

General



Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Distribution
FROM: *Charles F. Nylander*
Charles Nylander, ESH-18
SYMBOL: ESH-18/WQ&H:98-0443
SUBJECT: **MWIP QUARTERLY MEETING NOTES - OCTOBER, 1998**

DATE: December 15, 1998
MAIL STOP/TELEPHONE: K497/5-4681

Attached are the minutes from the second Los Alamos National Laboratory Monitoring Well Installation Project Quarterly Meeting. It was held on October 27, 1998 in Los Alamos. The major agreements reached in the meeting are:

- NMED is concerned that intermediate perched groundwater zones are not receiving adequate attention in this groundwater characterization program. LANL has committed to addressing the intermediate perched groundwater zones.
- LANL committed to providing a list of "critical data needs" for modeling at the Annual Meeting in March.
- LANL committed to providing a more detailed presentation of the modeling to NMED in the near future, the date and time to be coordinated with John Young.
- LANL will provide a copy of the External Peer Review Panel Report to NMED and the panel would like to have the participation of NMED.
- LANL committed to have a small group meeting with NMED to discuss the prioritization of the wells in December.
- Completion of R-9 will be with a single zone screened in the regional aquifer; R-12 completion decision will be coordinated with R-15 completion.

Please review these minutes for accuracy. If you identify any changes that should be made, please submit them to Charlie Nylander.

CN/mm

Attachments: a/s

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13230

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Patrick Longmire, CST-7, w/att., MS J534
Alice Barr, ESH-19, w/att., MS K498
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Alan Stoker, SAIC, w/att., MS J521
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Mark Cummings, TSA-4, w/att., MS F604
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Mark Everett, MK/PMC, w/att., MS M327
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Introduction

Charlie Nylander thanked everyone for attending the second Quarterly Meeting for the implementation of the Hydrogeologic Workplan. An action item from the first Quarterly Meeting is the planned vs actual data collected from R-9 and R-12. A handout with this information was provided. The information on the handout was extracted from the Interim Completion Reports for R-9 and R-12. The Interim Completion Reports are currently in internal review. They will be submitted to NMED in about 3 weeks.

R-25 Progress

David Broxton said that R-25 is the first hole that the Barber rig has been used to drill. The Barber rig performed well. It is larger than the T-4 rig that was used to drill R-9 and R-12. The Barber rig drills faster. For example, it took 5.5 hours to extract 1,020 feet of 11" casing with the Barber rig and 18 hours to do the same thing with the T-4. Also, the rate of casing advance is 5 times faster with the Barber rig. The reasons that the Barber rig is faster are: 1) the downhole hammer operates directly on the drill bit; 2) the bits have a concentric design; and 3) the drill rig rotates and advances the casing. The T-4 rig could not have performed as well as the Barber rig has. The soft rock units that have been encountered in R-25 have been a problem because they close in on the casing. The ability to rotate the casing has been critical to getting through these units. The T-4 could not have advanced the casing.

David Broxton described the geology encountered in R-25: top 1 ft was alluvium. The Tshirege Member underlies the alluvium and it is 381 feet thick. Two feet of Tsankawi Pumice and then the Cerro Toledo from 384 to 509 feet. The Otowi Member from 509 to 843 feet was thinner than expected. The underlying Guaje Pumice was 7 feet thick from 843 to 850 feet, which is unusually thin. The Guaje can be up to 60 feet thick. However, at SHB-3 there was no Guaje Pumice recognized at all. There was a 3-ft thick soil zone at the top of the Puye. This soil has been recognized enough places that it may be regional. This week the borehole is at 1026 ft, in the Puye Formation, which is a coarse fanglomerate, clast supported.

David Broxton described the drilling and casing. Three casing strings have been used. The first was a 16" surface casing. The second was a 13" casing down to 579 ft. There was difficulty advancing the 13" casing. Soft casing conditions required reaming. Tried to find a "parking spot" to change the casing, but when the rig stopped the formation caved in around it and it was stuck. Tried a number of ways to get it unstuck:

- Used a hammer that hammers up instead of down, but it was not effective
- Used a spear hook that hooks onto the casing at the bottom, but that was not effective.
- Unscrewed the casing and tried to pull it out, anticipating that it would break. It broke at the 508 ft joint.

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The 13" casing is still in the hole and will stay there until the well is built. The third casing string is 11". It works well and has been making rapid progress. The expected total depth of the hole is 1550 ft.

David Broxton described the hydrologic conditions encountered in R-25. A major saturated zone was encountered at 747 feet. It was at the beginning of the drilling day and there was water in the bottom of the hole at 747 feet. When operations resumed, the water level rose to 711 feet and never really stabilized. A water sample was collected from 711 feet. The borehole video log was run and there was a clear boundary – unsaturated at 717 feet and saturated at 718 feet. Alan Stoker asked about how the water level matches up with SHB-3 which is 6000 feet west. David Broxton said if the water level is 711 ft, then it is 150 ft lower than SHB-3. The regional aquifer was expected to be at 1380 ft. At this point have pulled the 11" casing out of the hole for retraction of 13" casing. Ran open hole geophysics and borehole video in the interval of the 11" casing.

Brent Newman asked if there were soils in the Cerro Toledo? Mark Everett responded that there is a 10ft thick reddish soil on top of the Cerro Toledo. Michael Dale asked if it was definitely Tsankawi? Mark Everett said yes it was clearly Tsankawi.

David Broxton said that the contacts were cored, except one that was missed because it was in unexpected position (base of Cerro Toledo). It is saturated down to 1000 feet, so it is either a thick perched zone or the regional aquifer. Two water samples have been collected: 1) 711 ft from Otowi and 2) 867 ft from the Puye. Michael Dale commented that it looks like two different waters. Pat Longmire said that the sample from the lower level is less turbid. David Broxton said there was a dramatic drop in water level at 1000 feet, possibly due to a clay zone. The water level is recovering and was at 771 feet yesterday.

Michael Dale asked if core was collected at soil horizons? David Broxton responded that there was no recovery in the soil zones, but the video log is quite good.

David Broxton showed a comparison of expected tops of formations based on the 3-D stratigraphic model and what was actually encountered in R-25. The biggest difference was in the Otowi where the model placed the top at 768 feet and the actual was 843 feet, a difference of 75 feet. Generally the differences were on the order of 40-50 feet, which is to be expected in an area that is relatively unknown and unconstrained.

John Young asked if any samples had been sent for HE analyses. David Broxton said that the cuttings, core, and water had HE screening. There were no hits for the cuttings or core. There was an screening HE hit on the water samples. The water samples were sent for fixed lab analysis at Paragon. The analytical results should be back next week. Pat Longmire said that analytical results from some of the vadose zone samples are back and they are clean for HE.

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David Broxton described the sampling that has been done at R-25. The suite of analytes are inorganic, organic, radionuclides, and HE. Paragon is doing most of the analyses on a 30-day turn around. Some analytical results are expected back next week. Coring has been attempted in 174 feet of borehole with 144 feet recovered which is 66% recovery. This equates to attempted 17% of the borehole and recovered 11%. 130 samples of core and cuttings have been collected between 0-850 feet for HE screening, which is an average of one screening sample per every 6.4 feet. The D-Tech screening was used on samples from 0 to 140 ft and the HE spot test was used from below 140 feet and will be continued to the TD. 106 samples of core and cutting have been collected for moisture content and matric potential.

John Young asked about the use of the HE spot test rather than the amino acid test. Pat Longmire responded the amino acid screen was used, it has a detection limit of 0.5. The spot test has a detection limit of 100-200.

David Broxton described the geophysics that have been run in R-25:

- 0-975 ft natural gamma
- 580-975 ft EM induction
- 580-863 ft borehole video
- At completion, Co-log will be logging the whole borehole

Charlie Nylander said that the Construction Committee has formulated a completion suggestion for R-25. It is to construct a multiple completion well with 5 to 6 intervals. The intervals will be selected based on hydrology and geology. It is expected to be completed in 10-14 days with a Westbay-style completion. Westbay will install the well. Michael Dale asked if the purpose of the multiple completion is for hydrologic characterization? David Broxton responded that it is primarily for hydrologic characterization, to be able to measure gradients and sample discrete zones. Michael Dale asked if the well construction waited for water quality results, would it still be constructed that way if the water is clean? David Broxton responded that it would be for the hydrologic properties. Charlie Nylander responded that those properties are important to modeling the effect of the fault.

R-15 Status

R-15 is located in Mortandad Canyon. It was started in September and is down to 420 feet. It will be drilled in two phases. The first phase will use the hollow-stem auger to as deep as it will work. The second phase will use the Barber rig. In phase one, hoped to get to the Guaje Pumice to see if it is saturated. Couldn't quite get to the Guaje, as the hollow-stem auger bottomed out in ignimbrite. Geophysical logs were run in the borehole. The geology encountered so far is the alluvium, Tshirege Unit 1g, Cerro Toledo, and the Otowi Member. The Otowi is homogeneous and has an iron-rich zone at the top. Samples of the formations have been collected and preserved for hydrologic

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properties and for tritium analysis. Samples for isotopes and moisture have been collected at five-foot intervals.

Michael Dale asked if the hollow-stem auger could be used in TA-16? David Broxton and Brent Newman both responded that it would be unlikely to be successful. Charlie Nylander asked when the Barber rig will move from R-25 to R-15? David Broxton responded that if all goes well and no more coring is required (e.g. no perching layer is encountered), they should be at the bottom of R-25 in 7 to 10 days. Construction of the well would start right away, so it will be approximately 3 weeks for the Barber rig to move to R-15. John Young asked about the casing for R-25. David Broxton answered that the casing will be stainless steel. Michael Dale asked if there will be dedicated transducers at each zone? David Broxton said that those details had not been worked out yet.

R-9 and R-12 Completion

The GIT Construction Subcommittee met on October 16. There are budget constraints on the completion of these two wells. No final decision has been made on R-12, it may be a multiple completion. R-9 will be a single completion in the regional aquifer and will be completed in the late winter/early spring. Multiple completion in R-12 may be warranted based on its proximity to a pumping well. It is a mute discussion at this point because there is no budget to complete it. The R-15 completion decision will be made at the same time as R-12.

Pat Longmire said that R-12. Samples were split with NMED. The samples were analyzed for full suite. The samples are being analyzed by Paragon and will have a detection limit of 10^7 for uranium. After R-9 is completed it will be sampled and it will be sampled again 6 months after that.

John Young asked what intermediate zone completions are planned. Charlie Nylander said that the Construction Subcommittee has a concern the hydrologic system is not known well enough to place an intermediate well; for example should it be further upgradient or adjacent to the well. John Young said that the State is concerned that intermediate well completions are being put off too long. The data needed to site an intermediate well should be identified and collected so that the decision can be made. Intermediate zones are important to the State. These wells are on the Lab boundary so there is no question about the point of compliance. David Broxton said that the Lab is committed to investigating the intermediate zones, but there is not enough known about them yet. For example, we still don't know which way water is flowing in these zones. The upper zone we don't know much about. The R-15 well is important in looking at intermediate zones. There should not be an urgency to penetrate the intermediate zones until we know more.

DP Drilling Plans for FY99

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Charlie Nylander said that the DP plans for FY99 are to drill the R-5 well in Pueblo Canyon early in the calendar year. This is expected to provide better information on the perched intermediate zone issues. John Young said that this is very important to the State to work toward completing work plans. Don't want funding issues to stop wells. Charlie Nylander said that the minutes of this meeting will reflect your concern and our commitment to install intermediate wells. Phyllis Bustamante said that the concern about intermediate zones is true in Mortandad Canyon as well.

Charlie Nylander continued the description of DP FY 99 drilling plans:

- Complete R-25
- Drill and complete R-5 in Pueblo Canyon
- Drill and complete R-31 in Ancho Canyon below the OB/OD area and above some firing sites

In FY 2000, drill and complete R-28 in the middle of Water Canyon downgradient from TA-49.

John Young asked if there is a problem with threatened and endangered species and the R-5 location? Charlie Nylander said the survey for the Mexican Spotted Owl must be done at the beginning of the breeding season. There is also a concern about the owls at the R-28 site too.

John Young asked if the two phase hollow-stem auger and Barber rig approach will be used for R-5? David Broxton answered that it is not soft enough at R-5 to use that approach. It may be more useful for R-31.

Charlie Nylander said that characterization data from R-31 and R-28 will be important because they are relatively unknown areas and the data is needed for modeling and particularly for estimating boundary conditions. The remaining DP budget in FY99 will be used for regional modeling, framework studies, strata model, and the groundwater database.

ER Drilling Plans for FY99

David Broxton said the FY99 ER drilling plans are:

- Complete R-15
- Complete R-9
- Install 4 alluvial wells: 2 in Pueblo Canyon and 2 in Mortandad Canyon

Michael Dale asked if there is a benefit to drilling R-27 before R-28 to tie in with R-25? Charlie Nylander said that R-28 is in the Miocene trough. Prospectively it was considered for a deep, deep well. However, we need to look at the rankings again. R-27 would make a good transect. John Young said that R-27 would also tie into the CMS at TA-16. Charlie Nylander said that by the annual meeting we should be able to address this.

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Michael Dale asked if data will be collected right away from R-25 or will data collection wait until the paired well across the fault is installed? Charlie Nylander responded that data will be collected right away and it will be sampled quarterly. Michael Dale asked who pays for the collection of data at R-25. Charlie Nylander said that the ER Canyons group will do the sampling, but the funding will come from DP. Michael Dale said they want to see how the R-25 data ties into the CMS. Bill Stone said that the head data will be used right away for modeling.

Modeling Task Progress

Bruce Robinson said that a draft report on the regional flow modeling has been produced. The purpose of the modeling task is to integrate geologic and hydrologic data; refine the conceptual model of the saturated flow system; predict travel times from LANL to receptors; and simulate contaminant transport. A regional context is needed for the plateau-scale model because regional flow is needed to predict plateau-scale flow; it reduces sensitivity to uncertain boundary flow conditions; and it expands the data set for model parameterization. The requirements of the model are to simulate transient flow and reactive transport; be compatible with unsaturated flow models; represent the complex 3-dimensional stratigraphy; have computational grids adequate for resolution in areas of interest; be able to do inverse modeling to estimate aquifer parameters; and do particle tracking.

John Young asked if there are experiments going on now that will help the modeling. Pat Longmire said that some are going on. Michael Dale asked if there is a "laundry list" of data needs for modeling? Bruce Robinson said this modeling is of the regional aquifer. There are complementary modeling efforts in the Canyons and MDA Focus Groups, and those groups are developing lists of data needs. The regional aquifer model will track contaminants from source to potential receptors. Alan Stoker asked about refinements of the hydrologic aspects – vertical head changes, etc.? Bruce Robinson said that the first version attempted to capture some of the hydrologic system. What has been done is:

- incorporated the geologic framework model
- computational grid
- initial permeability estimates (informed by data)
- steady-state model calibration/refinement of permeability estimates
- conceptual model alternatives – faults, Miocene trough.

The regional scale model is of the Espanola Basin. The scale is large enough so that the boundaries are realistic and represent reasonable geologic boundaries. Alan Stoker asked if the basin fill sediments will address the vastly different vertical gradient compared to the horizontal gradient? Bruce Robinson said that anisotropy is built into the model, but we don't know what the differences are yet. The multiple completion wells will provide the critical information for this. John Young asked if the modeling considers secondary permeability? Bruce Robinson responded that the consideration of secondary permeability is included in the intrinsic permeability. David Rogers said that the model

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has 1-km blocks with assigned permeability and can't account for small features. Michael Dale said that the regulators should be consulted about the final scale of the model so that the appropriate data can be collected from the wells. Brent Newman said that the modeling data needs are being looked at. Samples from completed wells have been selected for testing hydrologic properties and that testing is going on now.

Bruce Robinson said that the modeling results feed into the data collection plans for each well. The head distribution cross-section shows constant pressure lines (flow lines are orthogonal to the pressure lines). This cross section shows three distinct parts: the western part shows downward gradients, the middle part shows flatter gradients, and the eastern part shows upward gradients near the Rio Grande. These lines are dependent on the degree of anisotropy. As new data becomes available, e.g. R-25 water levels, the modeling outputs must match the measured data. Alan Stoker asked if older data is being used. The cross section shows flow east under the Rio Grande. David Rogers disagreed that the cross section shows eastern flow under the Rio Grande. Bruce Robinson responded that data from the Buckman well field and whatever else was available was used.

Bruce Robinson said that the FY99 tasks for modeling are:

- Improve calibration: stream bed recharge, framework model improvement; constraints on fluxes
- Publish conceptual and numerical models
- Incorporate geochemical data
- Create high resolution Pajarito Plateau model (and enough data to support it added Brent Newman)
- Formal sensitivity analyses to identify areas of critical data needs
- Use geostatistics to simulate heterogeneity within hydrostratigraphic units
- Incorporate pumping effects/transients

John Young asked when a list of critical data needs will be generated and will NMED receive a copy of the list to track data collection? Bruce Robinson said that is a good idea to distribute that list. Charlie Nylander said that is a good agenda item for the annual meeting. The Hydrology and Modeling subcommittees of the GIT will coordinate to develop the list.

David Rogers said that this has been a very brief description of the modeling activities. There have been many other activities with some important results. There are some conclusions about recharge from the Jemez. Brent Newman said that it is important from ER to ensure the smaller scale modeling can be fit into the regional model. John Young said that all that has been done should be in the annual report. Charlie Nylander said that in August there was a one-day symposium on modeling. Other DOE sites had people there. It was a review of the modeling details. LAAO has asked the GIT to put together

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the same thing for the State. The material is all put together, we just need to pick a time. Michael Dale said that the presentation should include the goals and the needs in a big picture sense. Charlie Nylander said the presentation had the components of modeling and specifically the kind of model, codes, etc. Bruce Robinson said that it includes a background of what has been done. The most complete modeling is Area G. The process there was to go from source to receptor and dose. It involves piecing together of models and final estimate of risk. The underlying science of the model is important. Charlie Nylander said we use the term "modeling" casually. We will try to clarify and distinguish between types of modeling. We will work out a date for the presentation with John Young.

Status of the Hydrologic Workplan Tasks

We have talked about well drilling and modeling. Ken Mullen will talk about data management. Primary tasks in modeling and information management are the most important. The Modeling Subcommittee has been meeting to try and put all of the modeling efforts (ER and other programs) together to get an economy of scale and inform both the left and right hands at the same time. The Modeling Subcommittee has talked about the stratigraphic model which is currently being migrated from 3-D model to Strata-model. The Strata-model will be used directly in the regional modeling. The right pieces have been pulled together and there is funding for it. There will be more detail in the annual report including a discussion of the accomplishments. Information management has been the emphasis this summer. The GIT and the ER Project have come together to integrate this. ER is planning to request additional funding for improvements to information management.

Use of Existing DT and Test Wells

The approach to plugging and abandonment of wells will be to inspect each well with a videolog. If it is structurally sound and useful, it might be reworked and kept in service, possibly as piezometers. It will be a well-by-well decision. John Young said that the State had made the suggestion to use these wells with the thought that it could save some money. Charlie Nylander said that in the Conceptual Design Review budget there is about \$1 million for plugging and abandoning wells. If these can be used, it will save money that can be used in other parts of the program. Brent Newman said they would like to see the TA-49 test wells used for monitoring. Michael Dale suggested that the casing could be replaced in the test wells; several test wells might be good if the casing was replaced. Perhaps some zones in DT-9, DT-10, and DT-5A could be grouted so that they could be used for monitoring. Charlie Nylander said that those decisions would rely on information from the geophysics and the borehole camera.

Michael Dale said that TW-8 would be a great well to re-do. Mark Everett responded that if a well is in that poor a shape, it would be better to drill a new well. John Young asked when the plug and abandonment program would begin? Charlie Nylander said that DP will be funding it and the money may be available in 2000. Bruce Gallaher said that Bill

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Purtymun did a review of the old wells to give his opinion on what they could be used for. It will be published as a LA-UR document. Charlie Nylander said that there will be a cost/benefit analysis for each well to make that decision. It is important not leave migration pathways.

Results of Monitoring Well Installation Project Peer Review

A panel of 6 came out in August to give an independent review of the Hydrogeologic Workplan and the monitoring well project. The panel consisted of:

- Elizabeth Anderson of Science International. She developed EPA's risk assessment models
- Dr. Robert Charles, independent consulting geochemist, formerly a LANL employee, specializing in management techniques
- John Butler, water resource economist, specializing in cost effectiveness and benchmarking
- Robert Powell, low flow sampling specialist with 25 years experience in water quality assessment
- Jack Powers, 45 years of drilling experience all over the world
- David Schafer, hydrogeologist with significant drilling experience

There are outstanding invitations to Fred Phillips and Alan Freeze to join the review panel.

The first day of their review was an overview of the setting and the program. The second day was a field trip and some time for the panel to discuss their observations together. A draft report has been submitted and their final report is due this week. A copy of their report will be provided to the State. Their draft conclusions were:

- The Hydrogeologic Workplan has a thorough approach
- There is an improved relationship with the stakeholders
- It is well integrated within the Laboratory programs
- They would like to see a more detailed Gantt chart
- It is unclear how the Hydrogeologic Workplan activities are integrated into individual ER projects
- There is need for agreement with the State on MCLs or ACLs
- They would like to have interactions with NMED and have a representative of NMED attend their meetings
- Need more information on intermediate zones and there should be contingency plans for how to address those zones
- Core and cuttings are critical; log them as soon as possible after retrieval
- Recommend low flow purging and sampling
- Barber rig critical to collecting data in Hydrogeologic Workplan
- Improve FIMAD system improve access and visualization
- Incorporate historic data into the models
- Data requirements rather than drilling method influences the high cost

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- Recommend stainless steel casing because PVC is more inert, but strength is a problem
- Benchmark against similar activities to justify cost to sponsors
- Re-bid the drilling work; consider a per-foot and time/materials combination
- Revisit data needs to optimize cost/benefit
- Modeling is good for visualization, but is no replacement for the data base
- Comfortable with the Westbay system, but make sure to clearly demonstrate that it is working as expected
- Place filter packs >2 feet above the top of the screened interval

Charlie Nylander said that it is good for the Lab and the State to have this independent perspective. This panel will review the annual report before it is finalized. The panel will be present for the annual meeting in March. The panel is expected to meet two times a year with review of documents as needed in between.

Status of Database

Ken Mullen said that the objective is to have a comprehensive database to support the groundwater and watershed programs. ESH-18 just got the surveillance data on the web site (LANL Home page to "subjects", click on groups and select ESH-18). The database activities that have been completed are:

- HLA user needs assessment completed -form a steering committee to coordinate ER/ESH; separate database for ESH-18; develop a data and records management plan that includes sharing data with stakeholders
- The steering committee has been formed
- A Project Leader is being hired (by Nov. 1)
- Developing data management plan and SOPs
- Create the data repository and load it

Ken Mullen said that the goal is to take all of the environmental data at the Lab and put it into one database. Decided to use the groundwater database as the pilot. John Young asked if the intent is to continue using FIMAD. Ken Mullen responded that FIMAD must be maintained because the geographic system is important. It is the database part of the system that must be improved. Michael Dale asked if the water level data is in the web? Ken Mullen responded that water level data from 10 wells is available on the web, the data from the remaining wells is being loaded.

Charlie Nylander said that Julie Canepa is pursuing fixing FIMAD. The groundwater database is on a parallel path that will converge when FIMAD is fixed. When the watershed plan is complete, it will have a surface water database. Alan Stoker added that the databases allow environmental data to continue in a consistent format after the sunset of ER. John Young said that there is an annotated RFI outline with specific data needs from the State's point of view. Linda Nonno has that. What is the time frame for the groundwater database. Ken Mullen said that the first task of the new Project Leader will

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be to write the data management plan. The plan will get input and consensus from users before developing the database.

Annual Report

Writing assignments have been made for the annual report. In starting to prepare the report, the concerns expressed at the June Quarterly meeting about the 1997/1998 Annual Report. We understand that we must specify the data that our conclusions are based on. Reports (e.g. modeling report, well completion reports will be summarized and referred to rather than include whole reports. John Young said that referring to other reports that we have in hand is fine. If we don't have the reports (or will have to wait for years to get them), then we need more detail. Michael Dale asked if another completion report will be completed? Charlie Nylander said that final completion reports will be completed when the wells are completed. The schedule for delivering the annual report is January 15. It will describe non-field activities and field activities by aggregate. We are making it more robust and comprehensive, but with reference to other reports. It will have been peer reviewed by the external group prior to submittal. We will be able to have the March Annual Meeting earlier in the month than last year, and the external peer review group will be in attendance.

Additional Items

John Young said that he would like a small group to meet to discuss prioritization, particularly with respect to trading deep wells for intermediate wells, as suggested by the external peer review group. There is pressure to complete the work in the Los Alamos/Pueblo Canyon Work Plan. The small group should look at the prioritization that is in the Hydrogeologic Workplan. Charlie Nylander said that prioritization will be discussed at the Annual Meeting in March and at one more Quarterly Meeting before then. We can have informal meetings at any time. Perhaps in early December after the draft of the annual report is done we can have a meeting to discuss prioritization. Michael Dale said that he has a grave concern about Los Alamos/Pueblo Canyon. Charlie Nylander responded that R-5 is in Pueblo Canyon. R-2, R-3, and R-4 are up there too. But the DP money is \$3 million per year which only pays for 2.5 wells and the non-field activities. R-5 will begin in Jan/Feb. Michael Dale asked if more than one team could work at the same time. Mark Everett said that the constraint is the Barber rig. Charlie Nylander said the Barber rig is so much faster, it is not worth starting R-15 with the T-4. The field crew is well seasoned and tested. A second field team may lose efficiency. We can discuss this in December. John Young said the meeting in December should include HRMB and Groundwater Bureaus.

Michael Dale said that they have received phone calls asking when the data from R-9 and R-12 will be released. When will that data be available. Charlie Nylander responded that it should be available in a couple of weeks. Michael Dale said that the HRMB has approved a groundwater package format. That format should be used. Ken Mullen asked what the format looked like and is it in the RFI guidance that was referred to earlier. John

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Young said the package is similar to the environmental surveillance data. Similar to, but less detail than the RFI guidance. The TA-16 data package was easy to read. Charlie Nylander said the R-12 re-sampling data won't be available in the next couple of weeks. The old data should be in the completion reports.

Michael Dale said on the comparison of planned vs actual data collected at R-9 and R-12, please add linear length.

Ken Mullen said that even when the data is delivered to the State, there will still be phone calls about it. How should the data be available – on the web, in the library? Charlie Nylander said that the objectives are in the Hydrogeologic Workplan, which sets them in context. We focus on the chemistry data, but that is a small percentage of the worth of the project. Be careful not to turn this into a chemistry project. After the annual report, perhaps there could be a joint press release to emphasize the other accomplishments. Michael Dale said if split sampling can demonstrate quality of the data, then we don't have to spend so much money on sampling. Charlie Nylander said it is also important to understand "hit" quantification levels versus detection levels.

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