



US ECOLOGY (USE) REMEDIAL INVESTIGATION STATUS

Topic of Discussion

- ⦿ Installation of Vadose Zone Soil Gas Wells
- ⦿ Groundwater Well Surveys
 - Civil
 - Well Deviation
 - Borehole Camera

Vadose Zone Soil Gas Wells

- Thirty vadose zone soil-gas monitoring wells
- Installed upon completion of soil sample collection
- Three vadose zone wells installed approximately two feet apart

Vadose Drilling Rig



Vadose Nested Wells



Present Vadose Well



Proposed Water Levels USE

- Review groundwater levels from 1993-2008
- Average decrease in slope of water level of 0.1 m/y (.32 ft/yr.)
- Groundwater flow in Central Plateau is affected by the presence of buried flood channel
- Hydraulic gradient is estimated to be 10^{-5}
- Reference PNNL-16346

Water levels from both USE and Non-USE Wells

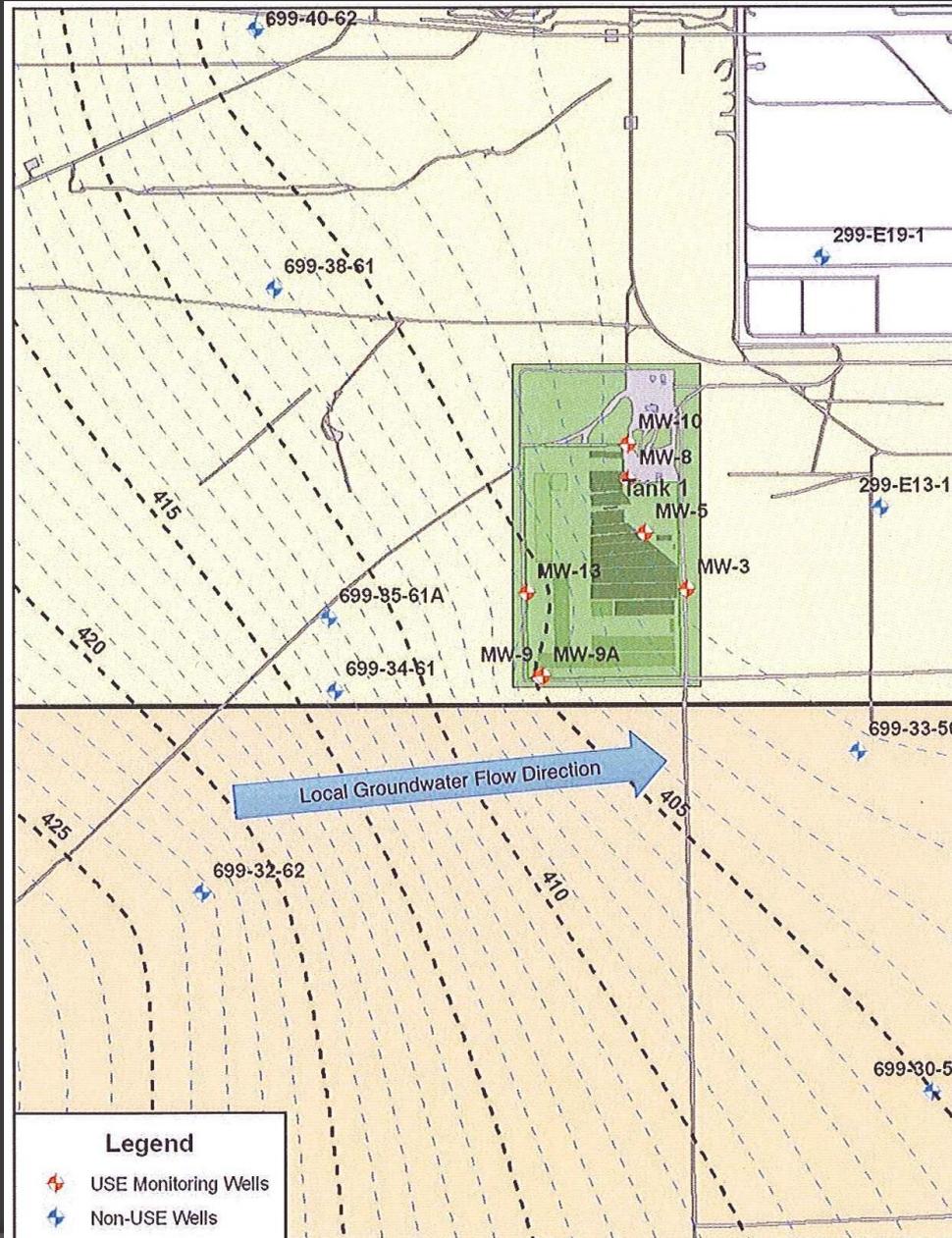


Figure 34 Corrected Site Waterlevels From Both USE and Non-USE Wells

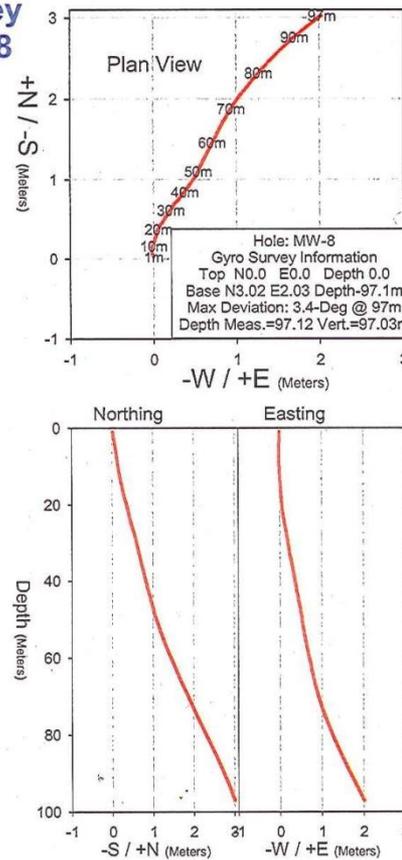
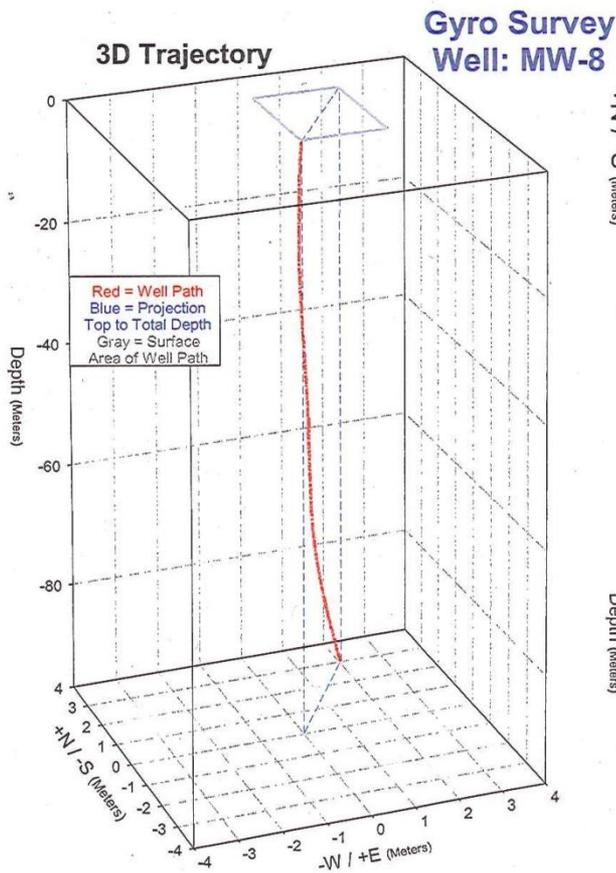
Well Deviation

- ① Assay deviations in vertical boreholes
- ① Concurrently performed with borehole camera survey
- ① 7 monitoring wells deviated from vertical 0.009 m to 0.083 m

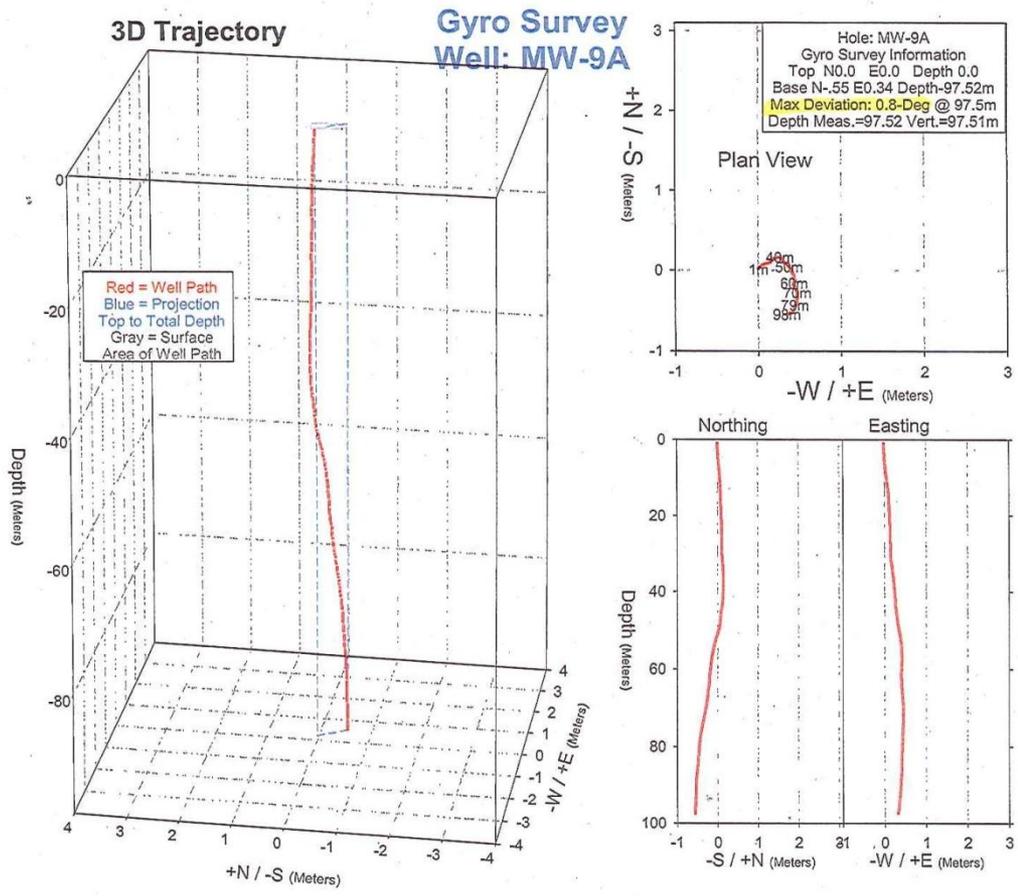
Gyro Survey Equipment



"Preliminary Draft, For Regulatory Review Only"



"Preliminary Draft, For Regulatory Review Only"



Borehole Camera

- Document and inspect the integrity of internal surfaces for each of the 7 monitoring well casings
- Dedicated groundwater monitoring pumps removed
- MW 3, 5, 13 no conditions to report
- MW 8, 9, 9A, 10 various O&M

Monitoring Well 10 Borehole Camera Images

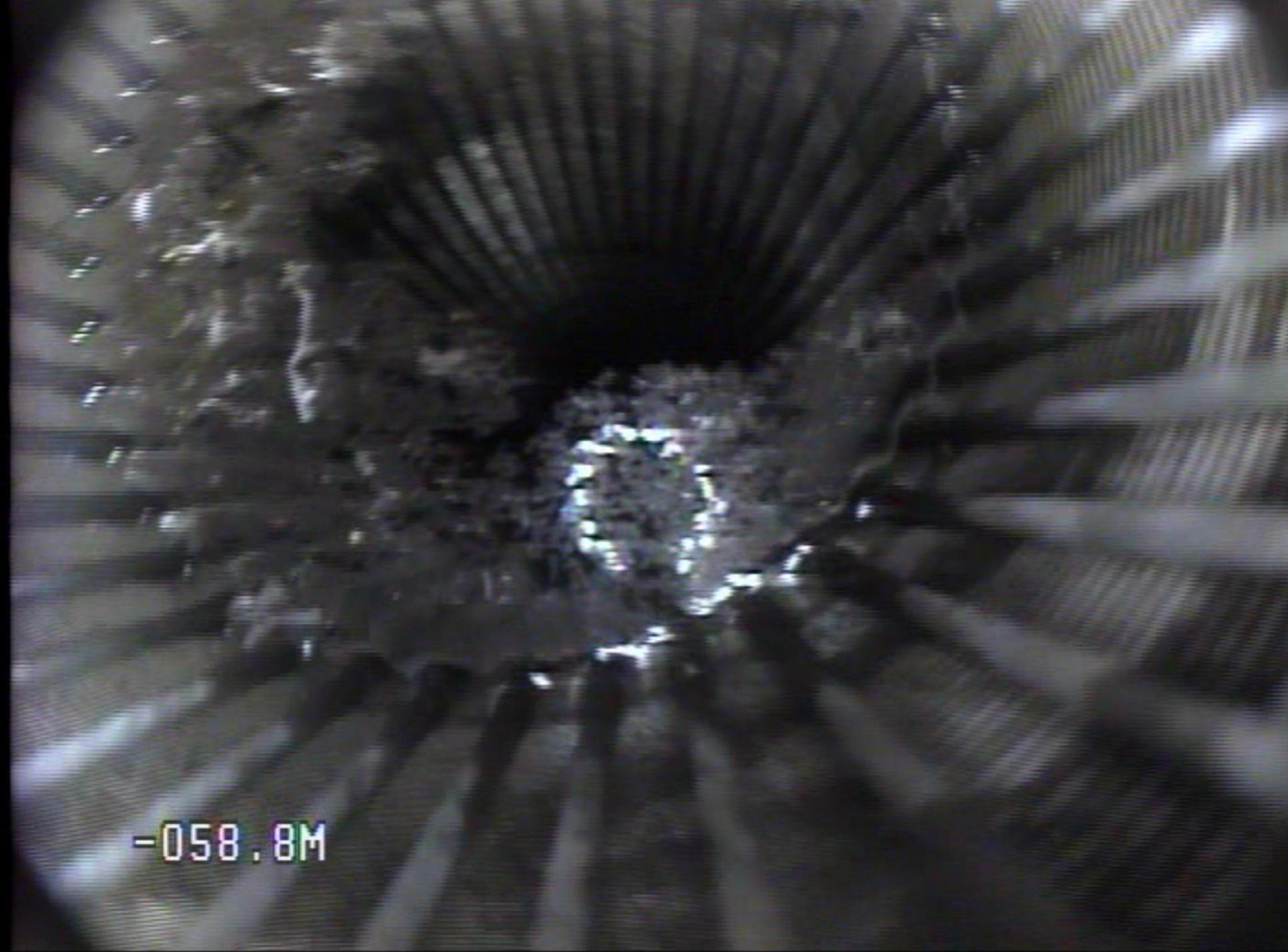
Taken January 25, 2008



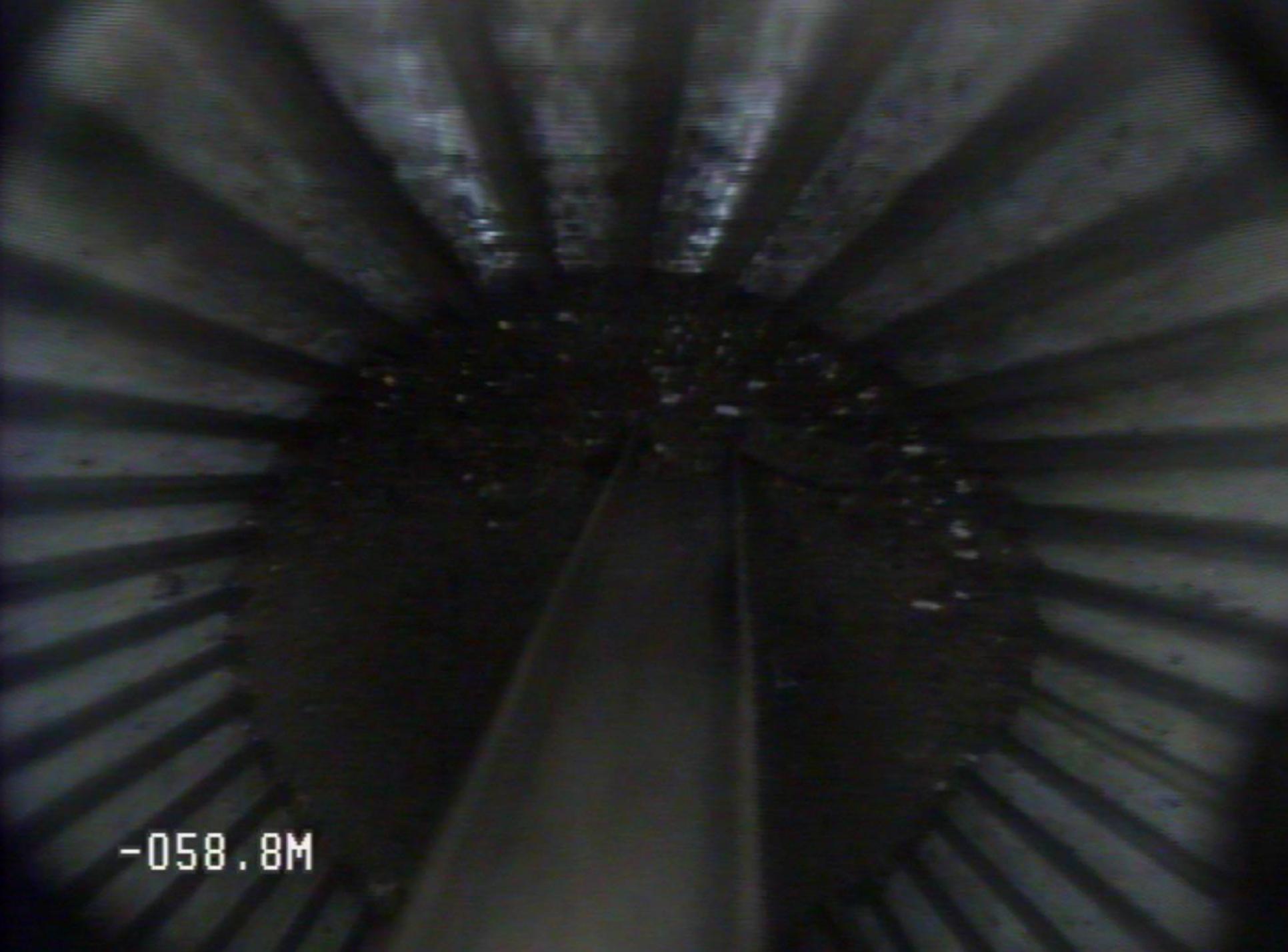
-058.8M

A circular, ribbed vent or filter cover is centered in the frame. The cover has a series of radial ribs and is surrounded by a thick, raised rim. The background is a dark, textured surface, possibly a wall or ceiling. The lighting is somewhat dim, creating a slightly grainy appearance.

-058.8M



-058.8M

A dark, narrow tunnel with a corrugated metal ceiling and floor. The tunnel is illuminated by overhead lights, creating a series of bright, parallel lines along the length of the tunnel. The perspective is from the center of the tunnel, looking down its length. The walls are dark and appear to be made of a similar material to the ceiling and floor. The overall atmosphere is dim and industrial.

-058.8M

Monitoring Well 9A Borehole Camera Images

Taken January 29, 2008



-058.8M



-058.8M

-058.8M

-058.8M

M8.850-

Monitoring Well 9 Borehole Camera Images

Taken January 25, 2008

-058.8M



-058.8M



-058.8M

-058.8M



-058.8M

Remedial Investigation Status

- ⦿ Preliminary results are available for soil gas and groundwater
- ⦿ Eight consecutive quarterly sampling for groundwater in the 7 monitoring wells
- ⦿ Eight consecutive quarterly sampling for 41 vadose zone soil gas wells.
- ⦿ Final groundwater sampling event will occur in May, 2010.

Questions?