

**CENTRAL PLATTE NRD  
WATER RESOURCES COMMITTEE MEETING  
AGENDA  
October 23, 2003**

- 10:28 a.m. Welcome & Opening Remarks – Chairman Mercer
- 10:30 a.m. Comments by Mr. Klein
- 10:35 a.m. Response to Mr. Klein's Questions – Duane Woodward
- 12:00 p.m. Noon – Adjourn

## **COHYST - Discussion Items/Questions for October 23, 2003 meeting**

### **Background:**

The premise appears to be that COHYST will be used to predict any interaction between groundwater pumping for irrigation use and Platte River stream flows. It appears that the goal is to use COHYST to regulate the use of groundwater based on the impact on those river flows, with the proclaimed ability to predict this interaction to the level of individual wells.

At the same time, it has been repeatedly stated by CPNRD management that the COHYST program will “protect the farmer”.

1. Please explain in comprehensive detail just exactly how beginning to regulate the use of existing irrigation wells, which are currently unregulated, can possibly “protect the farmer”?  
Please provide specific, supportable, factual, technically-based information to support this position. Also provide similarly supportable factual information to demonstrate that an adequate plan (other than to make the farmer disprove the model) is in place to protect the farmer against the model being incorrect in the case of it's being applied to one or more wells.
2. Publicly available data from the USGS clearly shows that in recent years the stream flows in the Platte River at Grand Island have increased. At the same time, data provided by CPNRD shows that the number of wells in the COHYST area have increased from 1,000 in 1941 to approximately 47,000 in the late 1990's. Some of this data is directly available at the following website: <http://www.platterivertruth.org/index2> .

Doesn't this increased flow with increased well development cause the need for COHYST to be very questionable if not completely unnecessary?

Please provide a comprehensive and detailed explanation of the technical reasons why COHYST is even technically necessary in view of this public data from credible sources. A complete, specific, and technically defensible explanation that will withstand scrutiny from outside and truly independent technical experts is appropriate.

3. What is the schedule for the various tasks required to develop the components of the model, confirm their performance, integrate them with the other components to produce the overall functional model, and verify the correct performance of the resulting model against field tests?
4. What are the key technical milestones accomplished and planned? What are the technical requirements for considering each of those milestones complete? What are the test results and analysis that either have been performed, or are planned to be performed in order to confirm these are technically correct and complete? What is the success criteria for each major milestone?
5. What is the exact plan for use of COHYST to regulate well use? Will it be to the level of the individual well? Or will it be to some grouping of wells?
6. What measures are being taken to be completely confident that predictions of performance by the model will be the same as field tests? What if they don't match? How will the model be

adjusted to provide results equal to field test results? [Note that at the June 26 briefing, it was stated that "the model won't be changed". **WHY NOT!?**].

7. There appears to be conflicting information being disseminated. In some cases this is done by the same individual. For example, at the June 26 briefing, the message that was conveyed indicated this model would be used for what might be called "operational regulation"[i.e. "management" of well use. Mr. Lewis stated that if a farmer believed the model wrong he would have to prove that himself.

Yet, at a recent NAS presentation in August, 2003, I am told that same Mr. Lewis stated that "Models are research tools and should not be used in management decisions".

With this in mind, which is it?

Again, a specific, detailed, factual, comprehensive, and defensible explanation of this conflicting set of positions seems to be in order.

8. What is the planned approach to adequately address the varying nature of the aquifer that often causes very unexpected results for individual wells when compared to neighboring wells in the same general area? How will, for example, the variations in transmissivity of the aquifer be addressed in an adequate way to ensure that the model accurately predicts performance for individual wells or groups of wells?

Most experienced well drillers have encountered the effects of these variations in areas where they least expect it. This seems to be a very challenging, if not impossible, part of the task.

Please provide a complete, specific, and technically defensible explanation that will withstand scrutiny from outside - and truly independent - technical experts on this issue.

9. Exactly what is going to be done to perform adequate field tests to confirm the model predictions are correct? Please provide a specific, detailed, and comprehensive explanation of what has and will be done to adequately field test the model against physical reality. See the following for normal expectations for projects of such difficulty and complexity as COHYST.

A specific and complete test plan needs to be developed. This plan should define the overall criteria for testing, such as what specific tests are going to be performed to confirm which specific portions of the model. It should define the iterative process required to adjust the model to match actual physical results and establish the exact criteria for determining when the model results are within an acceptable range of the physical results. It should also specifically define the size of the geographical areas (cells) which will be used to verify the model against actual field tests. It should specifically identify the locations of physical testing planned to confirm the model's correctness. It should define the nature of instrumentation and test processes required to perform all verifications.

This plan should go through more than just a "peer review". There need to be outside audits

by independent parties who are skilled at the standard engineering process of confirming the performance of systems. These people do not necessarily have to be hydrologists or modelers. In fact, it is best to have some people who are neither. This brings independent thought into the process and will identify problems overlooked by a group of people who probably all “think alike”, which is the biggest risk of “peer review” by a group of specialists who all do the same kind of work. Deficiencies are often missed. This independent method of confirming predictions is standard operating procedure in the industries I have been associated with and result in reliable outcomes. Without this approach, flaws will never be noted until it is too late.

Following approval by independent entities of the test plan, a full set of detailed specific test procedures then needs to be developed. A similar independent review process needs to be performed. These procedures should specifically define the exact sites, methods, equipment, instrumentation, and acceptable limits for confirmation of the model predictions compared to the physical tests. These procedures should be unique to each test site where there is any expectation of differences that require unique procedures for those specific sites. And, such procedures must be detailed for each individual step of the process, so that someone not specialized in the technology can perform the tests and still yield accurate and reproducible results.

With the above expectations in mind, please provide a specific, detailed, factual, comprehensive, and defensible explanation of plans in this area.

10. Examination of the funding profile related to the work breakdown structure of a complex project such as COHYST normally will provide insight into where the challenges are. And, a rigorous examination of that funding structure often allows identification of tasks that are incorrectly funded and may result in project failure.

Please provide a complete description of the work breakdown structure and associated funding for the various tasks. This should include a detailed explanation of the various tasks, and the critical items which need to be addressed along with identification of high risk areas that could cause the project to fail.

11. What truly independent outside entities either have been used as independent evaluators, or will be? Note that this does not include “peer review”. It is normally beneficial, and expected, on projects of this complexity and difficulty to use such truly independent entities to identify pitfalls that, if not addressed, have a high risk of causing project failure.
12. What technical papers have been published and/or presented by COHYST project personnel? Please provide detailed listing of such showing authors, applicable conferences and journals, costs associated with these specific activities, and information showing the source of funding for these efforts. Please explain how any such activities contribute toward a successful end result which is best defined as “ a means to protect the farmer/irrigator”.