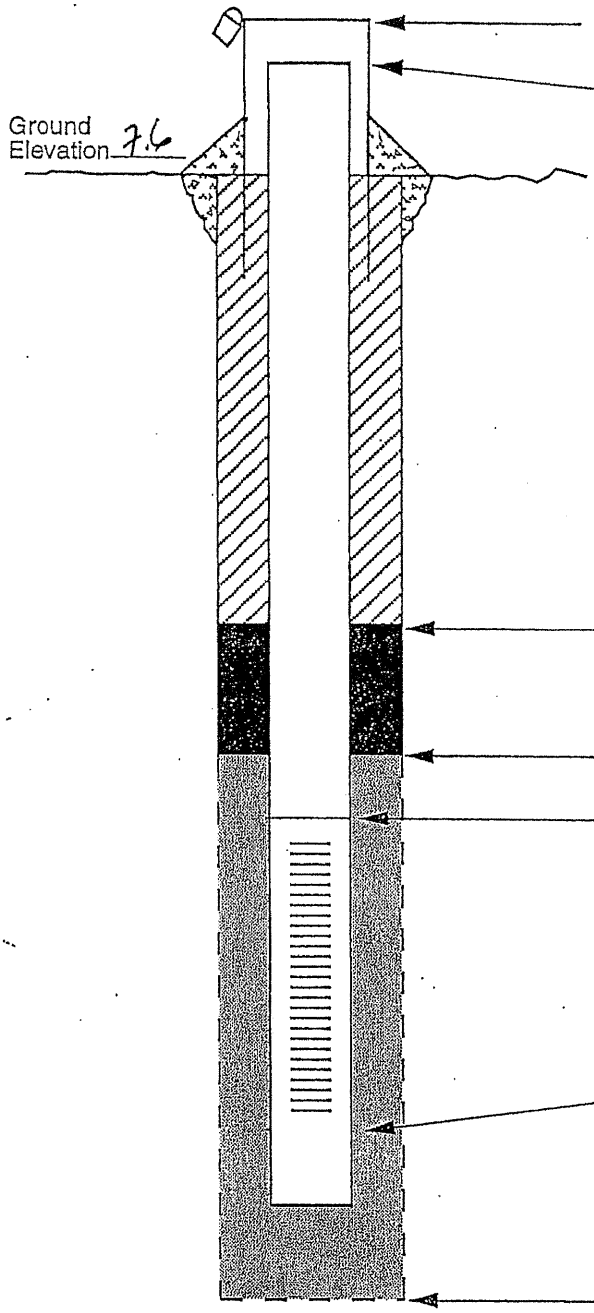
MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Project No.: 47254
Field Geologist: Tom Longley

Study Area: OU-2
Boring No.: PZ-99-02-B
Date Installed: 8-18-99

Driller: NFE
Drilling Method: HSA - 6 5/8" ID
Development Method: PUMP & SURGE

2 of 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 7.56
Stick-up of Casing Above Ground Surface: —
Elevation of Top of Riser Pipe: 7.37
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing:

Diameter of Borehole:

Riser Pipe ID: — See PZ-99-02-A
Type of Riser Pipe:

Type of Backfill:

Elevation of Top of Seal: -3.4
Depth of Top of Seal: 11
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: -17.4
Depth of Top of Sand: 25
Elevation of Top of Screen: -22.4
Depth of Top of Screen: 30

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -27.4
Depth of Bottom of Screen: 35
Depth of Sediment Sump with Plug: —
Depth Bottom of Sand: 37'

Elevation of Bottom of Borehole: -44.4
Depth of Bottom of Borehole: 52

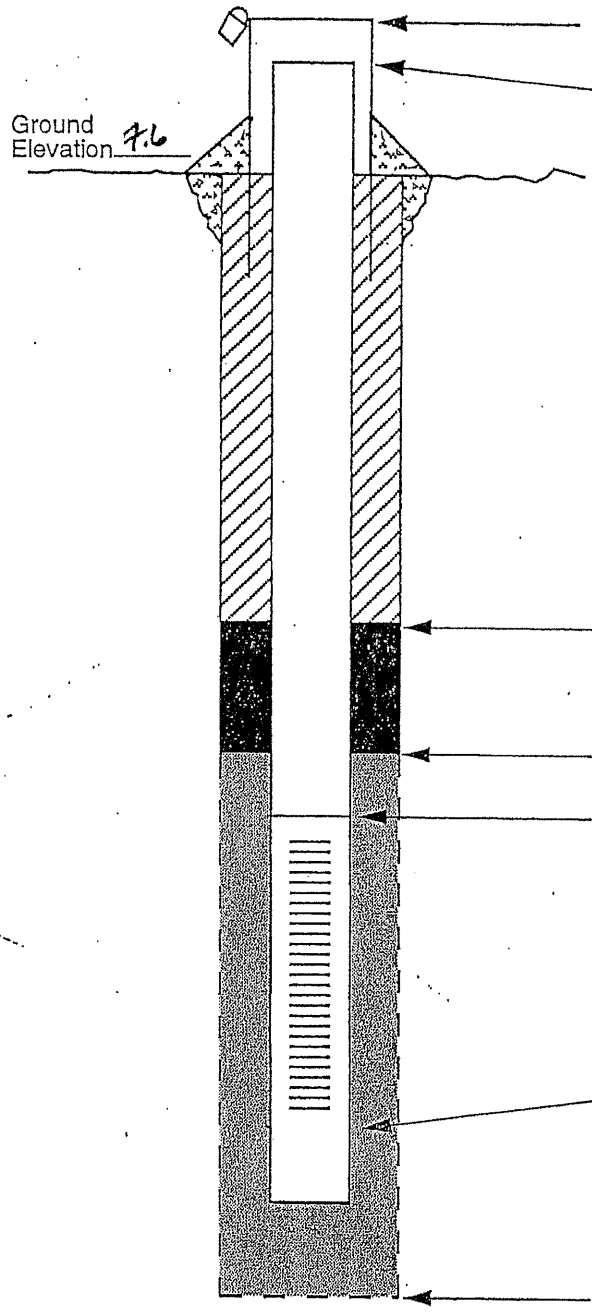
MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Project No.: 47254
Field Geologist: Tom Longley

Study Area: OU-2
Boring No.: PZ-99-02-C
Date Installed: 8-18-99

Driller: NFE
Drilling Method: HSA - 6 5/8" ID
Development Method: PUMP & SURGE

3 of 3 NESTED PIEZOMETERS



Elevation of Top of Surface Casing: 7.56
Stick-up of Casing Above Ground Surface: —
Elevation of Top of Riser Pipe: 7.38
Type of Surface Seal:
Type of Surface Casing:

ID of Surface Casing: — see PZ-99-02-B & A

Diameter of Borehole:

Riser Pipe ID:
Type of Riser Pipe:

Type of Backfill:

Elevation of Top of Seal: -29.4
Depth of Top of Seal: 37
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: -32.4
Depth of Top of Sand: 40'
Elevation of Top of Screen: -37.4
Depth of Top of Screen: 45'

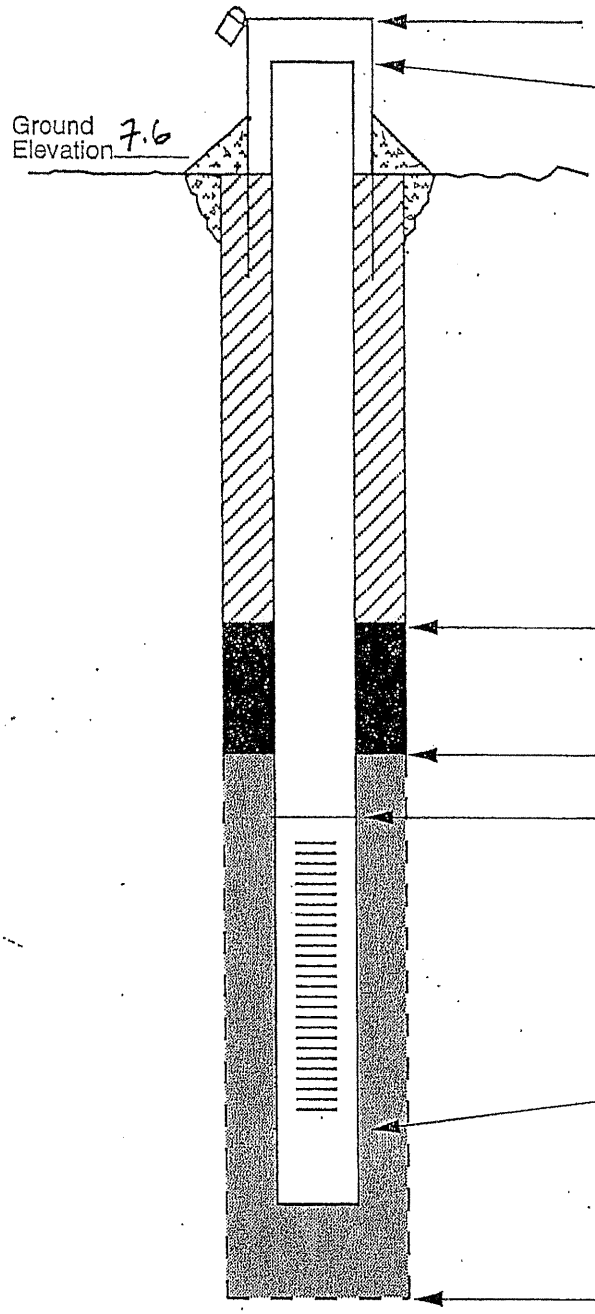
Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -42.4
Depth of Bottom of Screen: 50
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -44.4
Depth of Bottom of Borehole: 52

Project SAEP
Study Area
Driller NFE - DAN FINEHAM
Project No. 47254
Boring No. PZ-99-03
Drilling Method HSA
Date Installed 8-17-99
Development Method PUMP & SURGE
Field Geologist TOM LONGLEY



Elevation of Top of Surface Casing: 7.63
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe: 7.35
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH-TO-GROUND ROAD BOX

ID of Surface Casing: 8"

Diameter of Borehole: ~6" (3 1/4" HSA)

Riser Pipe ID: 1"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: —

Elevation of Top of Seal: 6.4
Depth of Top of Seal: 14"
Type of Seal: BENT. PELLET

Elevation of Top of Sand: 4.6
Depth of Top of Sand: 3'
Elevation of Top of Screen: 3.6
Depth of Top of Screen: 4'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 5'
ID of Screen: 1"

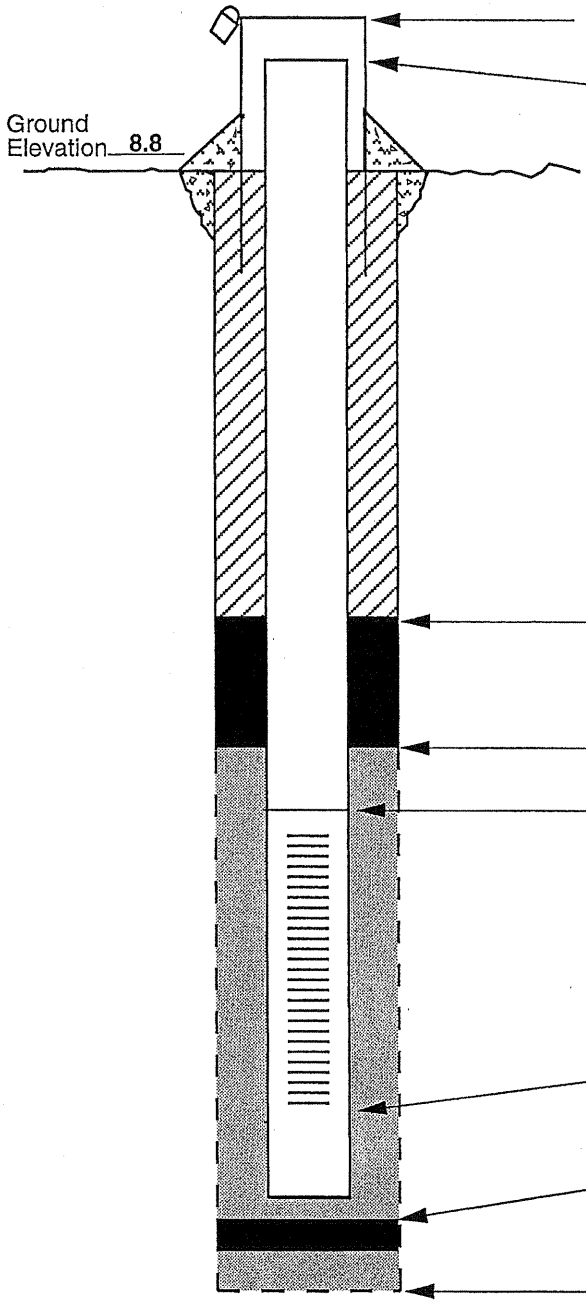
Type of Sandpack: SILICA SAND #2 GRADE

Elevation of Bottom of Screen: -1.4
Depth of Bottom of Screen: 9'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -34.4
Depth of Bottom of Borehole: 42'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: SAEP
Study Area: Causeway
Driller: Earth Exploration, Inc.
Project No.: 50796/1032
Boring No.: MWCD-00-01
Drilling Method: Drive & Wash
Date Installed: 9-26-00
Development Method: Pump & Surge
Field Geologist: T. Longley



Elevation of Top of Surface Casing: _____
Stick-up of Casing Above Ground Surface: _____
Elevation of Top of Riser Pipe: _____
Type of Surface Seal: Concrete
Type of Surface Casing: Steel

ID of Surface Casing: 4"

Diameter of Borehole: 4"

Riser Pipe ID: 2"
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Bentonite/Cement

Elevation of Top of Seal: -3.2'
Depth of Top of Seal: 12'
Type of Seal: Benonite Pellets

Elevation of Top of Sand: -5.2'
Depth of Top of Sand: 14'

Elevation of Top of Screen: -7.2'
Depth of Top of Screen: 16'

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.010" x 10'
ID of Screen: 2"

Type of Sandpack: Silica Well Sand

Elevation of Bottom of Screen: -17.2'
Depth of Bottom of Screen: 26'
Depth of Sediment Sump with Plug: 26'

Elevation of Top of Seal: -18.2'
Depth of Top of Seal: 27'
Type of Seal: Bentonite Pellets (3' thick)

Elevation of Bottom of Borehole: -61.2'
Depth of Bottom of Borehole: 70'

Harding ESE
A MACTEC COMPANY

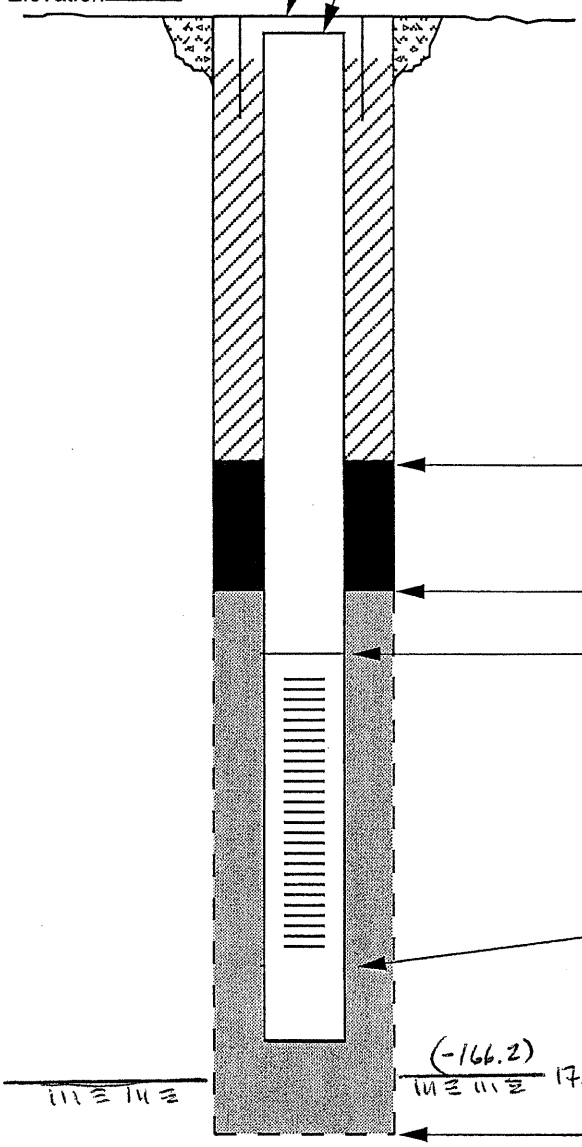
MONITORING WELL CONSTRUCTION DIAGRAM

Project **SAEP** Study Area **Remedial Investigation** Driller EARTH EXPLORATION

Project No. **52985** Boring No. HESE-01-05D Drilling Method DRIVE & WASH

Date Installed 11-20-01 Development Method PUMP & SURGE

Field Geologist R. Pendleton / T. LONGLEY



Elevation of Top of Surface Casing: 7.63'

Elevation of Top of Riser Pipe: ~~7.63~~ 7.29'

Depth of Top of Riser 0.34'

Type of Surface Seal: CONCRETE

Type of Surface Casing: FLUSH-TO-GROUND

ID of Surface Casing: 6"

Diameter of Borehole: 5" TO 55'; 4" TO 177'

Riser Pipe ID: 2"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: BENTONITE/CEMENT GROUT PLACED BY TREMIE HOSE

Elevation of Top of Seal: ~ -99.4'

Depth of Top of Seal: ~107'

Type of Seal: HIGH SOLIDS BENT. SLURRY

Elevation of Top of Sand: -145.4'

Depth of Top of Sand: 153'

Elevation of Top of Screen: -150.4'

Depth of Top of Screen: 158'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 2"

Type of Sandpack: ϕ SILICA SAND

Elevation of Bottom of Screen: -160.4'

Depth of Bottom of Screen: 168'

Depth of Sediment Sump with Plug: ~

Elevation of Bottom of Borehole: -169.4'

Depth of Bottom of Borehole: 177'

NOTES:

MONITORING WELL CONSTRUCTION DIAGRAM

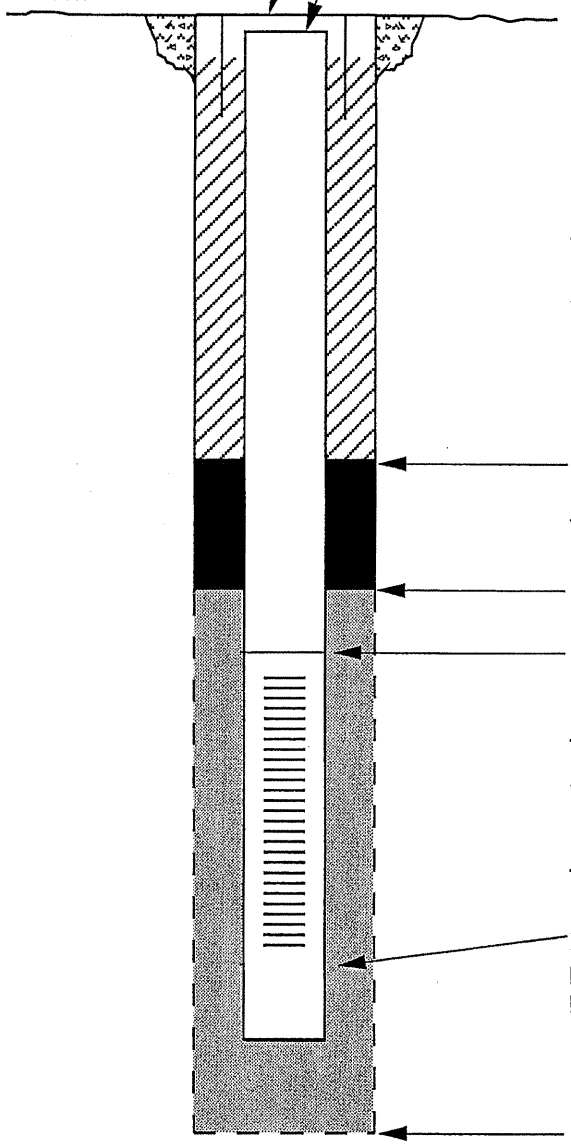
Project **SAEP** Study Area **Remedial Investigation** Driller Earth Exploration Services Derrick Mukudera

Project No. **52985** Boring No. HESE-01-06I Drilling Method HSA 4¼" ID

Date Installed 11/17/01 Development Method PUMP & SURGE

Field Geologist J. Rawcliffe

Ground Elevation 7.69'



Elevation of Top of Surface Casing: 7.68'
Elevation of Top of Riser Pipe: 7.17'
Depth of Top of Riser 0.51'
Type of Surface Seal: Cement
Type of Surface Casing: Aluminum and steel flushmount

ID of Surface Casing: 6"

Diameter of Borehole: 8"

Riser Pipe ID: 2"
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Bentonite chip to 4' sand to 1'

Elevation of Top of Seal: -3.7'
Depth of Top of Seal: 4'
Type of Seal: Bentonite chip

Elevation of Top of Sand: -7.3'
Depth of Top of Sand: 15.0' with natural cave to 12'.
Elevation of Top of Screen: -17.1'
Depth of Top of Screen: 19.8'

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.01" x 10'
ID of Screen: 2"

Type of Sandpack: #0 sand

Elevation of Bottom of Screen: -22.1'
Depth of Bottom of Screen: 29.8'
Depth of Sediment Sump with Plug: 29.9'

Elevation of Bottom of Borehole: -22.3'
Depth of Bottom of Borehole: 30' BGS

NOTES:

Jerry Rawcliffe

9912003(c)

Harding ESE

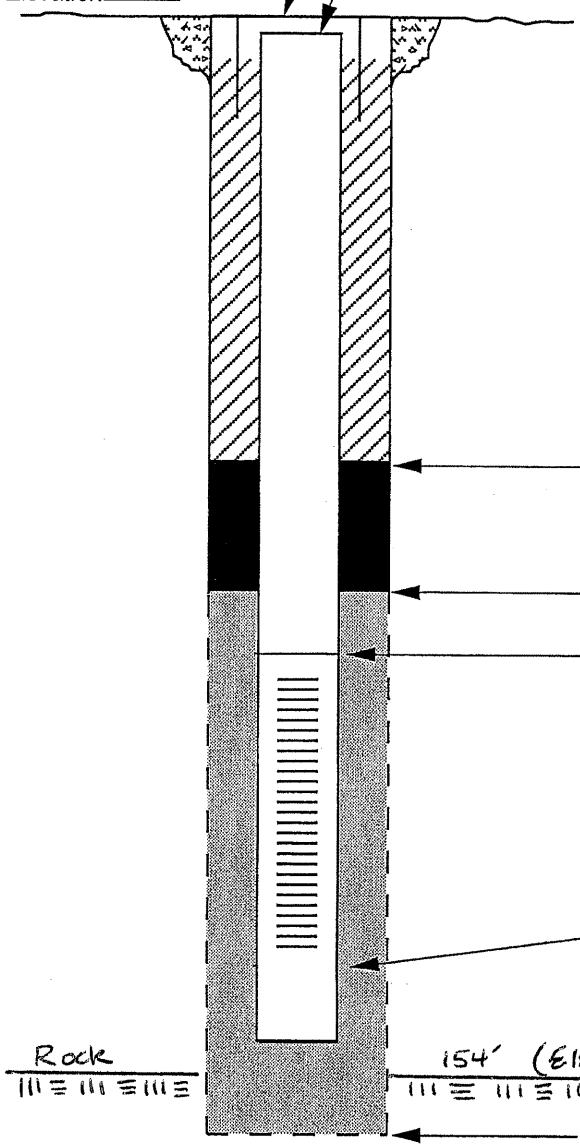
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller EARTH EXPLORATION (T.G.)

Project No. 52985 Boring No. HESE-01-06D Drilling Method DRIVE & WASH

Date Installed 11-30-01 Development Method PUMP & SURGE

Field Geologist T. LONGLEY



Elevation of Top of Surface Casing: 7.71'

Elevation of Top of Riser Pipe: 7.38'

Depth of Top of Riser 0.33'

Type of Surface Seal: CONCRETE

Type of Surface Casing: FLUSH TO GROUND

ID of Surface Casing: 6"

Diameter of Borehole: 5" TO 55' / 4" TO 152'

Riser Pipe ID: 2"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: BENT./CEMENT GROUT ON TOP OF THICK BENT. SLURRY. ALL SLURRY & GROUT PLACED BY TREMIE

Elevation of Top of Seal: ~ -102'

Depth of Top of Seal: ~110'

Type of Seal: HIGH SOLIDS BENT. SLURRY

Elevation of Top of Sand: -124.3'

Depth of Top of Sand: 132'

Elevation of Top of Screen: -134.7'

Depth of Top of Screen: 142.4'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 2"

Type of Sandpack: #0 SILICA SAND

Elevation of Bottom of Screen: -144.7'

Depth of Bottom of Screen: 152.4'

Depth of Sediment Sump with Plug: –

Elevation of Bottom of Borehole: -147.3'

Depth of Bottom of Borehole: 155'

NOTES:

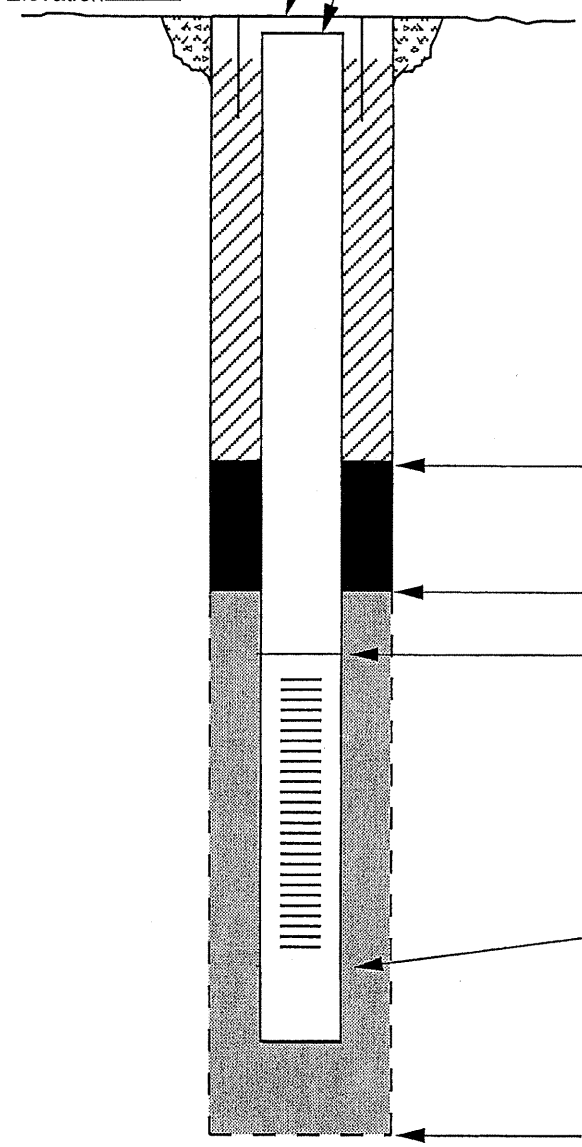
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller EARTH EXPLORATION (D.M.)

Project No. 52985 Boring No. HESE-01-07I Drilling Method HSA

Date Installed 11-18-01 Development Method PUMP & SURGE

Field Geologist T. LONGLEY



Elevation of Top of Surface Casing: 7.71'
Elevation of Top of Riser Pipe: 7.42
Depth of Top of Riser 0.29'
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH TO GROUND

ID of Surface Casing: 6"

Diameter of Borehole: 8"

Riser Pipe ID: 2"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: SEE SEAL

Elevation of Top of Seal: 3.72'
Depth of Top of Seal: 4'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -7.3'
Depth of Top of Sand: 15'
Elevation of Top of Screen: -12'
Depth of Top of Screen: 19.7'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 10'
ID of Screen: 2"

Type of Sandpack: # Ø SILICA PACK

Elevation of Bottom of Screen: -22'
Depth of Bottom of Screen: 29.7'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -22.3'
Depth of Bottom of Borehole: 30'

NOTES:

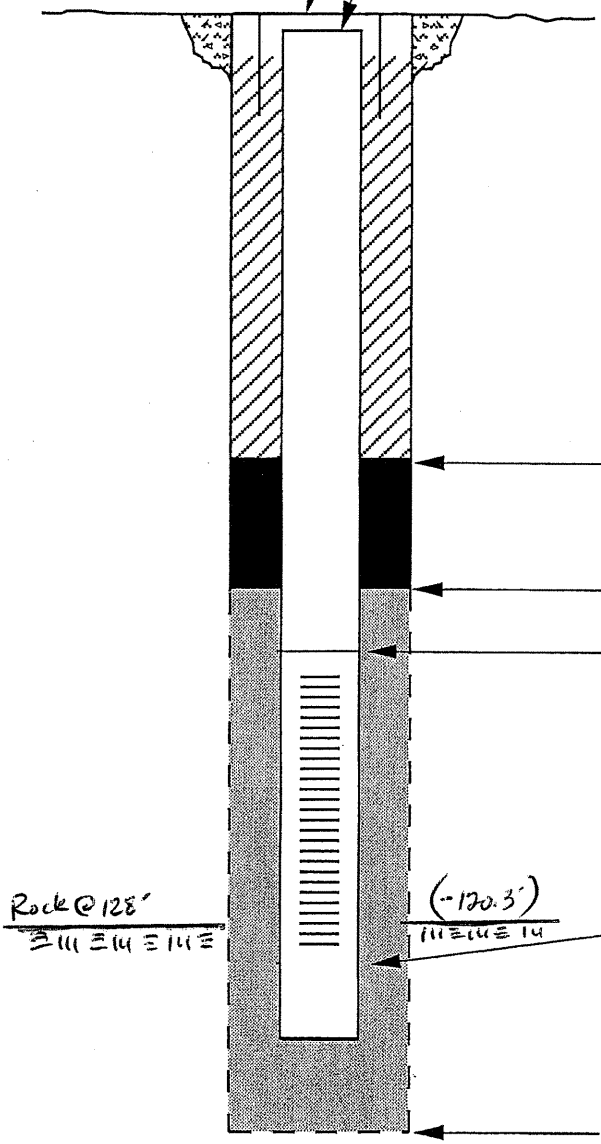
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller GEOCOIL EARTH EXPLORATION

Project No. 52985 Boring No. HESE-01-07D Drilling Method DRIVE AND WASH/MUD

Date Installed 11/26/01 Development Method PUMP & SURGE

Field Geologist Glenn Daukas



Elevation of Top of Surface Casing: 7.69'

Elevation of Top of Riser Pipe: 7.31'

Depth of Top of Riser 0.4' bgs.

Type of Surface Seal: Concrete

Type of Surface Casing: metal Roadway Flush Mount

ID of Surface Casing: 6"

Diameter of Borehole: 5" to 55' & 4" to END OF BORING

Riser Pipe ID: 2"

Type of Riser Pipe: PVC

Type of Backfill: Bentonite/Cement Grout

Elevation of Top of Seal: -100'

Depth of Top of Seal: ~~100' bgs~~ 98 10 8' bgs

Type of Seal: Bentonite Slurry tremie

Elevation of Top of Sand: -106.3

Depth of Top of Sand: 114' bgs

Elevation of Top of Screen: -111.6'

Depth of Top of Screen: 119.25' bgs

Type of Screen: PVC

Slot Size x Length: 10 X 10 FT

ID of Screen: 2 INCH

Type of Sandpack: 0 Sand

Elevation of Bottom of Screen: -121.6'

Depth of Bottom of Screen: 129.25 bgs

Depth of Sediment Sump with Plug: 129.25 bgs

Elevation of Bottom of Borehole: -121.6'

Depth of Bottom of Borehole: 129.3 FT BGS

NOTES:

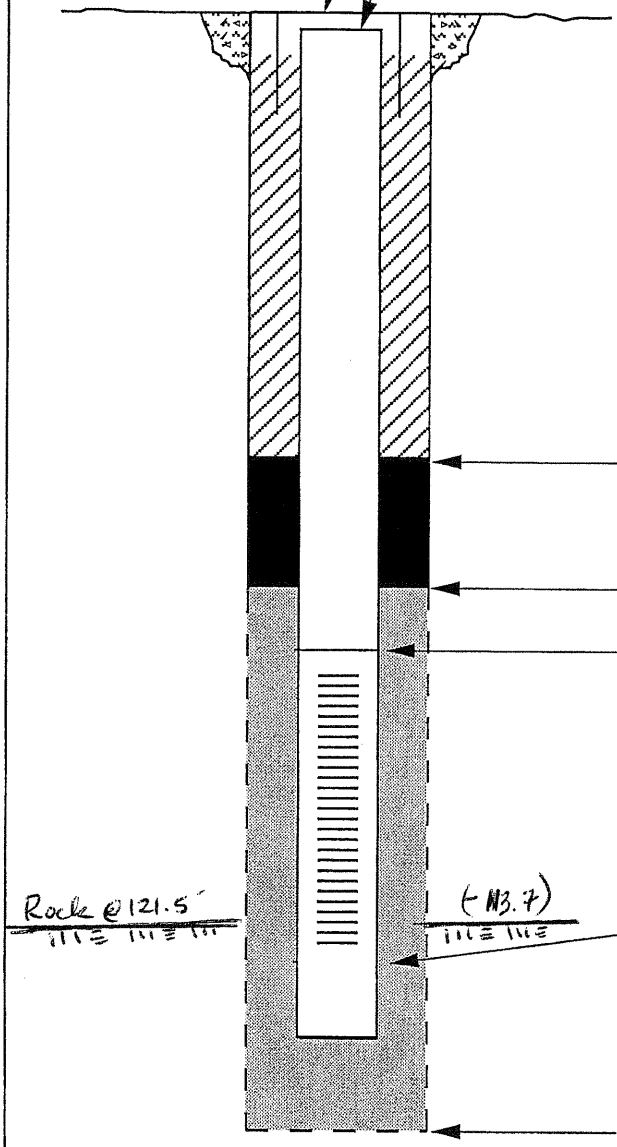
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area **Remedial Investigation** Driller GEOLOGIC / TIM

Project No. 52985 Boring No. HESE-01-08D Drilling Method DRIVE & WASH

Date Installed 12-05-01 Development Method PUMP & SURGE

Field Geologist GLENN DAUKAS



Elevation of Top of Surface Casing: 7.77'
Elevation of Top of Riser Pipe: 7.13'
Depth of Top of Riser 0.64'
Type of Surface Seal: Cement
Type of Surface Casing: Aluminum Flush Mount

ID of Surface Casing: 6"

Diameter of Borehole: 5" to 30' / 4" to 123'

Riser Pipe ID: 2"
Type of Riser Pipe: PVC

Type of Backfill: Cement Bentonite Grout Tremmie

Elevation of Top of Seal: -90.2'
Depth of Top of Seal: 98'
Type of Seal: Bentonite Slurry Tremmie

Elevation of Top of Sand: -100.2'
Depth of Top of Sand: 108
Elevation of Top of Screen: -105.2'
Depth of Top of Screen: 113

Type of Screen: PVC
Slot Size x Length: #10 X 10'
ID of Screen: 2"

Type of Sandpack: #0 SAND PACK

Elevation of Bottom of Screen: -115.2'
Depth of Bottom of Screen: 123'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -115.2'
Depth of Bottom of Borehole: 123' bgs

NOTES:

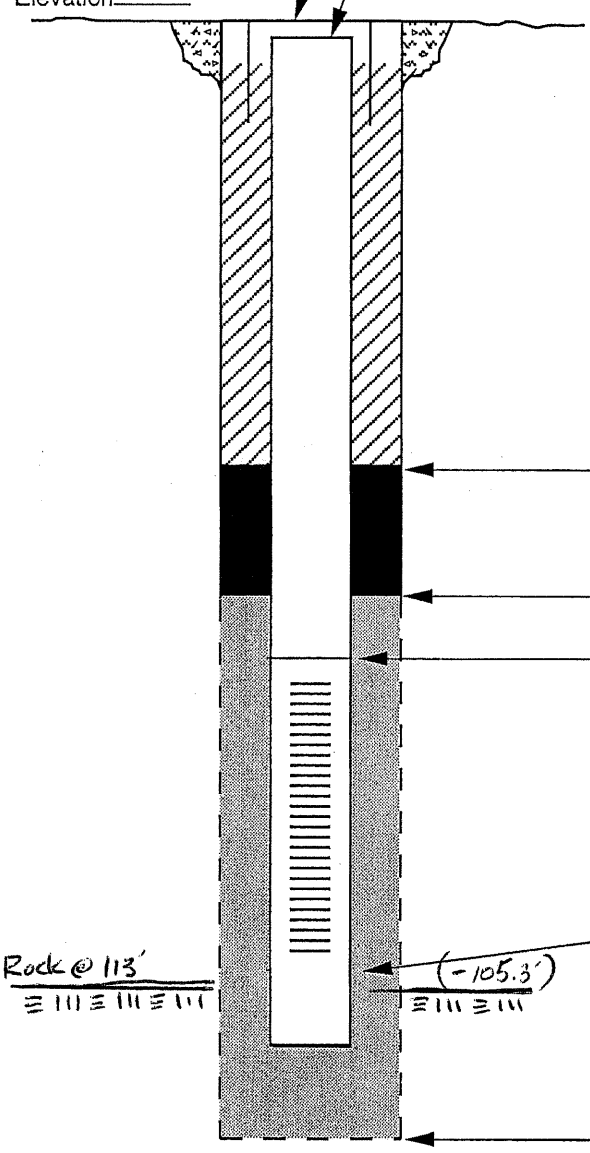
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller GEOLOGIC / DERRICK

Project No. 52985 Boring No. HESE-01-09D Drilling Method DRIVE & WASH 5"/4"

Date Installed 11/29/01 Development Method PUMP & SURGE

Field Geologist GLENN DALLKAS



Elevation of Top of Surface Casing: 7.66'
Elevation of Top of Riser Pipe: 7.36'
Depth of Top of Riser 0.3'
Type of Surface Seal: Cement
Type of Surface Casing: STEEL FLUSH MOUNT

ID of Surface Casing: 6"

Diameter of Borehole: 5"-55' bgs / 4" to 114' bgs

Riser Pipe ID: 2"
Type of Riser Pipe: PVC

Type of Backfill: Cement / Bentonite Grout.

Elevation of Top of Seal: -83.3'
Depth of Top of Seal: 91' bgs
Type of Seal: Bentonite Slurry (Tremie)

Elevation of Top of Sand: -89.3'
Depth of Top of Sand: 97' bgs
Elevation of Top of Screen: -94.6'
Depth of Top of Screen: 102.3' bgs

Type of Screen: PVC
Slot Size x Length: 10 X 10'
ID of Screen: 2"

Type of Sandpack: 0 Sand Pack

Elevation of Bottom of Screen: -104.6
Depth of Bottom of Screen: 112.3'
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole: -106.3'
Depth of Bottom of Borehole: 114' bgs

NOTES:

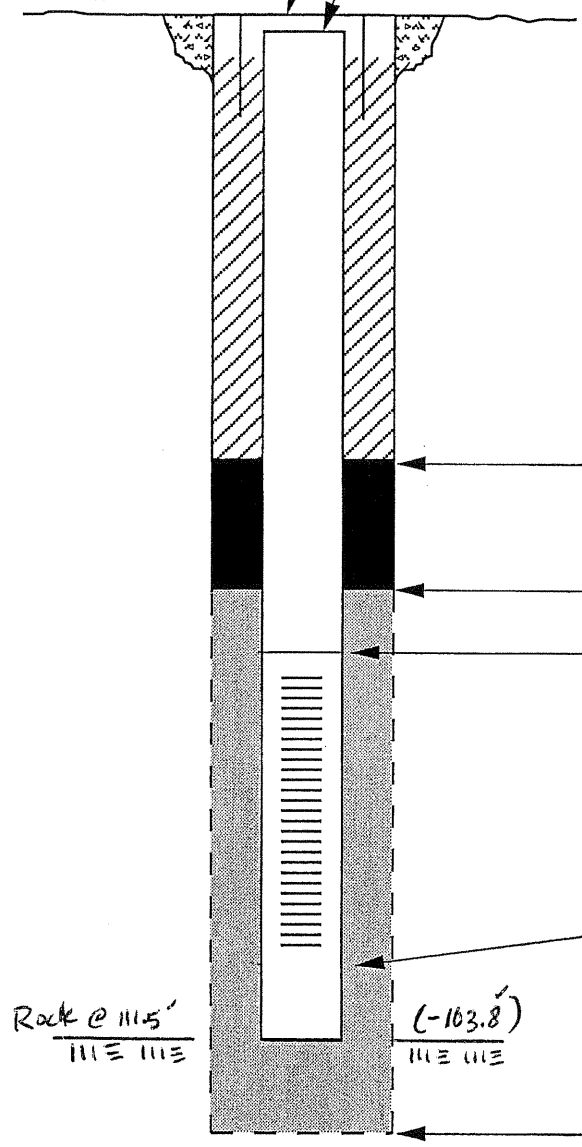
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area **Remedial Investigation** Driller EARTH EXPLORATION

Project No. 52985 Boring No. HESE-01-10D Drilling Method DRIVE & WASH

Date Installed 12-18-01 Development Method PUMP & SURGE

Field Geologist/INSPECTOR M. LOUNSBURY



Elevation of Top of Surface Casing: 7.73'
Elevation of Top of Riser Pipe: 7.42
Depth of Top of Riser 0.31'
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH-TO-GROUND

ID of Surface Casing: 6"

Diameter of Borehole: 5" & 4"

Riser Pipe ID: 2"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: CEMENT/BENTONITE SLURRY

Elevation of Top of Seal: ~75'-15 GAL. SLURRY
Depth of Top of Seal: ~-67'
Type of Seal: BENTONITE SLURRY-HIGH SOLIDS

Elevation of Top of Sand: -90.3'
Depth of Top of Sand: 98'
Elevation of Top of Screen: -93.8'
Depth of Top of Screen: 101.5'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 10'
ID of Screen: 2"

Type of Sandpack: ϕ SILICA SAND

Elevation of Bottom of Screen: -103.8'
Depth of Bottom of Screen: 111.5'
Depth of Sediment Sump with Plug: –

Elevation of Bottom of Borehole: -104.8'
Depth of Bottom of Borehole: 112.5

NOTES:

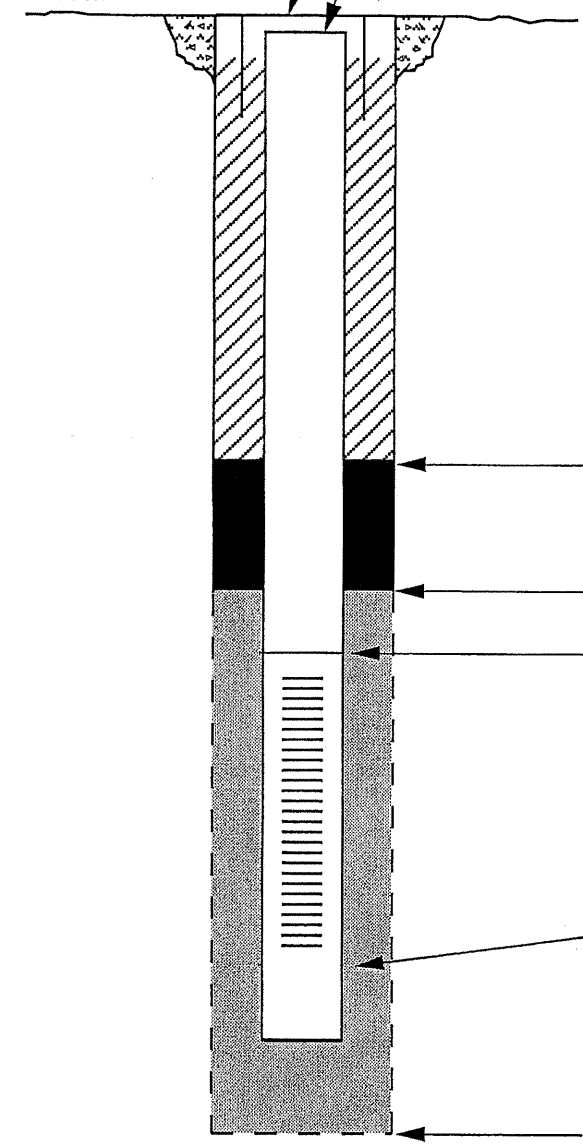
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller Earth Exploration Services Derrick Makudera

Project No. 52985 Boring No. HSE-01-12I Drilling Method HSA

Date Installed 11/18/01 Development Method PUMP & SURGE

Field Geologist J. Rawcliffe



Ground Elevation 7.74'

Elevation of Top of Surface Casing: 7.72'
Elevation of Top of Riser Pipe: 7.41'
Depth of Top of Riser 0.32
Type of Surface Seal: Cement
Type of Surface Casing: Aluminum and steel flush mount

ID of Surface Casing: 6"

Diameter of Borehole: 8"

Riser Pipe ID: 2"
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Sand and bentonite chips

Elevation of Top of Seal: -12.3'
Depth of Top of Seal: ≈20' BGS
Type of Seal:

Elevation of Top of Sand: -17.8' TO -20.8'
Depth of Top of Sand: 25.5-28.5 (Cave) BGS
Elevation of Top of Screen: -26.7'
Depth of Top of Screen: 34.4 BGS

Type of Screen: Sch 40 PVC cut slot
Slot Size x Length: 0.01" x 10'
ID of Screen: 2"

Type of Sandpack: #0 sand

Elevation of Bottom of Screen: -36.7'
Depth of Bottom of Screen: 44.4 BGS
Depth of Sediment Sump with Plug: 44.5 BGS

Elevation of Bottom of Borehole: -37.3'
Depth of Bottom of Borehole: 45.0' BGS

NOTES:

Jerry Rawcliffe

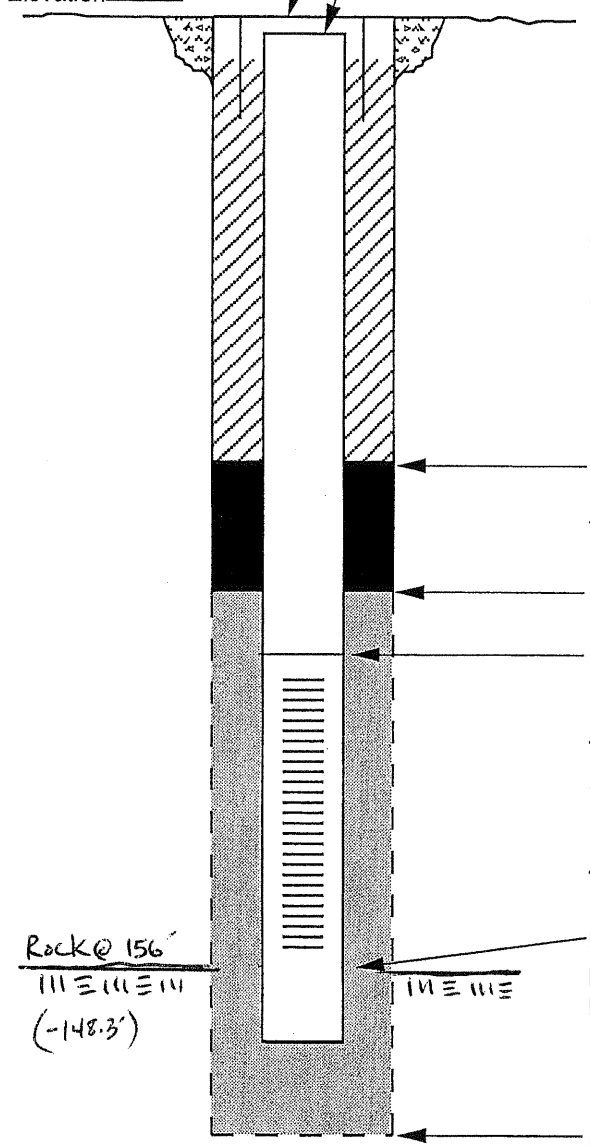
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller GEOLOGIC

Project No. 52985 Boring No. HESE-01-12D Drilling Method DRIVE & WASH

Date Installed 12/02/01 Development Method PUMP & SURGE

Field Geologist DALKAS/LONGLEY



Elevation of Top of Surface Casing: 7.66'

Elevation of Top of Riser Pipe: 7.36'

Depth of Top of Riser 0.3'

Type of Surface Seal: CEMENT

Type of Surface Casing: Aluminum FLUSH MOUNT

ID of Surface Casing: 6"

Diameter of Borehole: 5" - 30' / 4" → 158'

Riser Pipe ID: 2"

Type of Riser Pipe: PVC

Type of Backfill: BENTONITE/CEMENT GROUT TREMMIE

Elevation of Top of Seal: -107.3'

Depth of Top of Seal: 11.5'

Type of Seal: BENTONITE SLURRY TREMMIE

Elevation of Top of Sand: 140.8'

Depth of Top of Sand: -133.1'

Elevation of Top of Screen: ~~-140.8~~

Depth of Top of Screen: 145.8

Type of Screen: PVC

Slot Size x Length: 10

ID of Screen: 2"

Type of Sandpack: #0 SAND

Elevation of Bottom of Screen: -148.1'

Depth of Bottom of Screen: 155.8

Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -150.3

Depth of Bottom of Borehole: 158'

NOTES:

MONITORING WELL CONSTRUCTION DIAGRAM

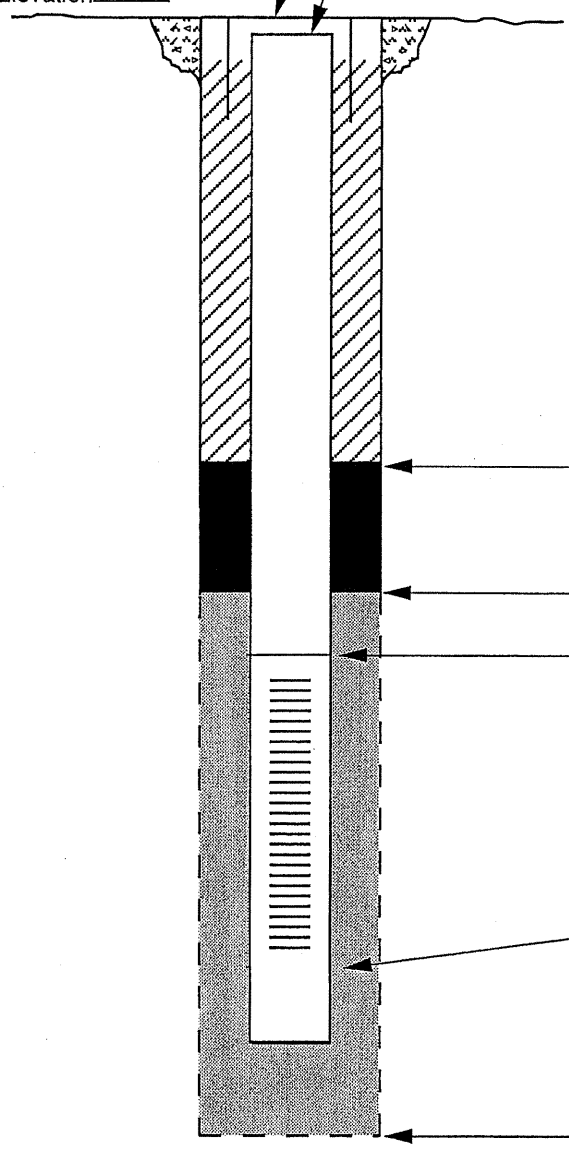
Project **SAEP** Study Area **Remedial Investigation** Driller Earth Exploration Services Derrick Makuchera

Project No. **52985** Boring No. HESE-01-14I Drilling Method 4" casing drive + wash

Date Installed 11/15/01 Development Method PUMP & SURGE

Field Geologist J. Rawcliffe

Ground Elevation 7.78'



Elevation of Top of Surface Casing: 7.77'
Elevation of Top of Riser Pipe: 7.45
Depth of Top of Riser 0.35'
Type of Surface Seal: CONCRETE
Type of Surface Casing: Steel and aluminum flush mount roadbox

ID of Surface Casing: 6"

Diameter of Borehole: 4"

Riser Pipe ID: 2"
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Cement/bentonite grout

Elevation of Top of Seal: -26.2'
Depth of Top of Seal: 34'
Type of Seal: Bentonite chip.

Elevation of Top of Sand: -27.2'
Depth of Top of Sand: 35'
Elevation of Top of Screen: -29.1'
Depth of Top of Screen: 36.9

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.01" x 10'
ID of Screen: 2"

Type of Sandpack: #0 sand

Elevation of Bottom of Screen: -39.1'
Depth of Bottom of Screen: 46.9'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -42.2'
Depth of Bottom of Borehole: 50'

NOTES:

Jerry Rawcliffe

9912003(c)

Harding ESE

MONITORING WELL CONSTRUCTION DIAGRAM

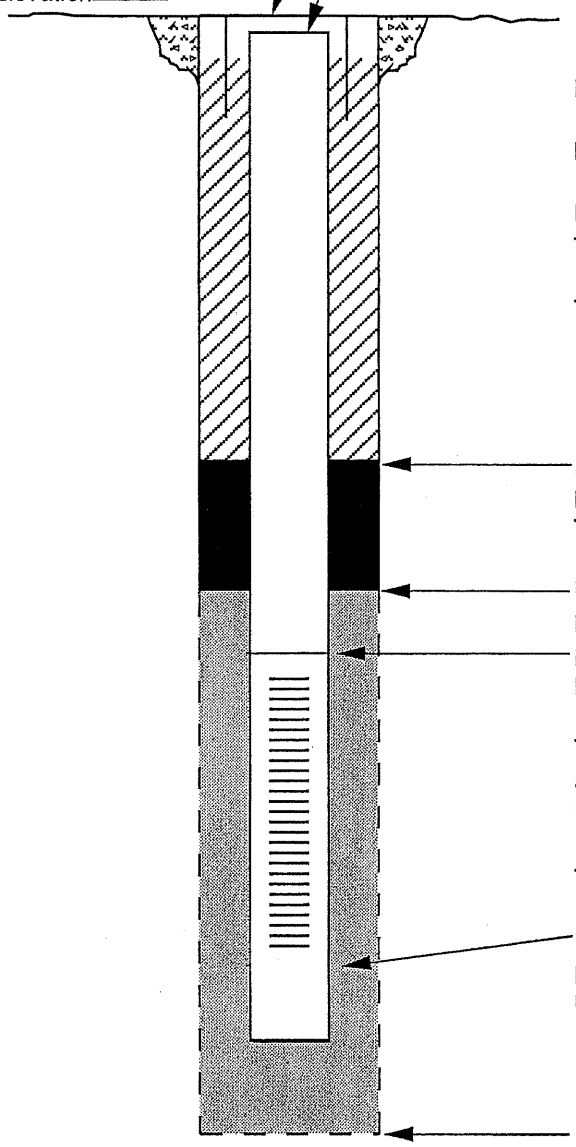
Project SAEP Study Area Remedial Investigation Driller EARTH EXPLORATION

Project No. 52985 Boring No. HESE-01-15I Drilling Method DRIVE & WASH

Date Installed 12-19-01 Development Method PUMP & SURGE

Field Geologist/INSPECTOR M. LOUNSBURY

Ground Elevation 7.74'



Elevation of Top of Surface Casing: 7.71'
Elevation of Top of Riser Pipe: 7.54'
Depth of Top of Riser 0.17'
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH-TO-GROUND

ID of Surface Casing: 6"

Diameter of Borehole: 4"

Riser Pipe ID:
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: BENTONITE CHIPS

Elevation of Top of Seal: -4.7'
Depth of Top of Seal: 3'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -15.3'
Depth of Top of Sand: 23'
Elevation of Top of Screen: -17.3'
Depth of Top of Screen: 25'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 10'
ID of Screen: 2"

Type of Sandpack: Ø SILICA SAND

Elevation of Bottom of Screen: -27.3'
Depth of Bottom of Screen: 35'
Depth of Sediment Sump with Plug: –

Elevation of Bottom of Borehole: -27.7'
Depth of Bottom of Borehole: 35.4

NOTES:

MONITORING WELL CONSTRUCTION DIAGRAM

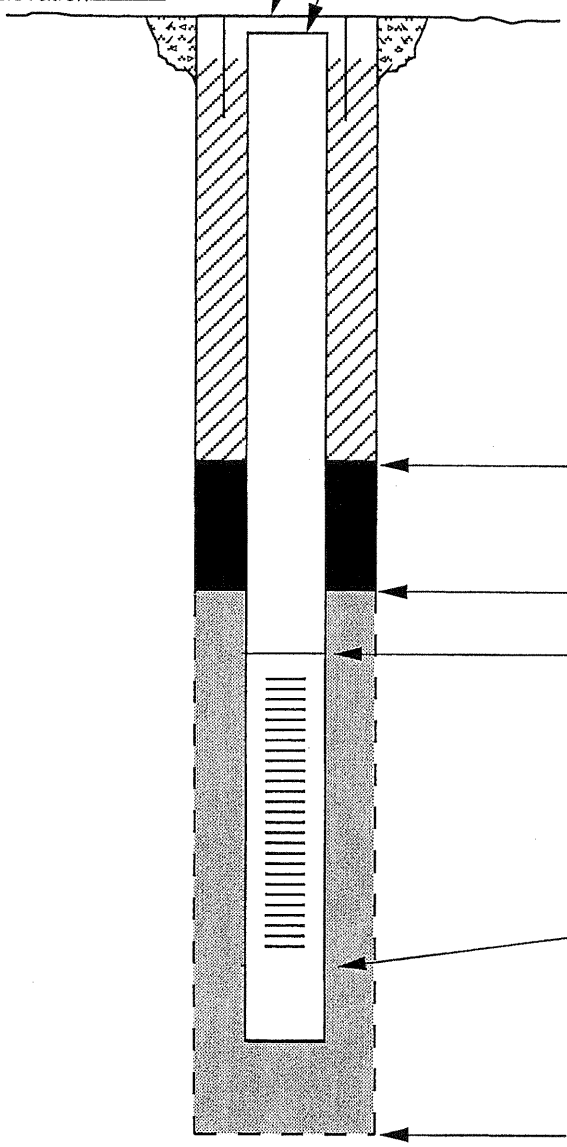
Project SAEP Study Area Remedial Investigation Driller Earth Exploration Services Derrick Makudera

Project No. 52985 Boring No. HESE-01-16I Drilling Method HSA

Date Installed 11/14/01 Development Method PUMP & SURGE

Field Geologist J. Rawcliffe

Ground Elevation 8.11'



Elevation of Top of Surface Casing: 8.10'
Elevation of Top of Riser Pipe: 7.68'
Depth of Top of Riser 0.42 BGS/TOR
Type of Surface Seal: Cement
Type of Surface Casing: Steel and aluminum Aushmant

ID of Surface Casing: 6"

Diameter of Borehole: 8"

Riser Pipe ID: 2"
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: NA (Bent. chip/see below)

Elevation of Top of Seal: 5.1'
Depth of Top of Seal: 3' BGS
Type of Seal: Bentonite chip

Elevation of Top of Sand: -12.4'
Depth of Top of Sand: 20.5' BGS
Elevation of Top of Screen: -15.8'
Depth of Top of Screen: 23.9

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.01" x 10'
ID of Screen: 2"

Type of Sandpack: #0 sand

Elevation of Bottom of Screen: -25.8'
Depth of Bottom of Screen: 33.9' (sat bottom - remeasure after development)
Depth of Sediment Sump with Plug: -

Elevation of Bottom of Borehole: -26.9'
Depth of Bottom of Borehole: 35' BGS

NOTES: Appears to be some sediment in well, remeasure bottom of well after development.
JRR 11/15/01

GW to TOR 11/15/01 0840 5.51' TOR

J Rawcliffe

Harding ESE

9912003(c)

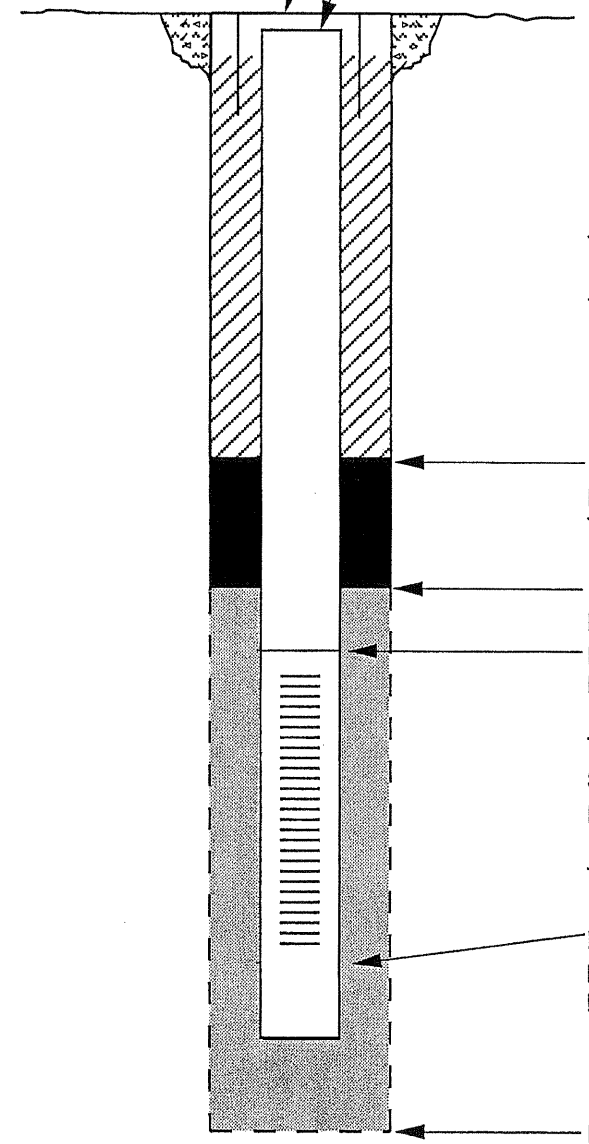
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller Earth Exploration Services Derrick Makuderu

Project No. 52985 Boring No. HESE-01-17I Drilling Method ~~Drive & wash~~ HSA 4¼" ID

Date Installed 11/13/01 Development Method Pump & surge

Field Geologist J. Rawcliffe ~~Jerry Rawcliffe~~



Ground Elevation 6.10'

Elevation of Top of Surface Casing: 6.11'
Elevation of Top of Riser Pipe: 5.77'
Depth of Top of Riser 0.35 BGS
Type of Surface Seal: Cement
Type of Surface Casing: Aluminum and steel

ID of Surface Casing: 6"

Diameter of Borehole: 8"

Riser Pipe ID: 2"
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Bentonite chips

Elevation of Top of Seal: 3.1'
Depth of Top of Seal: 3'
Type of Seal: Bentonite chip

Elevation of Top of Sand: -8.9'
Depth of Top of Sand: 15.0' BGS
Elevation of Top of Screen: -11.5'
Depth of Top of Screen: 17.6 BGS

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.01" x 10'
ID of Screen: 2"

Type of Sandpack: #0 sand

Elevation of Bottom of Screen: -21.5'
Depth of Bottom of Screen: 27.6 BGS
Depth of Sediment Sump with Plug: 27.7 BGS

Elevation of Bottom of Borehole: -21.9'
Depth of Bottom of Borehole: 28.0' BGS

NOTES:

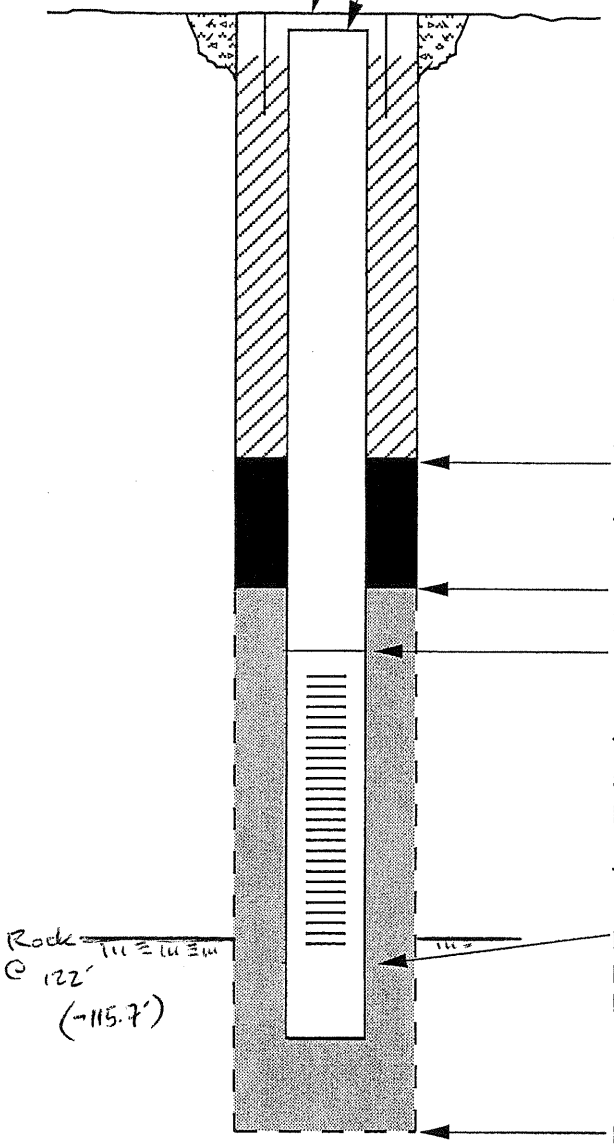
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller EARTH EXPLORATION - T. GALVIN

Project No. 52985 Boring No. HESE-01-17D Drilling Method DRIVE & WASH 4" CASING

Date Installed 11-15-01 Development Method PUMP & SURGE

Field Geologist T. LONGLEY



Elevation of Top of Surface Casing: 6.32'
Elevation of Top of Riser Pipe: 6.01
Depth of Top of Riser -0.3'
Type of Surface Seal: CONCRETE
Type of Surface Casing: FLUSH-TO-GROUND

ID of Surface Casing: 6"

Diameter of Borehole: 5" TO 9"; 4" TO 124'

Riser Pipe ID: 2"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: CEMENT/BENTONITE GROUT

Elevation of Top of Seal: ~-78'
Depth of Top of Seal: ~85'
Type of Seal: HIGH SOLIDS BENTONITE SLURRY

Elevation of Top of Sand: -101.7'
Depth of Top of Sand: 108
Elevation of Top of Screen: -106'
Depth of Top of Screen: 112.3'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" x 10'
ID of Screen: 2"

Type of Sandpack: Ø SILICA WELL SAND

Elevation of Bottom of Screen: -116'
Depth of Bottom of Screen: 122.3'
Depth of Sediment Sump with Plug:

Elevation of Bottom of Borehole: -117.7'
Depth of Bottom of Borehole: 124

NOTES:

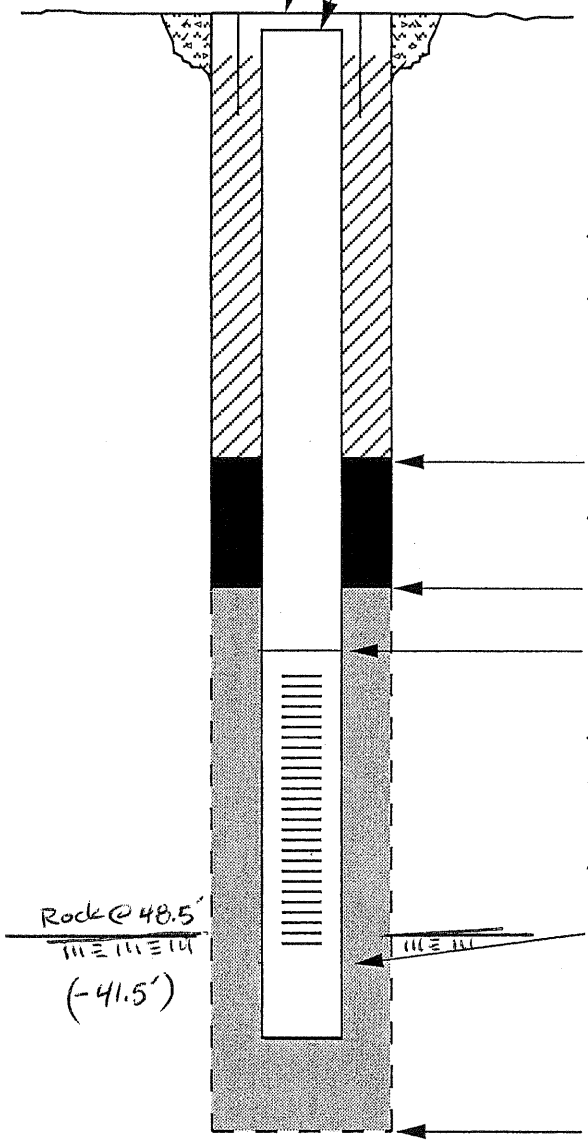
MONITORING WELL CONSTRUCTION DIAGRAM

Project **SAEP** Study Area **Remedial Investigation** Driller Earth Exploration Services Derrick Makuchera

Project No. **52985** Boring No. HESE-01-18D Drilling Method 5"/4" casing drive+wash.

Date Installed 11/16/01 Development Method Pump & surge

Field Geologist J. Rawcliffe



Elevation of Top of Surface Casing: 7.00'
Elevation of Top of Riser Pipe: 6.66'
Depth of Top of Riser 0.34'
Type of Surface Seal: Cement/CONCRETE
Type of Surface Casing: Aluminum and steel flush mount.

ID of Surface Casing: 6"

Diameter of Borehole: 0-20'/5", 20-49.5/4"

Riser Pipe ID: 2"
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Cement/bentonite grout

Elevation of Top of Seal: 5'
Depth of Top of Seal: 2'
Type of Seal: Cement/Bentonite grout

Elevation of Top of Sand: -25.5'
Depth of Top of Sand: 32.5' BGS
Elevation of Top of Screen: -31.9'
Depth of Top of Screen: 38.9' BGS

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.01" x 10'
ID of Screen: 2"

Type of Sandpack: #0 sand

Elevation of Bottom of Screen: -41.9'
Depth of Bottom of Screen: 48.9' BGS
Depth of Sediment Sump with Plug: 49.0 BGS

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 49.5' BGS

NOTES:

Jerry Rawcliffe

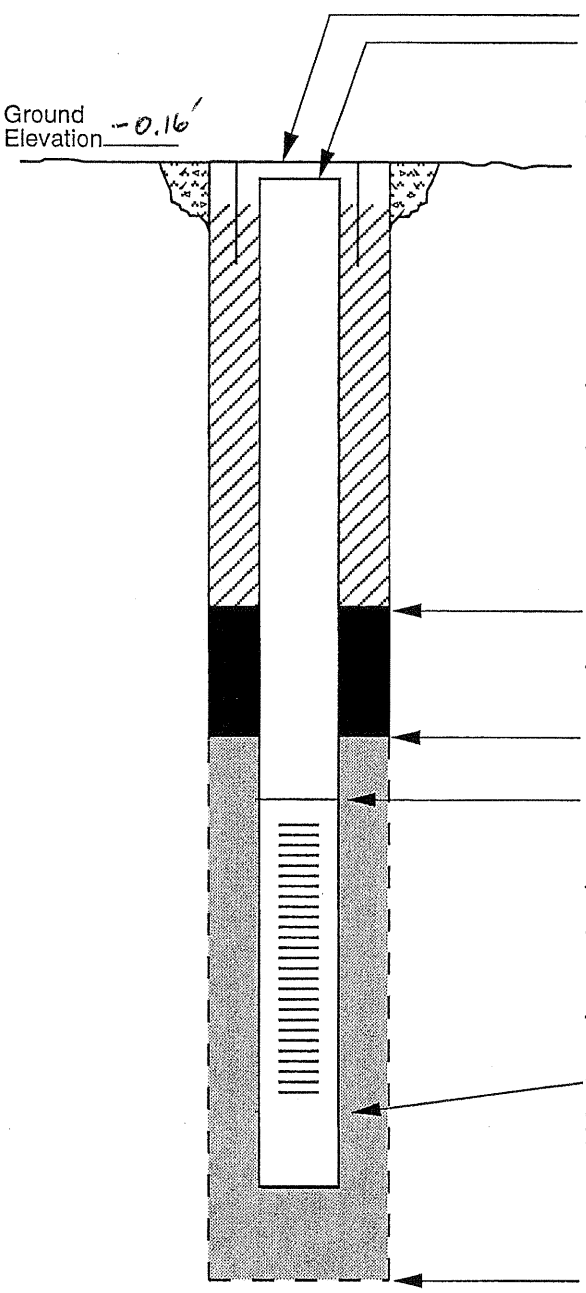
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area **Remedial Investigation** Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-01B Drilling Method DRIVE & WASH 4" CASING

Date Installed 3-21-02 Development Method SURGE & PUMP W/ FOOT VALVE

Field Geologist T. LONGLEY



Ground Elevation -0.16'

Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe: 6.43'

Depth of Top of Riser N/A

Type of Surface Seal: N/A - NATURAL CAVE

Type of Surface Casing: N/A - EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: NATURAL CAVE

Elevation of Top of Seal: -32.4'

Depth of Top of Seal: 32.2'

Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -35.7

Depth of Top of Sand: 35.5'

Elevation of Top of Screen: -38.7'

Depth of Top of Screen: 38.5'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" x 10'

ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK

Elevation of Bottom of Screen: -48.7'

Depth of Bottom of Screen: 48.5'

Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -50.2'

Depth of Bottom of Borehole: 50

NOTES:

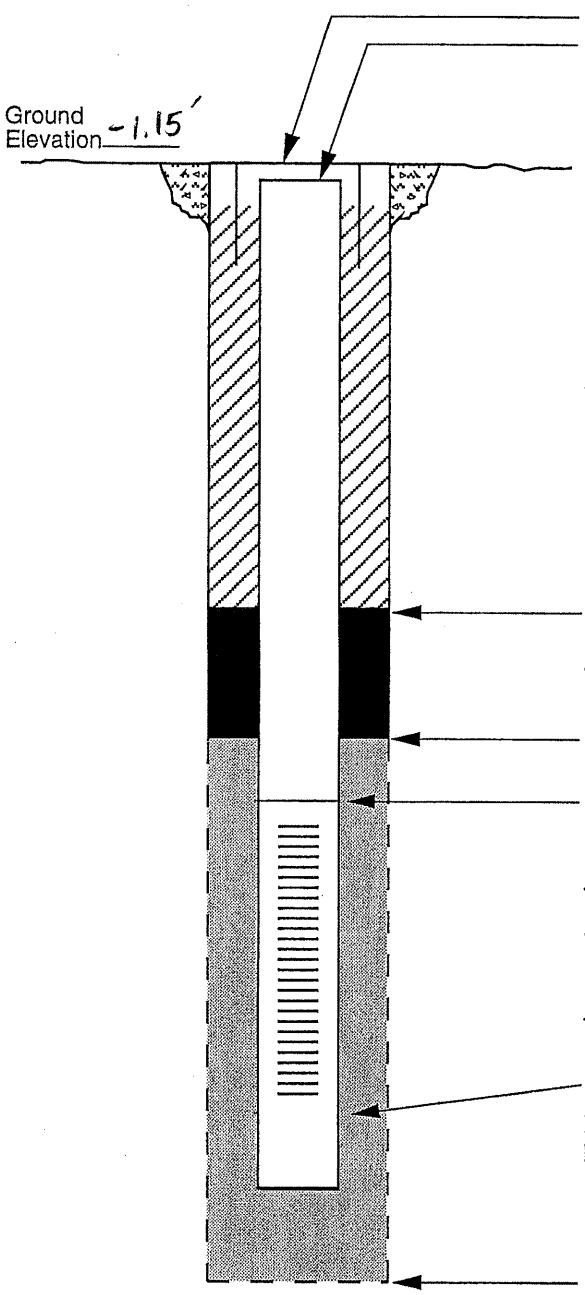
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area **Remedial Investigation** Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-02A Drilling Method DRIVE & WASH 4" CASING

Date Installed 4-8-02 Development Method SURGE & PUMP W/ WATERRA

Field Geologist BRADLEY B. LAFOREST



Elevation of Top of Surface Casing: N/A
Elevation of Top of Riser Pipe: 5.06'
Depth of Top of Riser N/A
Type of Surface Seal: BENTONITE CHIPS
Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: N/A

Elevation of Top of Seal: -1.15'
Depth of Top of Seal: 0'
Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -4.2'
Depth of Top of Sand: 3'
Elevation of Top of Screen: -5.2'
Depth of Top of Screen: 4'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 10'
ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -15.2'
Depth of Bottom of Screen: 14'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -51.2'
Depth of Bottom of Borehole: 50'

NOTES:

INSTALLED IN SEPARATE BORING FROM PZ-TF-02B

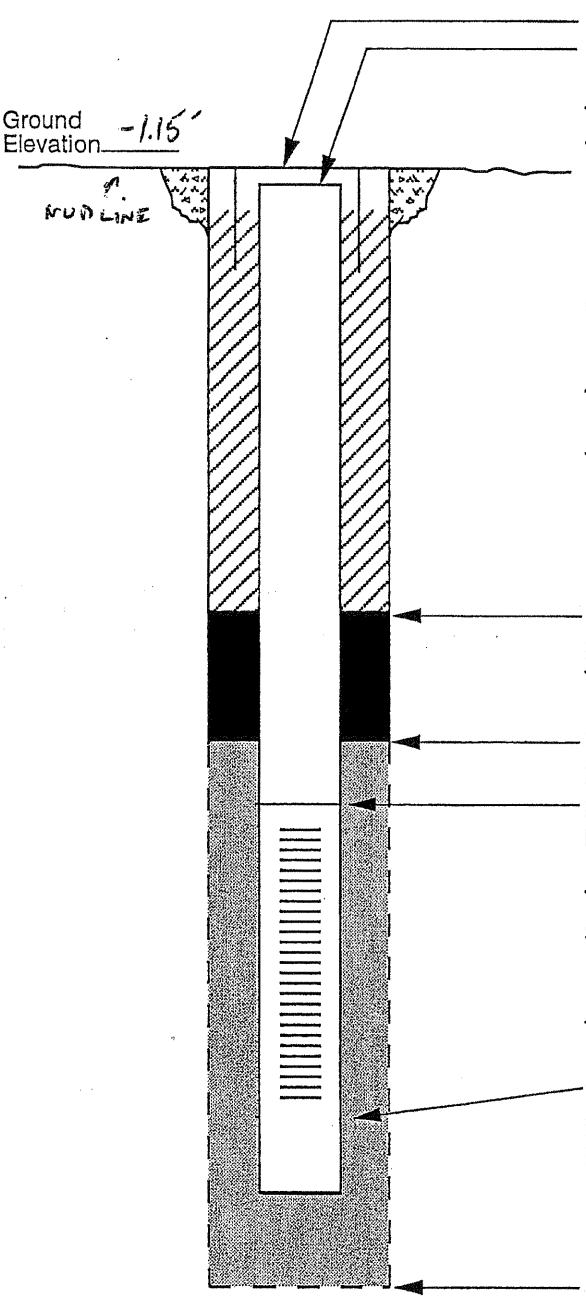
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area **Remedial Investigation** Driller NEW HAMPSHIRE DRILLING

Project No. 52985 Boring No. PZ-TF-02B Drilling Method DRIVE + WASH 4" CASING

Date Installed 4-8-02 Development Method BURGE & PUMP

Field Geologist BRADLEY B. LAFOREST



Elevation of Top of Surface Casing: N/A
Elevation of Top of Riser Pipe: 5.06'
Depth of Top of Riser N/A
Type of Surface Seal: N/A - NATURAL CAVE
Type of Surface Casing: N/A - EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: SCH 40 PVC 1.25"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: NATURAL CAVE

Elevation of Top of Seal: -34.2'
Depth of Top of Seal: 33'
Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -37.2'
Depth of Top of Sand: 36'
Elevation of Top of Screen: -40.2'
Depth of Top of Screen: 39'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010 x 10'
ID of Screen: 1.25"

Type of Sandpack: SILICA SAND NEW PACK

Elevation of Bottom of Screen: -50.2'
Depth of Bottom of Screen: 49'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -51.2'
Depth of Bottom of Borehole: 50'

NOTES:

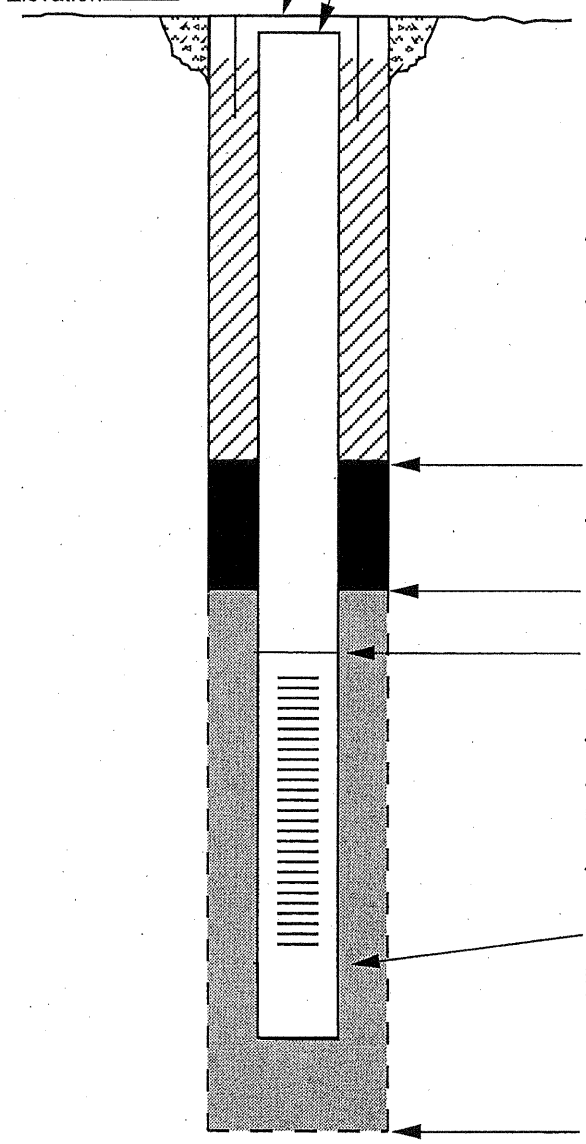
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-03A Drilling Method DRIVE & WASH 4" CASING

Date Installed 4-10-02 Development Method SURGE & PUMP

Field Geologist BRADLEY B. LAFOREST



Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe: 4.11'

Depth of Top of Riser N/A

Type of Surface Seal: BENTONITE CHIPS

Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: BENTONITE CHIPS

Elevation of Top of Seal: -1.49'

Depth of Top of Seal: 0'

Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -4.5

Depth of Top of Sand: 3'

Elevation of Top of Screen: -5.5'

Depth of Top of Screen: 4'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -15.5'

Depth of Bottom of Screen: 14'

Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -51.5'

Depth of Bottom of Borehole: 50'

NOTES:

INSTALLED IN SAME BORING AS PZ-TF-03B

MONITORING WELL CONSTRUCTION DIAGRAM

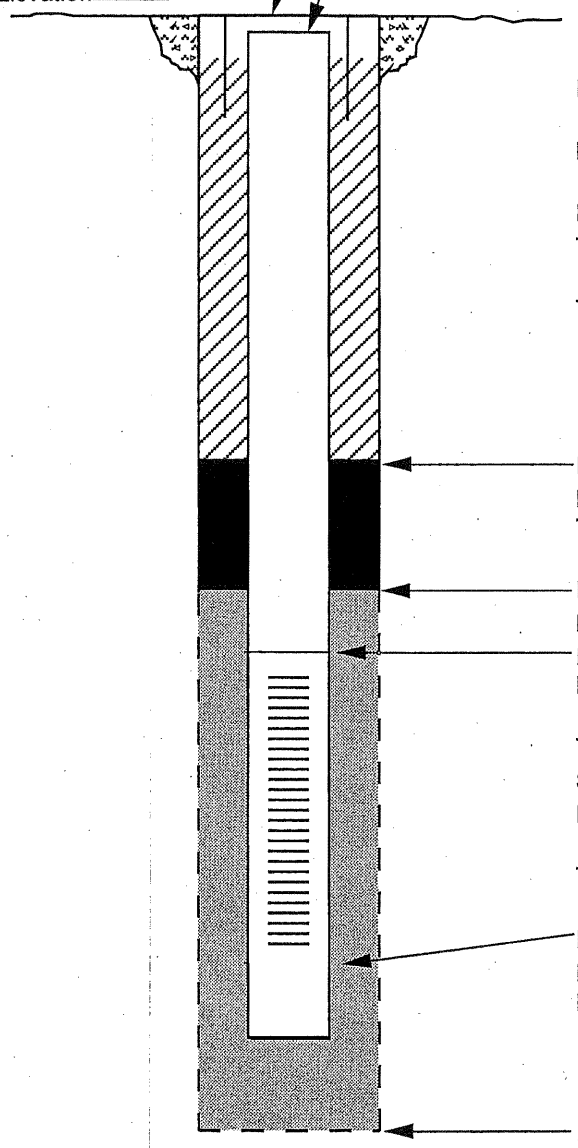
Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-03B Drilling Method DRIVE & WASH 4" CASING

Date Installed 4-10-02 Development Method SURGE & PUMP

Field Geologist BRADLEY B. LAFOREST

Ground Elevation -1.49'



Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe: 4.10'

Depth of Top of Riser N/A

Type of Surface Seal: BENTONITE CHIPS

Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: SAND/BENTONITE/SAND, ETC. TO BASE OF PZ-TF-03A

Elevation of Top of Seal: -34.5'

Depth of Top of Seal: 33'

Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -37.5'

Depth of Top of Sand: 36'

Elevation of Top of Screen: -40.5'

Depth of Top of Screen: 39'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -50.5'

Depth of Bottom of Screen: 49'

Depth of Sediment Sump with Plug: –

Elevation of Bottom of Borehole: -51.5'

Depth of Bottom of Borehole: 50'

NOTES:

INSTALLED IN SAME BORING AS PZ-TF-03A

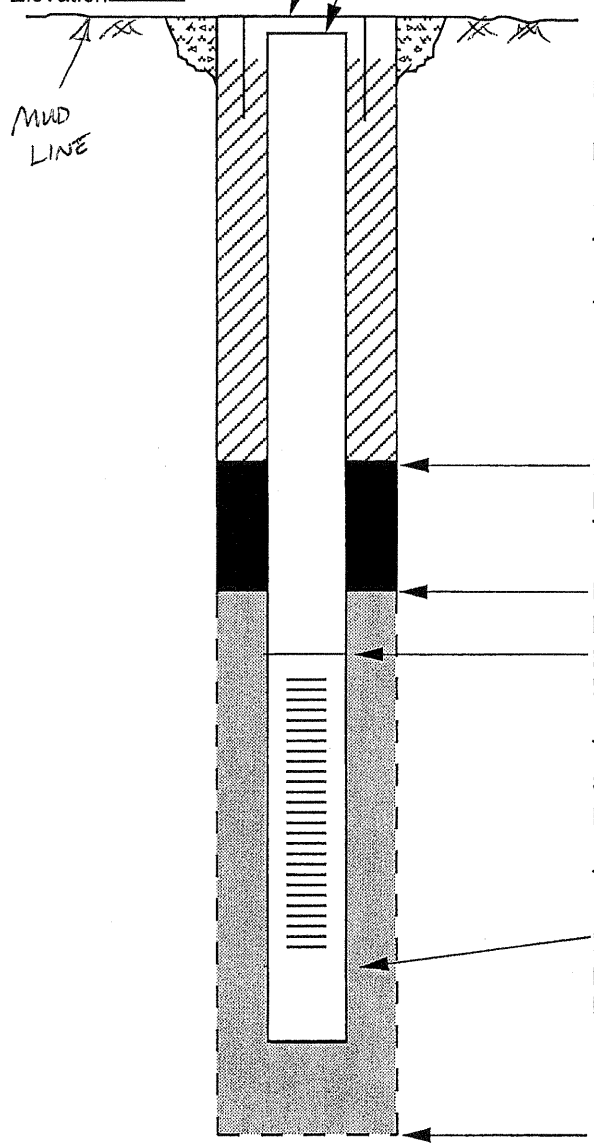
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-04B Drilling Method DRIVE & WASH 4" CASING

Date Installed 3-25-02 Development Method SURGE & PUMP W/ FOOT VALVE

Field Geologist T. LONGLEY



Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe: 5.94'

Depth of Top of Riser N/A

Type of Surface Seal: N/A - NATURAL CAVE

Type of Surface Casing: N/A - EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: NATURAL CAVE

Elevation of Top of Seal: -33.3'

Depth of Top of Seal: 33'

Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -36.3'

Depth of Top of Sand: 36'

Elevation of Top of Screen: -39.4

Depth of Top of Screen: 39.1

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 1.25" ID

Type of Sandpack: SILICA SAND WELL PACK

Elevation of Bottom of Screen: -49.4'

Depth of Bottom of Screen: 49.1

Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -50.3'

Depth of Bottom of Borehole: 50'

NOTES:

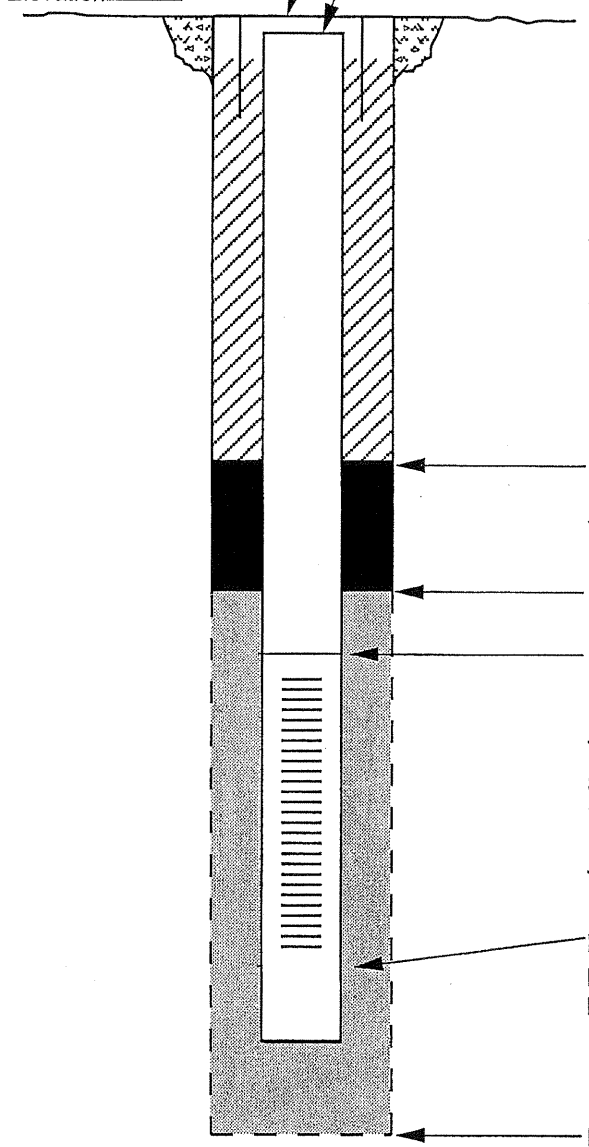
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-05A Drilling Method DRIVE & WASH 4" CASING

Date Installed 4-9-02 Development Method

Field Geologist BRADLEY B. LAFOREST



Elevation of Top of Surface Casing: N/A
Elevation of Top of Riser Pipe: 5.10'
Depth of Top of Riser N/A
Type of Surface Seal: BENTONITE PELLETS
Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: BENTONITE PELLETS

Elevation of Top of Seal: -1.10'
Depth of Top of Seal: 0'
Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -4.1'
Depth of Top of Sand: 3'
Elevation of Top of Screen: -5.1'
Depth of Top of Screen: 4'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 10'
ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -15.1'
Depth of Bottom of Screen: 14'
Depth of Sediment Sump with Plug: -

Elevation of Bottom of Borehole: -51.1'
Depth of Bottom of Borehole: 50'

NOTES:

INSTALLED IN SAME BORING AS PZ-TF-05B

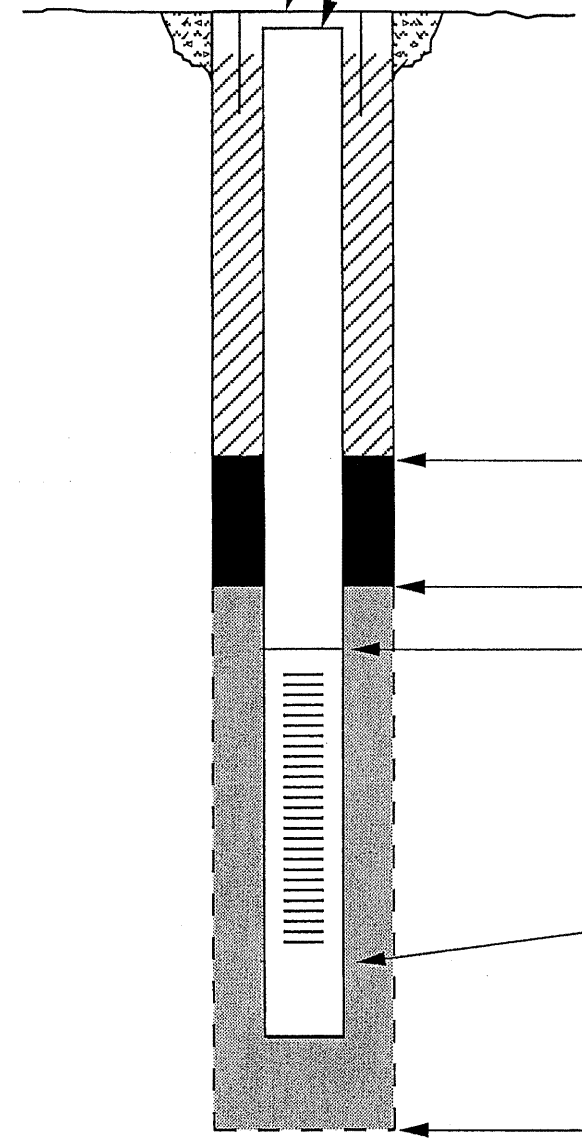
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-05B Drilling Method DRIVE & WASH 4" CASING

Date Installed 4-9-02 Development Method

Field Geologist BRADLEY B. LAFOREST



Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe: 5.12'

Depth of Top of Riser N/A

Type of Surface Seal: BENTONITE CHIPS

Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: SAND / BENTONITE / SAND ETC. UP TO BASE OF PZ-TF-05A

Elevation of Top of Seal: -34.1'

Depth of Top of Seal: 33'

Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -37.1'

Depth of Top of Sand: 36'

Elevation of Top of Screen: -40.1'

Depth of Top of Screen: 39'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -50.1'

Depth of Bottom of Screen: 49'

Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -51.1'

Depth of Bottom of Borehole: 50'

NOTES:

INSTALLED IN SAME BORING W/ PZ-TF-05A

Harding ESE

9912003(c)

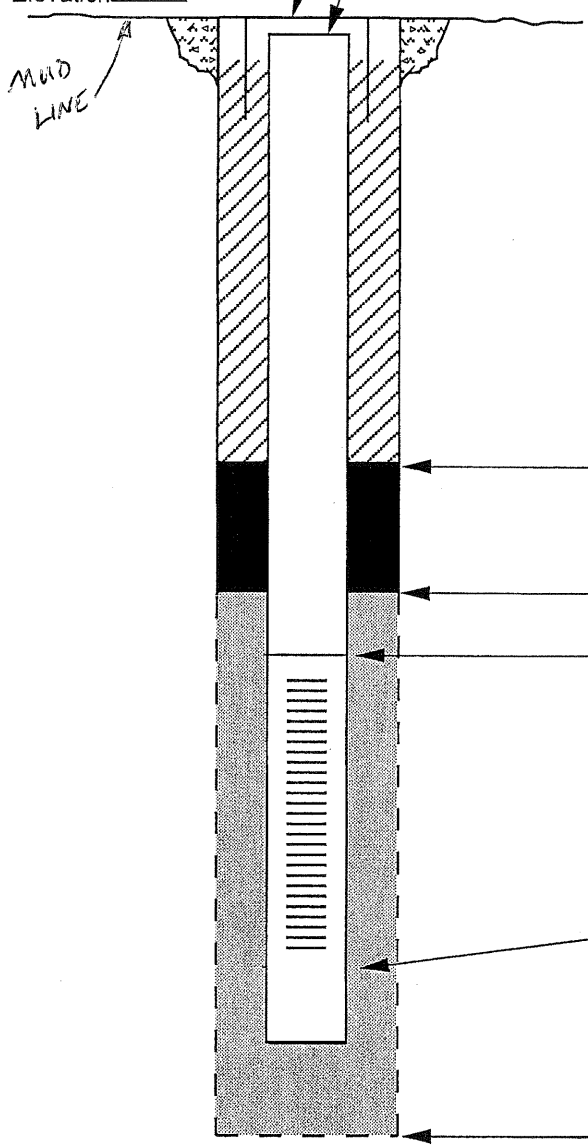
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-06B Drilling Method DRIVE & WASH 4" CASING

Date Installed 3-27-02 Development Method SURGE & pump w/ FOOT VALVE

Field Geologist T. LONGLEY



Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe: 7.80'

Depth of Top of Riser N/A

Type of Surface Seal: NA-NATURAL CAVE

Type of Surface Casing: NA- EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: NATURAL CAVE

Elevation of Top of Seal: ~~34~~ -31.5'

Depth of Top of Seal: 34'

Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -34.5'

Depth of Top of Sand: 37'

Elevation of Top of Screen: -37.5'

Depth of Top of Screen: 40'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK

Elevation of Bottom of Screen: -47.5'

Depth of Bottom of Screen: 50'

Depth of Sediment Sump with Plug: –

Elevation of Bottom of Borehole: -47.5'

Depth of Bottom of Borehole: 50'

NOTES:

MONITORING WELL CONSTRUCTION DIAGRAM

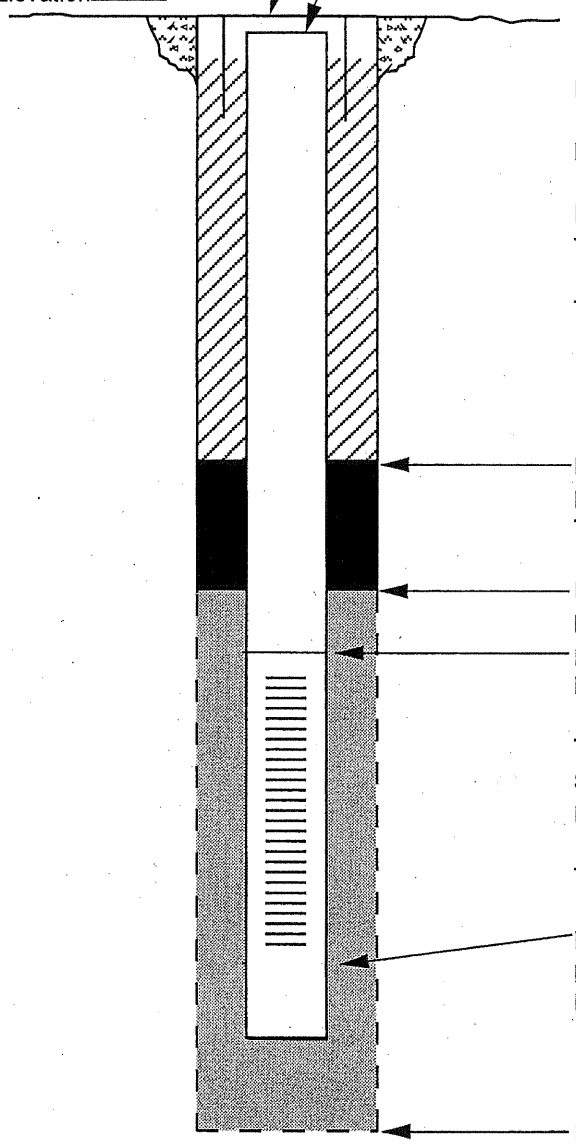
Project SAEP Study Area **Remedial Investigation** Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-07A Drilling Method DRIVE & WASH 4" CASING

Date Installed 4-1-07 Development Method SURGE & PUMP W/ FOOTVALVE

Field Geologist T. LONGLEY

Ground Elevation -1.35'



Elevation of Top of Surface Casing: N/A
Elevation of Top of Riser Pipe: 2.54'
Depth of Top of Riser N/A
Type of Surface Seal: BENTONITE CHIPS
Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: BENTONITE CHIPS

Elevation of Top of Seal: -1.35'
Depth of Top of Seal: 0'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -3.4'
Depth of Top of Sand: 2'
Elevation of Top of Screen: -5.4
Depth of Top of Screen: 4'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 10'
ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -15.4'
Depth of Bottom of Screen: 14'
Depth of Sediment Sump with Plug: –

Elevation of Bottom of Borehole: -51.9'
Depth of Bottom of Borehole: 50.5'

NOTES:

INSTALLED IN SAME BORING AS PZ-TF-07B

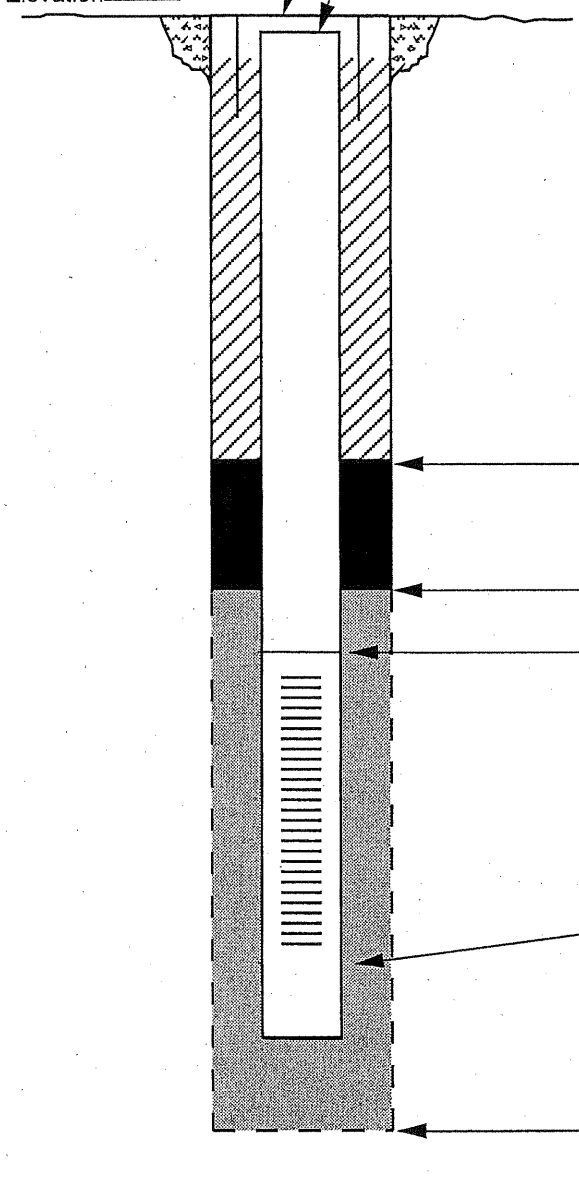
MONITORING WELL CONSTRUCTION DIAGRAM

Project **SAEP** Study Area **Remedial Investigation** Driller NEW HAMPSHIRE BORING

Project No. **52985** Boring No. PZ-TF-07B Drilling Method DRIVE & WASH 4" CASING

Date Installed 4-1-02 Development Method SURGE & PUMP W/ FOOTVALVE

Field Geologist T. LONGLEY



Elevation of Top of Surface Casing: N/A
Elevation of Top of Riser Pipe: 2.96'
Depth of Top of Riser N/A
Type of Surface Seal: BENTONITE CHIPS
Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: CAVE, SAND, BENTONITE CHIPS ETC. TO BASE FOR PZ-TF-07A

Elevation of Top of Seal: -33.4'
Depth of Top of Seal: 32'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -36.4'
Depth of Top of Sand: 35'
Elevation of Top of Screen: -39.4'
Depth of Top of Screen: 38'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" x 10'
ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -49.4'
Depth of Bottom of Screen: 48'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -51.9'
Depth of Bottom of Borehole: 50.5'

NOTES:

INSTALLED IN SAME BORING AS PZ-TF-07A

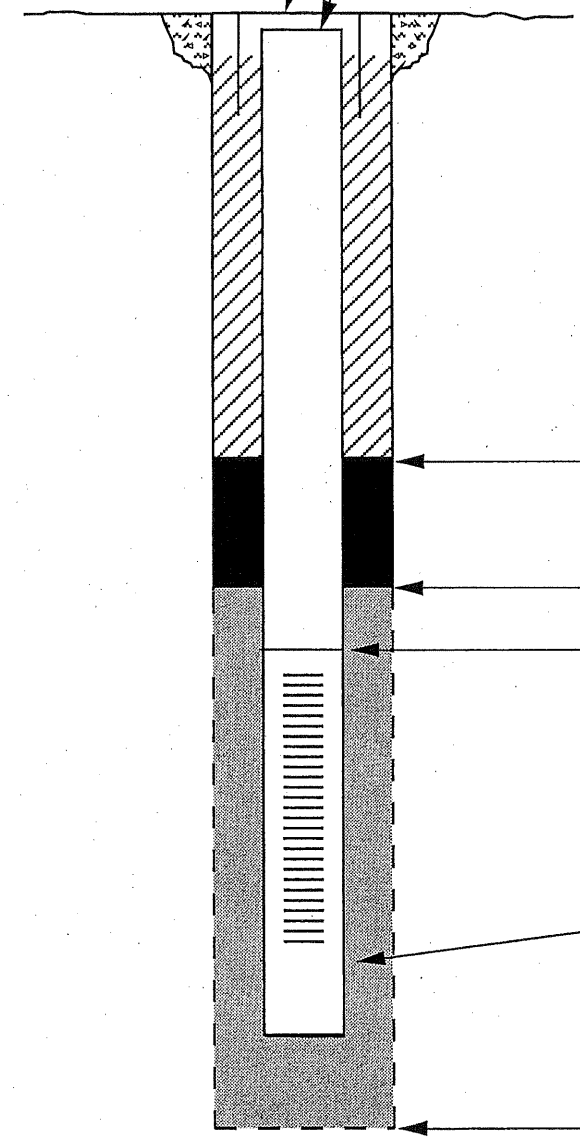
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-08A Drilling Method DRIVE AND WASH 4" CASING

Date Installed 4-3-03 Development Method SURGE & PUMP W/ WATTERA

Field Geologist T. LONGLEY



Ground Elevation -4.64

Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe: 2.87'

Depth of Top of Riser N/A

Type of Surface Seal: BENTONITE CHIPS

Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: BENTONITE CHIPS

Elevation of Top of Seal: -4.6'

Depth of Top of Seal: 0'

Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -7.6'

Depth of Top of Sand: 3'

Elevation of Top of Screen: -8.6'

Depth of Top of Screen: 4'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -18.6'

Depth of Bottom of Screen: 14'

Depth of Sediment Sump with Plug: –

Elevation of Bottom of Borehole: -54.6'

Depth of Bottom of Borehole: 50'

NOTES:

INSTALLED IN SAME BORING AS PZ-TF-08B

Harding ESE

9912003(c)

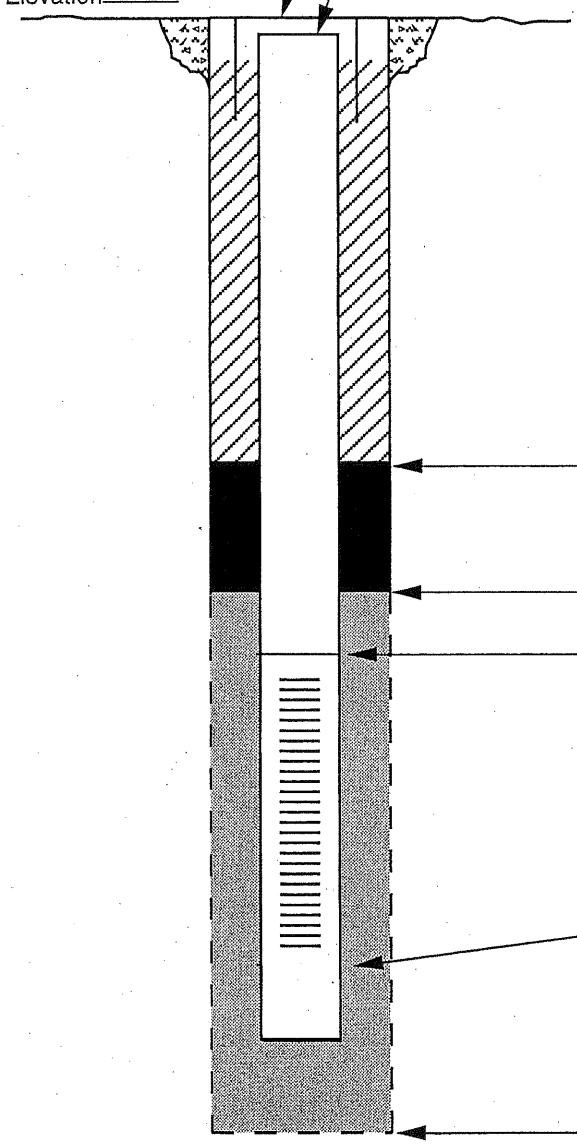
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-08B Drilling Method DRIVE & WASH 4" CASING

Date Installed 4-3-02 Development Method SURGE & PUMP W/ WATTERA

Field Geologist T. LONGLEY



Ground Elevation -4.64'

Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe:

Depth of Top of Riser N/A

Type of Surface Seal: BENTONITE CHIPS

Type of Surface Casing: N/A EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: CAVE / SAND / BENTONITE / ETC. UP TO BASE OF PZ-TF-08A

Elevation of Top of Seal: -37.6'

Depth of Top of Seal: 33'

Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -41.1'

Depth of Top of Sand: 36.5'

Elevation of Top of Screen: -43.6'

Depth of Top of Screen: 39'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -53.6'

Depth of Bottom of Screen: 49'

Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -54.6'

Depth of Bottom of Borehole: 50'

NOTES:

INSTALLED IN SAME BORING AS PZ-TF-08A

Harding ESE

9912003(c)

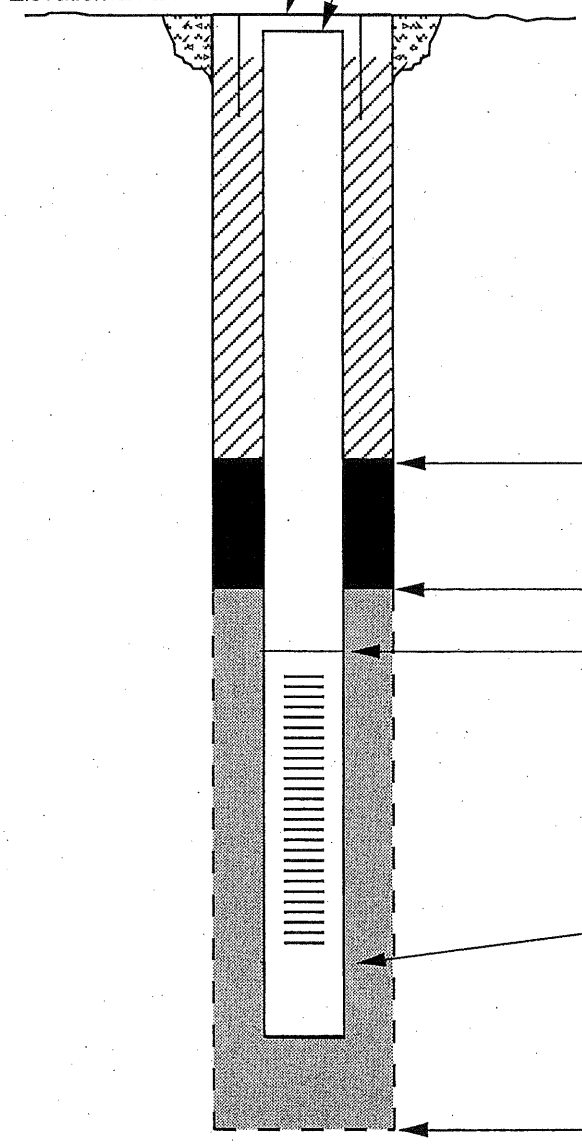
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-09A Drilling Method DRIVE & WASH 4" CASING

Date Installed 5-8-02 Development Method SURGE & PUMP W/ WATERA

Field Geologist R. AUBE



Elevation of Top of Surface Casing: N/A
Elevation of Top of Riser Pipe:
Depth of Top of Riser N/A
Type of Surface Seal: BENT. CHIPS
Type of Surface Casing: N/A - EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: BENT. CHIPS

Elevation of Top of Seal: -3.1'
Depth of Top of Seal: 0'
Type of Seal: BENT. CHIPS

Elevation of Top of Sand: -5.1'
Depth of Top of Sand: 2'
Elevation of Top of Screen: -7.1'
Depth of Top of Screen: 4'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 10"
ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -17.1
Depth of Bottom of Screen: 14'
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -53.1'
Depth of Bottom of Borehole: 50'

NOTES: INSTALLED IN SAME BOREHOLE AS PZ-TF-09B.

ORIGINALLY INSTALLED ON 4-4-02 - HAD TO BE REPLACED DUE TO BEING DAMAGED.

MONITORING WELL CONSTRUCTION DIAGRAM

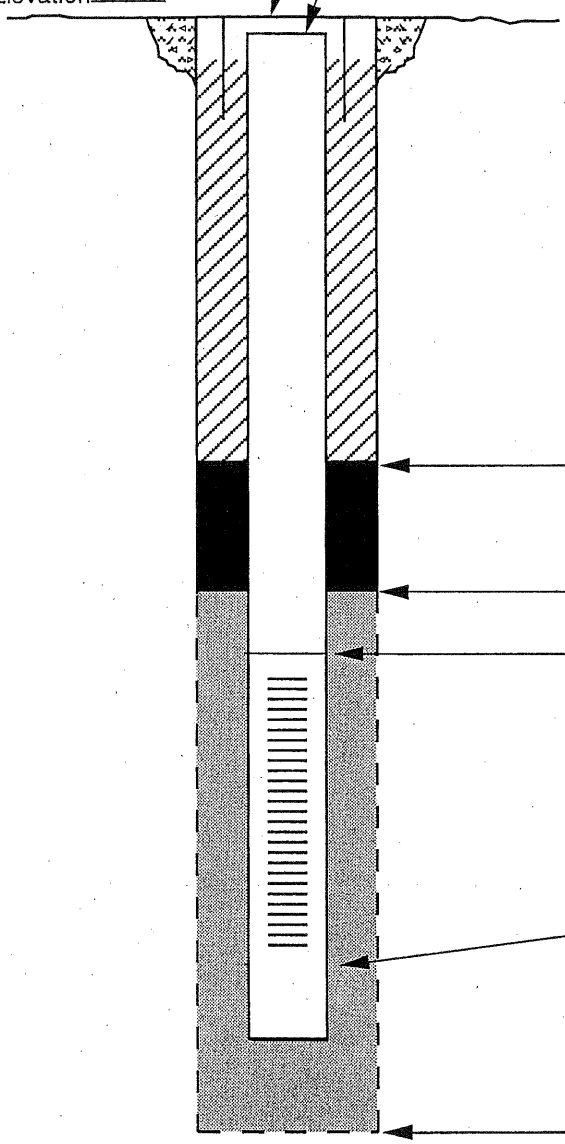
Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-09B Drilling Method DRIVE & WASH, 4" CASING

Date Installed 5-8-02 Development Method SURGE & WASH W/ WATER

Field Geologist R. AUBE

Ground Elevation -3.09'



Elevation of Top of Surface Casing: N/A
Elevation of Top of Riser Pipe:
Depth of Top of Riser N/A
Type of Surface Seal: BENT. CHIPS
Type of Surface Casing: N/A - EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: 1.25"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: SAND/BENT. CHIPS/SAND, ETC. TO BASE OF PZ-TF-09A

Elevation of Top of Seal: -38.1'
Depth of Top of Seal: 35'
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: -38.1'
Depth of Top of Sand: 35
Elevation of Top of Screen: -41.6'
Depth of Top of Screen: 38.5'

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" x 10'
ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK #1

Elevation of Bottom of Screen: -51.6'
Depth of Bottom of Screen: 48.5
Depth of Sediment Sump with Plug: -

Elevation of Bottom of Borehole: -53.1'
Depth of Bottom of Borehole: 50'

NOTES: INSTALLED IN SAME BORING AS PZ-TF-09A.
ORIGINALLY INSTALLED ON 4-4-02 - HAD TO BE REPLACED DUE TO BEING DAMAGED.

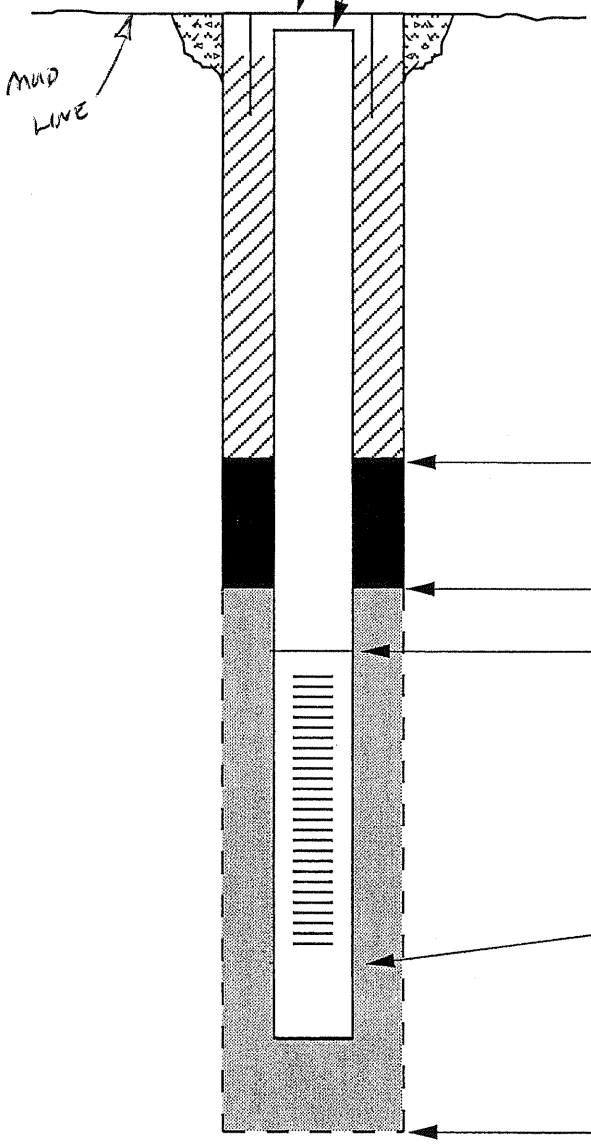
MONITORING WELL CONSTRUCTION DIAGRAM

Project SAEP Study Area Remedial Investigation Driller NEW HAMPSHIRE BORING

Project No. 52985 Boring No. PZ-TF-10B Drilling Method DRIVE & WASH 4" CASING

Date Installed 3-28-02 Development Method SURGE & PUMP W/ FOOT VALVE

Field Geologist T. LONGLEY



Elevation of Top of Surface Casing: N/A

Elevation of Top of Riser Pipe: 6.55

Depth of Top of Riser N/A

Type of Surface Seal: N/A - NATURAL CAVE

Type of Surface Casing: N/A - EXPOSED PVC

ID of Surface Casing: N/A

Diameter of Borehole: 4"

Riser Pipe ID: SCH 40 PVC 1.25"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: NATURAL CAVE

Elevation of Top of Seal: -30.9'

Depth of Top of Seal: 32'

Type of Seal: BENTONITE PELLETS

Elevation of Top of Sand: -33.9'

Depth of Top of Sand: 35'

Elevation of Top of Screen: -36.9'

Depth of Top of Screen: 38'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

ID of Screen: 1.25"

Type of Sandpack: SILICA SAND WELL PACK

Elevation of Bottom of Screen: -46.9'

Depth of Bottom of Screen: 48'

Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: -46.9'

Depth of Bottom of Borehole: 48'

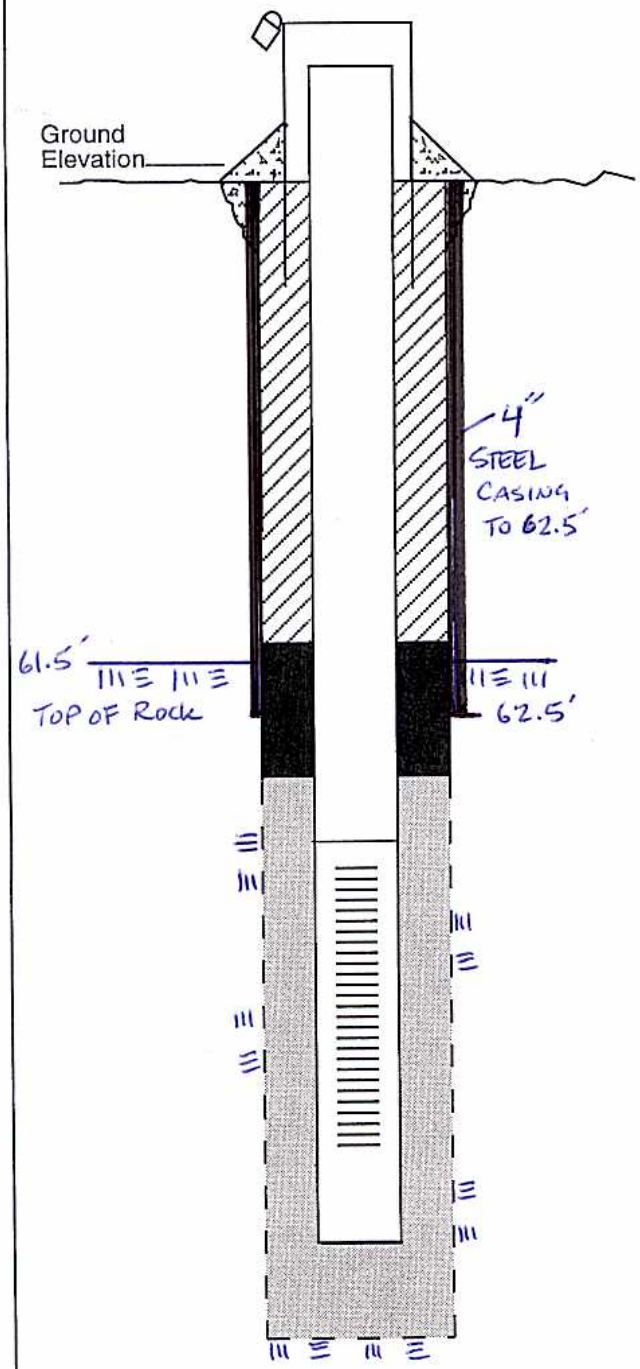
NOTES:

F-3

2004 BEDROCK MONITORING WELL CONSTRUCTION DIAGRAMS

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Stratford Army Engine Plant
Project No.: 3618038008
Boring No.: BRW-04-01
Date Installed: 3-4-04
Field Technician: T.D.L.
Driller: LES DARROW
Drilling Method: DRIVE & WASH - CORE BEDROCK
Development Method: PUMPE SURGE
Checked By: DRP



Stick-up of Casing Above Ground Surface: —
Type of Surface Seal/Other Protection: CONCRETE
Type of Surface Casing: FLUSH-TO-GROUND
ID of Surface Casing: 8"
Diameter of Borehole: 3 5/8" IN ROCK
Riser Pipe ID: 2"
Type of Riser Pipe: SCH 40 PVC
Type of Backfill: CEMENT/BENT. GROUT
Depth of Top of Seal: 61'
Type of Seal: BENT. PELLETS
Depth of Top of Sand: 65.5
Depth of Top of Screen: 72'
Type of Screen: SCH 40 PVC
Slot Size x Length: 0.010" X 10'
ID of Screen: 2"
Type of Sandpack: #2 GRADE SILICA SAND PACK
Depth of Bottom of Screen: 82'
Depth of Sediment Sump with Plug:
Depth of Bottom of Borehole: 82'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Stratford Army Engine Plant

Project No.: 3618038008

Boring No.: BRW-04-02

Date Installed: 3-9-04

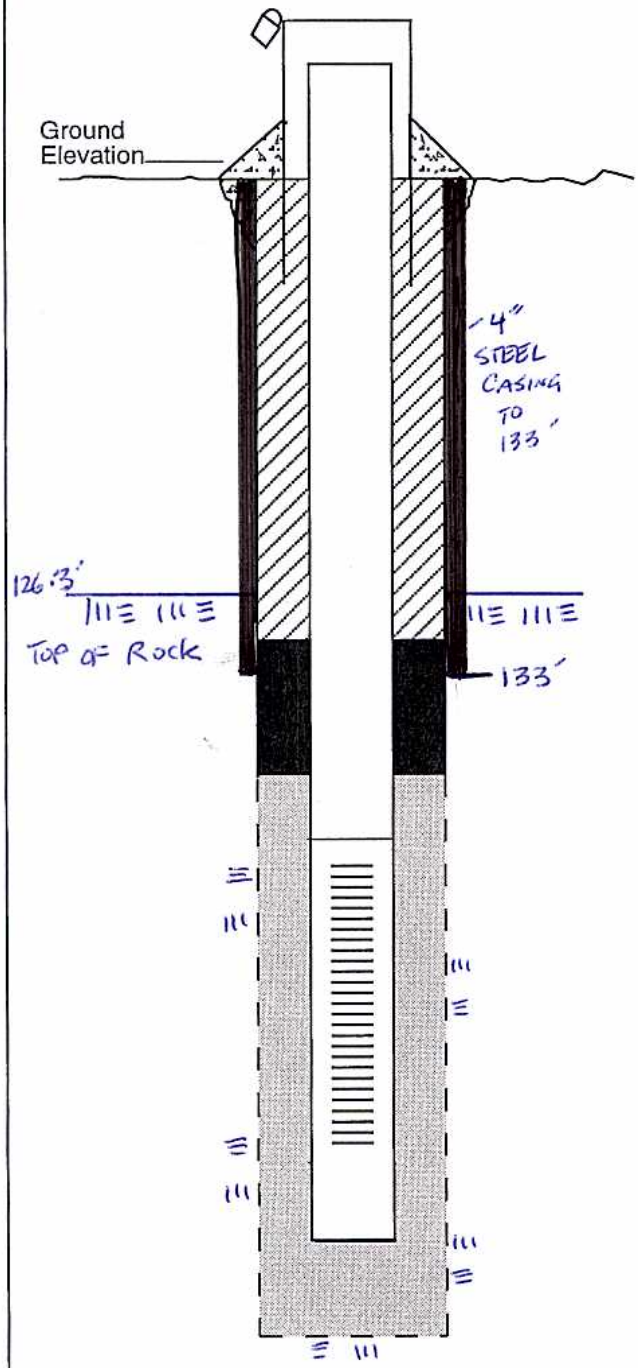
Field Technician: T.D.L.

Driller: LES DARROW

Drilling Method: DRIVE & WASH-CORE BEDROCK

Development Method: PUMP & SURGE

Checked By:



Stick-up of Casing Above Ground Surface: —

Type of Surface Seal/Other Protection: CONCRETE

Type of Surface Casing: FLUSH-TO-GROUND

ID of Surface Casing: 8"

Diameter of Borehole: 3 5/8" IN ROCK

Riser Pipe ID: 2"

Type of Riser Pipe: SCH 40 PVC

Type of Backfill: CEMENT / BENT. GROUT

Depth of Top of Seal: 132'

Type of Seal: BENT. PELLETS

Depth of Top of Sand: 135'

Depth of Top of Screen: 138'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" x 10'

ID of Screen: 2"

Type of Sandpack: #2 GRADE SILICA SAND PACK

Depth of Bottom of Screen: 148'

Depth of Sediment Sump with Plug:

Depth of Bottom of Borehole: 148'