DOW CHEMICAL U.S.A.

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SUMMARY OF THE GROUNDWATER RESOURCE TEAM MEETING, OCTOBER 29-31, MIDLAND.

Roundtable Discussion and Other Divisional Information

Western Division - (Andree Youngson)

A. Currently have 50 monitoring wells in the RCRA system
B. Conducted a pump test to determine if deep aquifer is in connection with shallow zone; related to old disposal site
C. Well Wizards and Purge Masters now being used for well sampling; have also adapted pH, conductivity, and temperature instrumentation for on-line measurements
D. Investigating air/oxygen injection at monitoring wells in response to Vinyl Chloride levels

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Texas Operations - (Marshall Turner, Steve Bahrt, Charlie Reed)

A. B-47 slurry wall completion at $1.85 MM ($1.4 MM to contractor, rest was internal costs), about $6.50/square foot
B. A subsurface investigation is being conducted in block A-41 to help identify actual conditions and potential recovery well locations --- soil borings are being conducted at the intercepts of a 200 foot grid pattern
C. Closure of Chlor-Alkali ponds is progresing with experimentation showing acidification followed by solidification to be the best alternative
D. Problems associated with the ponds at Oyster Creek continue, with latest complication arising from the observed leaching of natural arsenic from the local clay at a pH above 10
E. Current estimates show a cost of $.02/lb. to steam strip the recovered groundwater at Texas Operations
F. Experimentation with an air lift pump being developed by a local manufacturer in hopes of increasing the proproportion of dense organics to water, has been halted due to plugging problems

Sarnia Division - (Dave Shortt)

A. Government monitoring well (part of deep well disposal investigation) completed on plant property completed but not yet sampled
B. Initial samples of on-site clays shown to have a permeability of 3×10^{-8} cm/sec

Michigan Division - (Ben Baker, Millard Etling)

A. Auburn recovery system (stemming from past Bz line leak) is operational: approximately 5000 feet long tile system with single center well and one well point lift station averaging 10 gpm
B. Unexplained water table fluctuations within closed landfill (Rockwell) being monitored
C. Recovery wells just outside closed Poseyville landfill appear to have successfully captured the plume as intended.
D. The integrity of the River Revetment system (10,000 feet of tile and some recovery wells along the in-plant river base) has been investigated and plans for a 4000 feet extension developed --- well portion estimated at $ 60,000.00/well

E. Detection of phenol in a monitoring well associated with the hazardous waste landfill has, to date, been unexplainable--- still investigating and working with the regulating agencies to resolve the problem
F. Investigating the need for a recovery system (tile) at the Bay City site
G. Beaver Creek (old off-site pipeline compressor station) potential remedial action may allow blending the recovered groundwater with the aqueous stream being returned to a natural fuel source formation by a neighboring oil/gas firm

Louisiana Division - (Mel Heidner, Melissa Guise)

A. Recovery via deep drive points in Block 49 has proved ineffective due to insufficient production rates; possibly due to clay-smeared screens, resisting normal developement techniques
B. Trial run of a vacuum header system for Block 49 recovery system proved problematic; series ejector system being evaluated; expected recovery wells to number in the hundreds

Eastern Division - (Doug Gray)

A. Minimal activity; continued interest in modeling

Fort Saskatchewan - (Ken Tsang via D. Fales)

A. Recovery operations at Ladner were enhanced with the installation of additional shallow recovery wells and local artificial recharge/leaching via a sprinkling system in the dry summer months
B. Experiences with teflon screens (10 feet long, 2 inch diameter) have shown problems associated with structural rigidity; ie., the screens do not always remain plumb enough to allow a three foot bailer to reach the screen bottom --- centralizers or wider slot spacing were suggested counter measures
C. Five large diameter (24 inch casing in a 30 inch bore) shallow recovery wells have been installed at the VCM plant; expected production rates from the clayey silt is 100 gpd per well

Special Guests - Dow

Bill Witt - U.S. Environmental Quality - Non-Divisional Superfund Sites

- Number of sites Dow currently active in stands at nineteen
  - The Kalkaska, Michigan site (old Dowell facility), currently treating recovered groundwater via Aqua Detox (Air Stripper designed by Dow and available for licensing) at a cost of $ 10,000.00 per month, has cost approximately $ 750,000.00 to date --- Estimates show that only about 500 gallons of solvent from incidental losses to have been the original source of contamination
  - A unique soil gas sampling technique was employed at the Cliffs - Dow site in upper Michigan to ascertain the areal extent of contamination, primarily associated with wood tar residues --- the sampling technique involved the shallow implantation of activated charcoal coated wires to adsorb indicator gases, later desorbed and identified via a gas chromatigraph

Larry Bone - Dow's assigned representative to the Petro Processor Inc. site --- an active Superfund site in Louisiana

- About two and a half years and $ 5 MM dollars have been spent to date on remedial action planning; actual implementation of the remedial action is expected to take three years and cost an additional $ 50 MM dollars
- Have experienced "problems" with peroxide forming wastes
- Initial recovery well recharge data indicates a ten year period may be needed to remove the subsurface organic solvents
  - Using ejector type pumps activated by timers - 1.1 casing volumes removed every eight hours
- Recovered organics will probably be incinerated at Dow's Louisiana Division facilities
- Negotiations with the governmental agencies on groundwater monitoring requirements have allowed the reduction of parameters to be analysed for --- "harbinger" (lead, forerunner) compounds versus "indicator" compounds, will be looked for

  Note: Indicator parameter monitoring is not normally considered acceptable by the regulating agencies for groundwater monitoring at Superfund sites

Special Guests - Non-Dow

John Guswa and Charlie Faust of Geo Trans led a discussion on the characteristics of dense Non-Aqueous Phase Liquids (NAPLs) in the subsurface environment --- methods to estimate residual soil saturation levels, recovery well design and operation, and vertical hydraulic gradient reversal as a means to deter downward migration of dense organics were some topics of interest covered

David Kill and Don Baron of Johnson Screens by UOP gave an informative presentation on recovery well design, emphasizing screen sizing and gravel pack details --- there is a proper way

Bill Gregory of Sales Service Inc., a distributor of various types of pumps and associated hardware, led a discussion on the basics of pump operation, followed by specific pump application problems and considerations for recovery well situations

Miscellaneous

The group agreed that, although the quarterly frequency of meetings was well warranted for this initial year, next year's meetings can be less frequent. Also, the presentations by appropriate, non-Dow people have proved beneficial and should be a continued part of future meetings.

Please let me know your ideas or desires for future meeting topics.

Also, there was an interest expressed by the group as to what computer programs are being used by the different locations for data handling, such as the ones being used by Ken Tsang and Millard Etling. I would like to suggest that the Tech Center assist in making these programs available to all via the VAX computer system. If those of you currently utilizing computer programs could send me a brief description of your program's capabilities and design function, as well as its present form (floppy disc, tape, etc), equipment compatibility and program language, I will talk to some computer people about what it would take to get them onto the VAX system. I will also check with Fred Blanchard in regards to his MIGRT program and E & CS in regards to the Arizona program and their adaptability.

Keep Communicating,

Dave Fales

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