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SUBJECT: 7/22 TW Lead Meeting Notes (No Attachment)s

JUL 26 1993

Meeting Notes
Lead in LANL Test Wells: Phase I Alternatives
July 22, 1993

The meeting attendees list is attached.

Alan Stoker provided a summary of the history of LANL's test wells:

- The test wells (**TW**'s) were installed by the USGS for the AEC. #'s 1,2,3 and 4 were installed as a part of an investigation into the suitability of the deep aquifer for a possible water supply system in 1949. TW's 1-4 had pumps installed by 1970. #'s 1 and 2 had pumps during the 60's. In 1971 pump for TW-4 was moved to DT-5A.

- TW2-4 have Grundfos submersible pumps while 1, 8, 5A, 9 and 10 have O'bannon cylinder pumps.

- Sampling for trace metals in supply wells began in 1970's pursuant to the Clean Water Act, while test well trace metal sampling began in the 1988.

- LA-6 was taken out of service due to arsenic concentration in the 1970's.

- Sampling schedule done on a 3-year cycle during which each test well is sampled for both metals and organics. Rad and general chemistry is done for each well annually.

- EM-9 is not used nor regarded as a certified drinking water lab so all samples for drinking water acceptability are submitted to SLD.

- Survey for drinking water system done 10/92 for 78 homes revealed two exceedances for lead. Subsequent tests were done at "adjacent sinks" and found no problems. Adjacent sink tests are done to determine if exceedances are due to system or to individual house plumbing. (Attachment 1)

- Los Alamos Canyon Field (LA) wells were last used in the regional water supply system in 1990. None are now used.

- The supply wells 1993 test results shown as "underway" in Attachment 2 are due next week.

- In 1992 most TW's were modified as follows: 1-1/2" galvanized pipe (aka "thin walled electric conduit") was installed as a part of placement of transducers in order to begin collecting accurate water level measurements in wells 1, 3, 8, 5A, 9 and 10. No pipe dope was used, the galvanized pipe segments were joined by threaded couplings.

- TW-2 was redrilled an additional 30' in 1990 as too little of the screen was in the saturated zone and a new 10' screen

screen installed. A lead "swedge" was removed and pvc pipe was installed rather than galvanized thin wall electric conduit for transducer access.

o TW-4 has a plastic rather than galvanized pipe for transducer.

Alan's/colleagues' speculations as to possible lead sources if other than from aquifer:

1. The thin-walled electric conduit transducer access pipe.

2. Agitation of the casing and internal well plumbing may have dislodged system components which might include lead, e.g., pipe dope in old pump column joints.

3. In TW-4, the new galvanized pump column.

4. Paint on well caps, possibly red-lead paint which was drilled through during new access tube installation.

Alan described TA-49 and its TW system:

Deep Test (**DT**) wells 5,9 and 10 are located in and around TA-49.

Most lead used during the Hydronuclear tests (1959 and 60) was used at the NE and SE test locations. Total lead used 90,000 kg.

DT-5A is screened approx. 200' into the saturated zone, 8" casing. Its O'Bannon pump is capable of only about 1 gal/min. Samples from this well during May event were taken after well had been purging over 24 hours.

Group discussion on possible elements of Phase 1 lead source investigation

(Not in order of proposed sequence nor in priority)

1. Conduct a time series of well samples at all wells with significant lead in previous samples. Possibly a geometric time sequence (i.e., at one hour, two hours, four, sixteen, sixty four, etc., hours for e.g. two weeks) while wells are constantly purging. Collect water chem data at same time: pH, redox, temperature; as well as Pb and other trace metals.

   Objective: determine whether the lead concentration in samples decreases as it should if the source is in the well construction elements and not in the aquifer.

   Swanton considered this a large problem in that the pump may be incapable of purging the well fast enough to attain formation water relatively unaffected by the construction elements which might be the lead source. But via rough calculations for DT-5A: given 200 feet of standing water in an 8 inch screened casing:

radius = 4 inch = .333 feet

$V = \pi r^2 h = 3.14 \times .333^2 \times 200 \times 7.48 \text{ gal/ft}^3 = 522 \text{ gals}$

Three well casings would be 1,565 gals, which could be pumped in 26 hours at one gal/min.

Swanton's concern seems unfounded.

2. In concert with Item 1, filter each sample to, e.g., filters finer and coarser than .45µ. Evaluate applicability/feasibility of subjecting samples to 1) scanning electron microscopy for characterization of metals as colloidal or mechanical fragments and 2) isotopic lead ratio analysis using purification and mass spectrophotometry.

3. Evaluate remaining galvanized "thin wall electric conduit" pipe which has been located in supply yard for lead and evaluate applicability/feasibility of isotopic lead ratios.

4. Pull DT-5A transducer and pump stem elements for evaluations as in Item 3 above.

5. Review existing database for all trace metals for all TW's.

6. Evaluate red paint for lead content, if lead present evaluate applicability/feasibility of isotopic lead ratio analysis.

Conclusion

As there were several key persons missing from this meeting it was decided that Alan and colleagues would use the content of this meeting and propose a draft set of initial actions plus a proposed implementation schedule to be transmitted to all parties present at this meeting as well as to Robert Gallegos of the Drinking Water Bureau. Inital actions would include items 1, 2, 3, 5 and 6, above.

New news

Manner of managing purge water from time sequence study has caused concerned with LANL waste management. Pilot study featuring use of filters to remove "particulate" lead from purge water is likely to be implemented first. Other possibilities include off the shelf technology such as water softeners. This pilot study may delay start of initial actions.

Alan Stoker out of town next week, Bruce Gallaher will be contact for this subject next week.

Also: the retested production wells came up below detect for lead