



April 21, 2008

Deputy Regional Forester, Southwestern Region
Appeal Deciding Officer
333 Broadway Blvd., SE
Albuquerque, New Mexico 87102

VIA email to appeals-southwestern@fs.fed.us and U.S. mail

Subject: Factual Statement of the Applicants Regarding the
New Mexico Environmental Law Center Appeal of the
Buckman Direct Diversion FEIS and ROD

Dear Appeal Deciding Officer:

The City of Santa Fe, Santa Fe County, and Las Campanas are the applicants for the Buckman Direct Diversion Project ("Project"). The City and County are cooperating agencies for the preparation of the EIS. As cooperating agencies and applicants, we here respond to the factual issues alleged or implicated by the appeal filed on behalf of Concerned Citizens for Nuclear Safety ("CCNS"), Amigos Bravos, and Joni Arends to the Record of Decision for the Buckman Water Diversion Project ("ROD") and related Final Environmental Impact Statement for the Buckman Water Diversion Project ("FEIS"). We respectfully request that you consider this information in determining the merits of the appeal.

This letter does not respond to every allegation in the appeal. Rather, the purpose of this letter is to provide references to the facts in the Project Record ("PR") for a correct understanding of Rio Grande water quality with respect to radiological and other contaminants of concern associated with the Los Alamos National Laboratory ("LANL") and associated risks to the public and the environment of diversion of Rio Grande water by the Project. This letter contains a factual description with references to the PR regarding LANL contaminants in the Rio Grande, the applicable water quality standards, and the ability of both the Rio Grande stream flow and the drinking water that will be produced by the proposed City/County Water Treatment Plant to meet applicable standards.

In reviewing the appeal, it must be remembered that preparation of an EIS is tempered by a "rule of reason," so that not every conceivable impact must be examined. Upon judicial review, courts determine whether the EIS contains a reasonably thorough discussion of the

probable environmental consequences. The extent to which a particular impact needs to be assessed corresponds with its importance. In addition, only impacts which bear a reasonably close causal relationship to the change in the physical environment need be assessed. An agency need not consider wholly speculative impacts, even where the consequences could be severe. An agency also need not consider effects it has no ability to prevent due to its limited statutory authority over the proposed action.

An agency also may rely on other agencies, with their separate and distinct statutory authorities, doing their jobs to see that implementation of a selected project is in compliance with the laws and regulations that they administer and enforce. Compliance with drinking water standards and proper disposal of associated wastes are within the missions of other federal and state agencies with staffs of experts dedicated to those purposes. The Forest Service need not look beyond the statutory and regulatory authorities and mandates of other agencies to evaluate their sufficiency. As we understand it, the Forest Service Environmental Policy and Procedures Handbook specifically instructs the Service to rely on the expertise of these other agencies on these matters. (This is discussed Chapter 20, section 25.5 of that Handbook).

The Forest Service can rely on the New Mexico Environment Department ("NMED") to require adequate water treatment processes to remove what NMED as the drinking water quality regulator determines to be the contaminants of concern in order that the treated water comply with the federal and state drinking water standards that NMED implements and enforces. The FEIS lists the NMED approval for construction permits, including NMED review of preliminary design report, plans, and specifications, as one of numerous additional permits and compliance reviews that the Project must obtain prior to implementation (*see, e.g.*, FEIS 68-69). The Project owners' consulting engineers have communicated with NMED drinking water, surface water quality, and construction programs staff for the last several years and have specific conversations regarding the issues at hand.

With this in mind we offer the following facts:

First, the LANL contaminant issue isn't being *caused by* the proposed agency action. Rather, LANL contamination is preexisting, and will exist (or be removed) irrespective of the proposed agency action, and the PR suggests that the agency action will not exacerbate the problem. Appellants' concerns regarding alleged adverse environmental impacts, including cumulative impacts, that may foreseeably result either directly or indirectly from the diversion of LANL contaminants into the Project were adequately and publicly considered and addressed by the Forest Service (and BLM) in accordance with, and to the extent required by, applicable law, including the National Environmental Policy Act and its implementing regulations. *See* ROD, item #6 at 6; ROD, Appendix B at 33; FEIS, Appendix A at 265-270, 272-274. Moreover, the PR for the ROD does not support the Appellants' contention that adverse environmental impacts may foreseeably result either directly or indirectly from the diversion of LANL contaminants into the Project. To the contrary, the

ROD and the PR demonstrate that any concerns of Appellants over purportedly foreseeable contamination are misplaced, lack a factual basis, or are speculative and will be, in any event, eliminated by treatment of the water supply to Federal drinking water standards.

Interpretation of trace concentrations of contaminants. Rio Grande surface water at the location of the Project's river diversion works *is not* contaminated to an unsafe or unacceptably risky degree with radiological and toxic contaminants of LANL origin. Indeed, a May 18, 2007 news release by the NMED (PR 432 at 7-8) announcing the availability of a final NMED report on radiological contamination in the Rio Grande (AR 395) says just the opposite. Assessment of the risk and environmental impact of contaminants of LANL origin requires an understanding of the concentrations at which risks exceed thresholds established by federal and state laws and regulations. The Appellants appear to be contending that *any* amount of such contaminants is "too much." Applicable federal and state laws and regulations, however, provide that only amounts of such contaminants that cause excessive risk are "too much." As the PR and this letter demonstrate, contaminants of LANL origin are not present in an amount that pose any appreciable risk to Appellants and, moreover, any such risks even if they did exist will be eliminated by treatment of the water supply to Federal drinking water standards.

Another complicating factor is the ability of technology to measure minute amounts of contaminants. The detection limit of an analytical technology is set near the contaminant concentration that produces a response that can be distinguished from the background "noise." Scientists establish detection limits knowing that some fraction of the "detections" in fact will be "noise".

Recent risk evaluations. The Cerro Grande fire resulted in several different risk assessments of LANL-origin contaminants. The first of those was from the Interagency Flood Risk Assessment Team (IFRAT), which included the Forest Service (PR 69). Its broad conclusion was that "[a]lthough some samples collected after the fire showed increased concentrations of some radionuclides and nonradioactive carcinogens, *the study found no marked difference in potential chronic health effects from these substances...*" (IFRAT 7/19/2001 news release at 2).

The NMED (not LANL, as indicated in the PR document list) commissioned a very thorough assessment of risks of LANL-origin contaminants by the Risk Assessment Corporation (PR 106). This risk assessment considered both the pre-fire risks and the incremental but temporary risks caused by the Cerro Grande fire (PR 106f at 4). The risk assessment was conservative. The authors describe the conservatism as follows (PR 106g at 5): "Our risk estimates may be overestimated by approximately 1-3 orders of magnitude as a result of the conservatism in our assumptions about source term, transport, and scenario parameters. This level of conservatism appears to be confirmed based on our comparisons of predicted to measured concentrations. "

One focus of that study was estimation of risks due to contamination of surface water. The exposure scenarios included that of a hypothetical resident of the banks of the Rio Grande at its confluence with the Water Canyon who drank untreated water from the Rio Grande, ingested and breathed dust from sediment deposits along the Rio Grande, raised crops irrigated by the Rio Grande, and ate fish living in the Rio Grande (PR 106f at 3). The last two paragraphs of the Executive Summary summarize the risk conclusions (PR 106h at vii):

We presented risk estimates as cancer morbidity risks for carcinogenic chemicals and radionuclides or as hazard quotients for noncarcinogens. We estimated the potential annual cancer risk from the Cerro Grande Fire burning on the LANL site to be less than 3 in 1 million from exposure to any LANL-derived chemical or radionuclide that may have been carried in the surface water and sediments to the Rio Grande and Cochiti Lake. If exposure to the same concentrations of LANL-derived chemicals or radioactive materials was assumed to continue for 7 years (the time it may take to return to pre-fire vegetation conditions in the area), then the potential cancer risk was greater at about 20 in 1 million. For potential exposure to noncarcinogenic chemicals, intakes of all chemicals were less than acceptable intakes (a hazard quotient <1) established by the U.S. Environmental Protection Agency (EPA).

Of the different individuals considered in the hypothetical exposure scenarios, the health risks were highest to the resident living year-round on the bank of the Rio Grande near the confluence of Water Canyon. The type of exposure contributing most to the potential risk was eating fish.

The summary report for this study is more succinct. It says, “[c]ancer risks for LANL-derived radionuclides and chemicals were within the range of acceptable risks defined by the U.S. EPA. Estimated intakes of noncarcinogenic LANL-derived chemicals were less than the U. S. EPA’s acceptable intakes.” (RAC Summary Report at 13).

Two other recent risk assessments, one by LANL and another by the U. S. Public Health Service, Agency for Toxic Substances and Disease Registry, reached similar conclusions. (Kraig, 2001 and Agency for Toxic Substances and Disease Registry, 2005).

Quality of the Rio Grande at the location of the Project’s river diversion. The appeal incorrectly implies that the Rio Grande is too contaminated by LANL for diversion by the Project as a source of water for public water supply. In fact, the Rio Grande surface water at the location of the Project’s planned river diversion, *prior to any water treatment, rarely exceeds federal Safe Drinking Water Act Maximum Contaminant Levels (“MCLs”)* for radiological and other LANL-derived contaminants of concern. The Project Manager recently commissioned an independent expert evaluation of Rio Grande water quality and the planned water treatment processes. Dr. Kerry J. Howe, a water quality and water treatment expert who is on the civil engineering faculty at the University of New Mexico, recently completed the evaluation. (PR 442 (draft); final report is dated 4/15/2008).

Based on this independent evaluation, water from the Rio Grande, at the point of diversion and prior to treatment, will meet federal and state drinking water standards for LANL-associated radionuclide and chemical contaminants except during periods when the river is

carrying large amounts of sediment. (Howe, 2008 at 37). Such periods would be associated with relatively brief and infrequent snowmelt and storm-related run-off events. The project has been designed to allow for rapid cessation of diversions during such events. This independent expert evaluation concludes that the planned City/County water treatment plant provides excellent removal of most of these contaminants. The remaining contaminants are not expected to exist in the untreated Rio Grande water to be diverted by the Project at concentrations that exceed drinking water standards (Howe, 2008 at iii).

The Project applicants plan to temporarily suspend diversions from the Rio Grande when the sediment concentrations are very high and when runoff from LANL may be conveying contaminants to the Rio Grande (PR 432 at 3). This operational constraint was originally adopted to protect the pumps, pipelines and treatment facilities from excessive amounts of sediment-related wear and water treatment plant residuals disposal costs (Howe, 2008 at 37) but also will reduce diversion of the contaminants of concern, which strongly adsorb to fine grained sediment particles. Scientific studies have found that radionuclide and other contaminants of concern associated with LANL are preferentially adsorbed to colloid, clay, and silt size particles (PR 15 at iii). "Radionuclides naturally tend to bind more readily to clay and silt-sized particles than to sandy portions of a sediment sample. This phenomenon is generally related to strong van der Waals forces, the higher cation exchange capacity, total organic carbon content, and higher surface area of clay and silt particles relative to coarser materials." (McLin, S.G. and Lyons, D.W., 2002, p. 5). "Heavy metals and radionuclides tend to adsorb to higher concentrations on the finest particles." (Graf, W.L., 1994, p.8) "Concentrations also vary in regard to the particle size distribution in sediments; samples containing a large fraction of coarse-grained materials demonstrate lower contaminant concentrations, often below reference values used to identify Laboratory impacts." (PR 395 at 36)

The NMED recently completed a scientific study (PR 395) that addressed both river channel bed sediments and flood plain sediment concentrations of radionuclides of LANL origin. That report speaks clearly about the absence of LANL-derived contaminants in river bed sediments. "We included eight Rio Grande channel sediment samples in this evaluation. The samples were collected in 2003 from slack-water, low energy areas in the river, are predominantly fine-grained sediments, and reflected current transport. We found that the analytical measurements in the river channel sediments reflect global fallout constituents similar to that found in the upper Rio Grande watershed." (PR 395 at 63). "We did not observe a LANL impact on the sediments in the Rio Grande River channel bottom." (PR 395 at 22). "These measurements identified the contaminant source as global fallout. Laboratory contaminants could not be identified above or below the Los Alamos Canyon / Rio Grande confluence." (PR 395 at 42).

The appeal also incorrectly implies that the Project is vulnerable to LANL-origin contamination from the groundwater flow pathway to the Rio Grande. The PR demonstrates that the groundwater pathway is not a significant source of contaminants. The reasons are set forth in the study prepared for the CCNS that is cited in the appeal as

the "Rice Report". That study (PR 285) shows that 18 of the approximately 20 springs that discharge to the Rio Grande in White Rock Canyon are downstream of the BDD river diversion location (PR 285 at 10, Figure 3-2). Rice also states that the total spring discharge (for all 20 springs) is about 5,500 acre-feet per year (PR 285 at 9), or about 1% of the flow at Otowi in a dry year. Rice's actual conclusions about contamination from the springs reaching the Rio Grande are (PR 285 at 55):

There are a number of cases where contaminants associated with LANL may have been detected in springs along the Rio Grande. However, one case, CCNS spring, is ambiguous. Some of the data, e.g., perchlorate and radionuclides, are questionable. There are only two cases where a clear relationship to LANL activities can be established and the data appear to be reliable. They are the explosives at Ancho Spring and Spring 6 and the perchlorate in Springs 4 and 4C.

Each of these springs identified by the Rice Report as contaminated is downstream of the Project's diversion point (PR 285 at 10). Even if all of the spring flow were upstream of the Project's diversion point, which it is not, the groundwater concentrations of contaminants would have to be considerably higher than MCLs in order to raise river concentrations of those contaminants to levels that would exceed drinking water MCLs in the untreated river water, because the total spring flow comprises 1% or less of the flow of the Rio Grande on an annual basis.

Regarding the surface water pathway, water quality data from LANL, NMED, the USGS, and Project owners' consulting engineer assembled and summarized by Dr. Howe (Howe, 2008) shows that the Rio Grande at the location of the Project's diversion currently could meet standards of 0.15 pCi/l for plutonium and americium in surface water as adopted by the State of Colorado in 1997 and subsequently approved by EPA. An NMED expert working in the DOE Oversight Bureau recently told us that he concurred with this conclusion. The Colorado standards are 100 times *more stringent than* the values associated with the Safe Drinking Water Act's MCLs. The Colorado surface water standards of 0.15 pCi/l for plutonium and for americium are based on the average of 30 consecutive unfiltered samples.

The appeal also incorrectly implies that the Rio Grande at the location of the Project's diversion point has unacceptable levels of polychlorinated biphenyls (PCBs) by reference to a lawsuit filed by the Appellants against LANL regarding, among other issues, PCB concentrations in the Pajarito Plateau canyons that drain the LANL property. The appeal incorrectly suggests that NMED's human health standard for PCBs is somehow directly pertinent to the BDD. However, the NMED standard of 0.00064 ug/L for PCBs is set to protect people that eat fish that live the Rio Grande, where PCBs are bioaccumulated by the aquatic food chain. The federal drinking water standards set the MCL at 0.5 ug/L. The maximum Rio Grande measurement of PCBs came from a Colorado sample that contained 0.1 ug/L. The maximum of recent measurements of PCBs in the Rio Grande from a joint

LANL/NMED program is 0.01 ug/L; 50 times lower than the drinking water standard. (Howe, 2008, p. 19).

Contaminants in the Canada Ancha slough. Considerable time was spent responding to concerns of low levels of contaminants that exist in now-buried Rio Grande flood plain sediment deposits upstream from the diversion location, which is at the mouth of Canada Ancha. See PR 396, 432 and 435. Those contaminants were deposited in a former river channel that became a slough. Floods filled the slough with sediments during the period from 1945 to the 1960s. (PR 396 in attachment from Graf, 1994). More recent sediment deposits subsequently buried the area. Contaminants in the slough sediments have been investigated and described by William Graf (PR 15; PR 25; Graf, 1994) and by NMED (PR 395).

NMED's study included a risk assessment with "overly conservative" exposure assumptions. As stated in the NMED study, "EPA used the Superfund Preliminary Remediation Goal (PRG) for Radionuclides Risk Calculator that can be found at http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml. A residential scenario (long term occupancy) was used for each evaluation, and is based upon six years of exposure as a child and 24 years as an adult. This scenario includes direct ingestion of soil, inhalation of fugitive dusts, external exposure to radionuclides in the soil, and ingestion of homegrown produce." (PR 395 at 57). *There were no differences in risk associated with all of the radionuclides measured in the surface sediments at Canada Ancha and the control site located upstream of LANL drainages confluences with the Rio Grande.* (PR 395 at 63). The most contaminated sediments at Canada Ancha, which are now buried by about one meter of cleaner, younger sediments, would present about 4 to 5 times higher risk if they were at the surface (PR 395 at 63). *The most contaminated sediments measured by NMED do not exceed any of the applicable "screening action levels," which if exceeded, might trigger additional investigations or remediation.* One contaminant in the now-buried slough sediments, cesium 137, was present at 67% over the associated "preliminary remediation goal" for long-term residential exposure, presuming the buried sediments were on the surface at the residence location, but did not exceed the preliminary remediation goals for construction worker or outdoor worker exposures. All other contaminants were less than their associated preliminary remediation goals.

The ROD requires the owners to demonstrate that the sediments in the near-river area that will be disturbed by construction of the project will meet worker exposure requirements prior to initiation of construction. (ROD at 6) The PR indicates that: (1) even the most contaminated buried sediments would not cause exposures in excess of applicable standards; (2) elevated concentrations of contaminants are confined to the specific, geographically discrete package of sediments that filled the slough from 1945 to the 1960s; and (3) Project construction will not disturb this package of sediments. (PR 396).

Perhaps most importantly for this letter, there is no pathway for the buried sediments in the slough to be diverted by the Project. The flood plain overlying these buried sediments would be inundated and eroded only by an extreme flood event, because the Rio Grande channel has become further incised subsequent to the deposition of the buried sediments

and these sediments are now armored against erosion by dense vegetation. The BDD will not be operating during such an event.

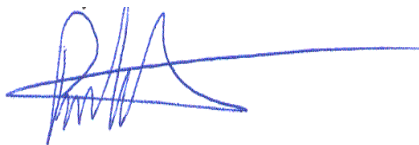
The BDD Board's November 1, 2007 letter to LANL. The BDD Board sent a letter to LANL expressing its desire that LANL implement and fund six actions associated with LANL-derived contaminants. The appeal erroneously cites this letter as purported evidence to challenge the conclusion in the FEIS that "the impact of Los Alamos National Laboratory on water quality *in terms of Federal drinking water quality standards* [emphasis added] was considered speculative....Water quality data that was reviewed for this analysis does not indicate that there would be any problem with treatment of diverted water to Federal drinking water quality standards for distribution within the City, County, or Las Campanas distribution systems." (FEIS at 265).

The PR shows that low concentrations of some contaminants derived from LANL historical operations are in the Rio Grande at the Project's proposed diversion location. (PR 106; Howe, 2008). The risk assessments cited in the PR and in this letter show that such contaminants would not present risks exceeding EPA risk criteria with even highly unrealistic exposure assumptions, including drinking untreated water from the river. (PR 106). As a result, the attempt to link LANL contaminants with a potential future violation of drinking water quality standards or an environmental impact caused by the Project is completely unsupported in the PR.

All drinking water system owners and operators are encouraged by the federal and state drinking water regulators to have an active program to protect the quality of their raw water supplies. The six actions that the Board requested of LANL in its November 1, 2007, letter are intended to do just that. Appellants are aware that this is was the purpose of the letter, since CCNS and Joni Arends, appellants, encouraged that it be sent.

If there are any questions regarding these comments, please contact me at 505-955-4206.

Very truly yours,



Rick Carpenter
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City of Santa Fe

c: Sandy Hurlocker
Sam DesGeorges

References:

Agency for Toxic Substances and Disease Registry, 2005. *Public Health Assessment for Los Alamos National Laboratory*. U. S. Department of Health and Human Services, Public Health Service, public comment release, 168 pp.

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