



## Communities for Clean Water

November 30, 2015

By email to: [greg.huey@state.nm.us](mailto:greg.huey@state.nm.us)

Mr. Greg Huey  
Ground Water Quality Bureau  
New Mexico Environment Department  
P. O. Box 5469  
Santa Fe, NM 87502-5469

Re: Public Comments in Opposition to the draft Discharge Permit (DP) 1835  
Class V Underground Injection Control  
Los Alamos National Laboratory

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Dear Mr. Huey:

The Communities for Clean Water (CCW) and the CCW Youth Council provide the following comments to the draft Discharge Permit (DP) 1835 for the discharge of up to 648,000 gallons per day (gpd) of "treated" groundwater to a Class V Underground Injection Control (UIC) system. The public has not been provided a full and complete description of the proposed eight-year interim measures project in order for it to properly review and provide informed comments to the Ground Water Quality Bureau of the New Mexico Environment Department (NMED). We oppose the draft permit for the reasons detailed below.

## Introduction

CCW is a coalition of non-governmental organizations based in Northern New Mexico that formally organized in 2006. CCW Council members include Amigos Bravos, Concerned Citizens for Nuclear Safety, Honor Our Pueblo Existence, New Mexico Acequia Association, Partnership for Earth Spirituality, Tewa Women United, and the CCW Youth Council. CCW brings together these organizations for a collective and powerful impact on protecting and restoring water quality downstream and downwind of LANL. CCW serves diverse multicultural communities, including those in the Española Valley, member organizations from tribal communities, the City of Santa Fe and Santa Fe County, and Los Alamos County. Our members live, work and recreate downwind and downstream of LANL and the proposed chromium and perchlorate plumes.

The CCW mission is to ensure that community waters impacted by LANL are kept safe for drinking, agriculture, sacred ceremonies, and a sustainable future.

### **Indigenous View of Environmental Justice and the Need for Restorative Justice.**

CCW is honored to provide an Indigenous View of Environment Justice and the Need for Restorative Justice from Elder Kathy Wanpovi Sanchez, of Pueblo de San Ildefonso:

The draft DP-1835 does not address the Indigenous culture. There is a definite lack of addressing the cultural specificity of holistic interconnectiveness among all things on Sacred Spaces of the Jemez Mountains and regional waters. Ancestral to present time and space impacts our future lands of existence.

What is not addressed is gender-based violence, especially of Indigenous women and girls. Women are the first environment for life-giving. To use water as the carrier of the toxic, hazardous and radioactive contaminants is reflective of the lack of consideration of Sacred Self and Sacred Lands of our only home planet. Humans are earthen vessels for water as Our Earth Mother is for all life.

Our need for linguistically appropriate time and delivery is also not addressed. The English language base is not in the totality of our brain capacity. We are Indigenous thought oriented with cosmic ancestral guidance.

As an Indigenous Tewa Women, it is environmental violence to our Mother Earth to enslave our bodies to carry the cumulative impacts for the monetary and military gains of corporate establishments.

The health of the land, air and waterways exponentially impact pathways of life for culturally bonded spirit rooted practices of our Peoples. We need to have input to these toxic, short-term, shortsighted practices without health impact considerations.

CCW is honored also to include the comments of Robert Chavez, on behalf of the CCW Youth Council:

Honor Our Pueblo Existence (H.O.P.E.), along with CCW Youth Council, supports the Indigenous View of Environmental Justice and the Need for Restorative Justice. The draft DP-1835 does not address the spiritual and life-giving properties of water. It does not consider the importance of ALL types of life that resides in the Sacred Area where the plumes exist. We are also concerned about the pathways of springs that may exist in the area of the plume that feeds surrounding vegetation that begins the food chain to other species, which is vital to sustainability of the eco-system in that Sacred Space.

CCW thanks Elder Kathy Wanpovi Sanchez and Robert Chavez for their statements in support of the spiritual and life-giving properties of water in this limited regulatory process. A holistic approach is needed to properly address the historic trauma to the land, air, water and Peoples and to provide restorative justice to all.

The draft DP-1835 does not address the environmental justice issues for those living downwind and downstream of LANL and the proposed project. There will be air emissions from the storage of 648,000 gpd of contaminated groundwater await "treatment" in the ion exchange (IX). The draft DP-1835 does not address the radionuclides in the contaminated groundwater, including tritium. The Applicants have not explained how they will address storage, treatment and disposal of the radionuclides, which are a health and environmental concern, and for which the Applicants are self-regulating.

The Applicants' application and the draft DP-1835 do not address impacts of the proposed project to the Los Alamos County and Buckman drinking water wells, which draw water from the regional aquifer. Los Alamos County residents rely 100 percent on the regional aquifer for drinking water. We are very concerned about protecting the regional aquifer. The draft DP-1835 does not protect the regional aquifer from the proposed eight-year project to "remediate" the chromium plume.

The cumulative impacts of the re-injection of "treated" ground waters into the regional drinking water aquifer have not been adequately addressed in the draft DP-1835. Chromium and perchlorate contaminated groundwater will be re-injected into the drinking water aquifer at levels that are not as protective as those in California. The University of California (UC) made the mess, beginning in 1943. California residents

benefited from the “profits” that UC was awarded annually for managing and operating LANL.

NMED should recognize UC as a potentially responsible party (PRP) and hold them responsible for the contamination to the regional aquifer resource. NMED should require groundwater cleanup to California’s more protective public health goals (PHG). A PHG “is the level of a contaminant in drinking water that does not pose a significant health risk. It is not a regulatory level for cleanup of groundwater or surface water contamination.” <http://oehha.ca.gov/water/phg/072911Cr6PHG.html>

Set in 2011, California’s public health goal (PHG) for chromium is 0.02 ug/l. It is 2,500 times more protective than New Mexico’s standard.

In February 2015, California set its PHG for perchlorate at 1 ug/l or 1 part per billion (1 ppb). It is a decrease from 6 ppb to 1 ppb.  
<http://oehha.ca.gov/water/phg/2015perchlorate.html>

Further, the Applicants have not provided technical justification for treating the contamination to less than (<) 90 percent of the New Mexico standards. *See* “Introduction” to draft DP-1835.

Steps must be taken by NMED and Applicants to address the outstanding environmental justice issues and restore justice to the peoples of Northern New Mexico for the contamination of the regional aquifer, the emissions of toxic, hazardous and radioactive particles into the air, the proposed on-going contamination of the soils (without requiring Applicants to establish a baseline now to determine if the soils will accumulate toxic, hazardous and radioactive pollutants through the proposed eight year project - it is an optional requirement in DP-1793 (land application permit; *See* Conditions 3 and 8)), and damage to the floodplains of Mortandad and Sandia Canyons.

CCW suggests that one step forward would be for NMED and the Applicants to present the entire eight-year proposed chromium plume interim measures project to the public at evening meetings, held in at least five communities downwind and downstream of LANL. We suggest the presentation include what we know now; what we want to find out; what are the steps to get there; the decision making process; the decision tree; and provide an opportunity for public comment for incorporation into the various permitting documents (e.g., DP-1793, DP-1835) and National Environmental Policy Act (NEPA) documents (e.g., environmental assessment, floodplain assessment).

We suggest quarterly meetings held in at least five communities downwind and downstream of LANL – similar to the semi-annual public meetings held for the individual storm water permit (IP). The next IP meeting will be held on December 9,

2015 from 5:30 to 7:30 pm at the Los Alamos Holiday Inn Express. You are cordially invited to attend to witness the exchanges that take place at these meetings.

**“Statistically Significant Evidence” of Increased Chromium Contamination  
First Detected in January 2004**

We are concerned about the haphazard way the Applicants (Department of Energy (DOE) and Los Alamos National Security, LLC (LANS)) for LANL and the NMED have addressed the chromium plume, which was first detected in January 2004 at over five times the New Mexico water quality standard of 50 micrograms per liter (ug/l). 20.6.2.3103.A(4) NMAC. The levels were “statistically significant evidence of increased contamination,” thus requiring NMED to order DOE and the predecessor to LANS, the University of California (UC), to conduct compliance monitoring under 40 CFR § 264.99. But NMED did not do that. It skipped compliance monitoring and moved to corrective action without the necessary information to support corrective action. Over the following decade contamination levels increased to 24 times (1,200 ug/l) the New Mexico water quality standards, all the while the plume has migrated south southeast to the LANL boundary with the Pueblo de San Ildefonso.

We are concerned about the misinformation provided in the application submitted to NMED for draft DP-1835. As Robert H. Gilkeson, Registered Geologist, detailed in his July 12, 2006 report entitled “The Immediate Danger of LANL Waste to the Groundwater of the San Ildefonso Pueblo,”

Misinformation in LANL Reports of the Large Groundwater Resource on the San Ildefonso Pueblo. LANL reports portray the regional aquifer beneath the San Ildefonso Pueblo to have aquifer strata of very low permeability, and therefore, to be a limited groundwater resource. Quite the opposite is true. The LANL data from drilling records and borehole geophysics prove the aquifer strata beneath the Pueblo have very high permeability [possibly greater than 40 meters a day] and the regional aquifer on the Pueblo property is a very large and valuable groundwater resource. Because of the high permeability, the LANL waste are of greater danger to contaminate the groundwater resource of the San Ildefonso Pueblo.” *Id.*, p. 2.

The July 12, 2006 Gilkeson report is incorporated in its entirety into these CCW comments. The report includes information about the danger of the hexavalent chromium contamination beneath Sandia and Mortandad Canyons; the mistakes in the construction of the LANL characterization wells R-13 and R-34 and the poor detection of LANL waste; the danger of the buried radioactive and chemical waste at LANL Area G and L [located to the south of the plume] to contaminate the groundwater of Pueblo de San Ildefonso; the toxic waste buried at Areas G and L; the mistakes in the construction of LANL characterization well R-21 and the poor detection of waste from Area L; the new network of monitoring wells that are required at Area L; the mistakes

in the construction of LANL characterization well R-22 and the poor detection of waste from Area G; the little concern of DOE and NMED for the poor characterization of the danger of Area G and Area L to contaminate groundwater of Pueblo de San Ildefonso; the toxic contaminants detected in water samples from beneath Area G; the new network of monitoring wells that are required at Area G; the mistake by DOE in reporting the regional aquifer of Pueblo de San Ildefonso to have low permeability; the high permeability of the regional aquifer at well R-34 and R-22, as well as two appendices providing information from the technical literature with reasons for not installing monitoring wells in strata that are invaded with organic drilling additives or bentonite clay drilling muds; and the danger to health of selected pollutants in groundwater at LANL.

CCW believes the LANL pollution has already cross the boundary, but no one knows for sure because the contamination has not been detected, nor provided in publicly accessible document.

The regional wells that were drilled to characterize the Pajarito Plateau under the LANL Hydrogeologic Workplan, as required by NMED, are defective for the purposes of monitoring.<sup>1</sup> Nevertheless, the NMED Hazardous Waste Bureau authorized the use of the defective characterization wells for monitoring under the Hazardous Waste Permit and 2005 Consent Order.

Given the high permeability of the aquifer strata in the area of the plume and in the cone of depression for the proposed extraction and injection wells, CCW is concerned that Applicants have not considered – or analyzed for - the potential migration of groundwater pollution beneath other disposal sites in the area, including TA-50 Radioactive Liquid Waste Treatment Facility and Material Disposal Area C, and TA-54 Material Disposal Areas G, H and L, towards the extraction and injection well. NMED must be proactive and use its knowledge, expertise and regulatory power to fully evaluate this potential for migration to or from the plume in the area of high

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<sup>1</sup> See “Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory: Final Report,” Committee for the Technical Assessment of Environmental Programs at the Los Alamos National Laboratory, National Research Council, ISBN: 0-309-10620-6 (2007).

See also United States Environmental Protection Agency, National Risk Management Research Laboratory, Ground Water and Ecosystems Restoration Division, Ada, OK, Memoranda: (a) September 30, 2005, Subject: Los Alamos National Laboratory, Los Alamos, NM (05RC06-001), Impacts of Well Construction Practices; (b) February 16, 2006, Subject: Los Alamos National Laboratory, Los Alamos, NM (05RC06-001), Well Screen Analysis Report (LA-UR-05-8615); and (c) March 30, 2009, Subject: Los Alamos National Laboratory (LANL), Los Alamos, NM (05RC06-001), Well Screen Analysis Report (WSAR), Rev. 2 (LA-UR-07-2852), Groundwater Background Investigation Report (GBIR), Rev. 3 (LA-UR-07-2853).

permeability. Further, CCW is concerned about the safety of our drinking water – one of the premises for using the Class V UIC regulatory designation for the injection wells.

Added to our migration concern, we provide the following history of the plume to provide a broad view of the CCW concerns raised in these comments about the patterns and practices of the Applicants with regard to groundwater quality. We quote from the June 14, 2007 Chromium “Settlement Agreement and Stipulated Final Order,” HWB 07-27(CO) for violations of the New Mexico Hazardous Waste Act, the NMED Hazardous Waste Facility Permit for LANL, and the March 1, 2005 Compliance Order on Consent (Consent Order) by the DOE and UC for not properly notifying NMED of “significant evidence” of increased chromium contamination in groundwater as required by Section VIII.H of the 1989 Hazardous Waste Permit.

“11. On January 12, 2004, DOE and UC collected a ground water sample from monitoring well R-28, a well that had recently been completed in the regional aquifer. DOE and UC received the analytical data on the sample on or about January 26, 2004. The data showed chromium at a concentration of 270 micrograms per liter (ug/l). DOE and UC included the data in an appendix to the *Completion Report for Regional Aquifer R-28*, dated April 28, 2004, which they submitted to the Department, without otherwise noting the data.

“12. DOE and UC did not collect any further samples from R-28 until May 2005. On May 20, 2005, the DOE and UC collected a ground water sample from monitoring well R-28. The data showed chromium at a concentration of 375 ug/l (filtered) and 389 ug/l (unfiltered).

“13. On September 1, 2005, DOE and UC collected a second ground water sample from monitoring well R-28. The data showed chromium at a concentration of 397 ug/l (filtered) and 404 ug/l (unfiltered).

“14. On November 10, 2005, DOE and UC collected a third ground water sample from monitoring well R-28. The data showed chromium at a concentration of 404 ug/l (filtered) and 416 ug/l (unfiltered).

“15. The water quality standard for chromium in groundwater, set by the New Mexico Water Quality Control Commission under the New Mexico Water Quality Act, is 50 ug/l. 20.6.2.3103.A(4) NMAC. The maximum contaminant level for chromium in drinking water, set by the United States Environmental Protection Agency under the federal Safe Drinking Water Act, is 100 ug/l. 40 C.F.R. § 141.62(b)(5). Both are health-based standards.

“16. A municipal drinking water supply well for the County of Los Alamos, well PM-3, is located approximately one-half mile from monitoring well R-28.

"17. On December 23, 2005, DOE and UC notified the Department of the chromium concentrations in monitoring well R-28 by telephone.

"18. On December 29, 2005, the Department sent a letter to the Respondents [DOE and UC] requiring the submission of an Interim Measures Work Plan pursuant to section VII.B.1 of the Consent Order to fully investigate the chromium contamination. The letter required DOE and UC, among other things, to determine whether the chromium detected in monitoring well R-28 is in the trivalent or the hexavalent form. On March 31, 2006, the Department received from DOE and UC the Interim Measures Work Plan. The Work Plan noted that the chromium is hexavalent."

It has taken a decade to get to this point.

Over the last few months, the Applicants and NMED have released for public review and comment a host of documents for the proposed eight-year project, but the comment periods have not allowed for the public, at our detriment and that of our precious ground water, to have a complete picture of the proposed project.

CCW incorporates and refers to its November 13, 2015 comments for the draft Chromium EA, specifically our specific comments No. 6 requesting that DOE provide the technical basis for treatment to less than 90% of the applicable 20.6.2.3103 NMAC standards and the numeric standards established for tap water in Table A-1 for constituents not listed in 20.6.2.3103 NMAC. We continue to question why less than 90%; why not less than 50%, or 10%?

CCW also incorporates the entirety of our comments to the NEPA documents (draft environmental assessment and floodplain assessment) and the draft DP-1793 as part of these comments.

In our comments about the proposed project, CCW has raised concerns regarding the possibility of further spreading of pollutants from surface dispersions through land application, emissions into the air from mechanical evaporators, and the use of injection wells for waste water from pump and treat operations into the regional drinking water aquifer.

### **Request for Public Hearing on the draft DP-1835**

Given the complexity of the proposed eight-year project for the Chromium Plume Control Interim Measure and Plume-Center Characterization at Los Alamos National Laboratory (LANL), as described in the draft Environmental Assessment, DOE/EA-2005 (draft Chromium EA), the CCW and the CCW Youth Council request a public hearing on the draft DP-1835 pursuant to 20.6.2.3108(K) NMAC as a matter of substantial public interest.

A public hearing for the draft DP-1835 is necessary to consider concerns for public health and the environmental consequences that may result from the daily discharge of more than 648,000 gpd of treated ground water containing the fast moving carcinogens, hexavalent chromium and perchlorate, as well as radionuclides (tritium and uranium), along with other toxic chemicals found in the co-located plumes. Whether the discharge will facilitate or interfere with the widespread, deep contamination from these pollutants is also at issue. A concern exists whether the discharges may cause the remobilization of other pre-existing radioactive, toxic and chemical contamination from 72-years of LANL operations, including those from Material Disposal Areas C, G, H and L and historic discharges from the Radioactive Liquid Waste Treatment Facility at TA-50.

Under draft DP-1835, the discharge of treated waste water can contain levels of hexavalent chromium and perchlorate below the EPA MCL. Discharge can continue for at least eight years under interim measures, and perhaps longer as needed. Discharge may increase if pump and treat is selected as a Resource Conservation and Recovery Act (RCRA) remedy and more extraction and injection wells are installed.

Unknown are the actual amounts of hexavalent chromium and perchlorate in the regional drinking water aquifer. Many data gaps exist. What is known, with limited data and through computer modeling, is that the co-located plumes are large and migrating to the LANL boundary with Pueblo de San Ildefonso. The plumes are also migrating towards Los Alamos County municipal wells (which provide 100% of the drinking water to county residents and LANL), as well as the Buckman wells that provide over 40 percent of the drinking water for the City of Santa Fe and Santa Fe County residents.

Draft DP-1835 appears to circumvent RCRA requirements for public participation. The interim measure of pump and treat appears to be receiving a huge commitment of technology and taxpayer funding while leaving behind the prerequisite RCRA procedures for a site conceptual plan, plume characterization, the RCRA Facility Investigation, Corrective Measures Study and Corrective Measures Implementation Plan.

While no remedy or combination of remedies have been chosen as final for the remediation of the plumes, the interim measure of pump and treat is being used. The commitment to pump and treat technology without full details of the:

1. geologic complexity of the area for the extraction and injection wells;
2. the tendency of the pollutants to absorb to soil materials;
3. mechanism used by chromium to change from III to VI, and vice versa, depending on the pH in groundwater and how the appropriate pH will be established in the regional aquifer;

4. appropriate consideration of how the cleanup levels will be achieved;
5. meaningful exploration of alternatives to pump and treat;
6. lack of requirements for establishing a baseline for soil contamination; and
7. distribution of the discharge water and how it will be done.

Without the optimal characterization of the geology, hydrology, groundwater flow direction, chemical properties of the remediation/extraction zone, there can be no dynamic management of the extraction well field.

In addition,

1. This is the first of its kind proposed interim measures to hydraulically contain the plumes at LANL.
2. There is a need for the National Academies of Science (NAS) to conduct an independent review of the proposed eight-year interim measures project.
3. The proposed use of Class V UIC injection wells for the enormous daily "discharge" of almost two acre feet a day requires a second look because the Applicants did not analyze or evaluate for any alternatives in the draft Chromium EA. *Id.*, p. 17. Alternatives considered, but not evaluated, include monitored natural attenuation; in situ treatment; and proposed action alternative with treated effluent pipeline option.
4. It is unclear whether the extraction wells are considered Class V wells. Class V wells for the proposed injection is inappropriate since the wastes may migrate in the foreseeable future exceeding standards to protect human health. The injection wells are indicated for location in recharge zones, or cones of depression, for the Los Alamos County municipal wells, e.g., PM-3, PM-4 and PM-5. See 2005 issue of the "Vadose Zone Journal" about LANL groundwater monitoring and the uncertainties of their computer modeling for the transport of pollutants, etc.
5. How are the extraction wells regulated?
6. Class V wells are used to inject fluids either into or above an underground source of drinking water. Proper management of Class V wells is essential. "Class V wells are a concern because they pose a risk to underground sources of drinking wells. Because of this they are regulated by the Underground Injection Control (UIC) program under the Authority of the Safe Drinking Water Act." <http://water.epa.gov/type/groundwater/uic/class5/basicinformation.cfm>, accessed on November 6, 2015. How does the Class V designation protect the regional drinking water resource?
7. We question whether the injection wells will be at a depth where water polluted with the toxic radionuclides and chemicals, such as hexavalent chromium and perchlorate, can migrate into and threaten Los Alamos and Santa Fe drinking water wells? What is the proper depth for the injection wells in order to avoid that potential problem?

8. What monitoring will be provided for the vadose and intermediate zones in the extraction and injection zones?
9. We are extremely concerned about the use of defective regional wells for monitoring purposes. These include: R-11, R-13, R-43, R-44, R-45, R-50, R-61, R-52, and SIMR-2. The wells were drilled in the wrong location; the well screens were not placed in the fast pathways, nor at the top of the water table; the screens were too long (in some cases 60 ft long); the use of organic drilling muds that bind pollutants were used to mask detection of LANL contaminants; etc. See 2007 NAS Report and EPA Kerr Laboratory memoranda attached hereto.
10. The resin treatment system – more research is needed.
11. Draft DP-1835 puts the cart before the horse for the RCRA requirements by putting in place a decision that lacks sufficient data to be imposed as part of an interim or final remedy.
12. The chromium and perchlorate plumes are regulated under RCRA. The RCRA requirements for public notice and participate (40 CFR 124) must be considered. In addition to the NMAC requirements, the draft DP-1835 is modifying LANL's RCRA/Hazardous Waste Act permit by facilitating and adopting an interim measure. See 40 CFR 270.42 (52 FR 35838, September 23, 1987) and the 40 CFR 124 change in the "RCRA Expanded Public Participation" Rule (60 FR 63417-34, December 11, 1995).

p. 4-11 Required Activities. When corrective action is proceeding under a RCRA permit, the permit may identify specific interim measures and/or stabilization measures (if they are known at the time of permit issuance) or may have general conditions that govern when interim measures might be required during the course of the corrective action. In either case, the public can comment on the interim measures strategy in the draft permit as part of the permitting process.

p. 4-14 – 4 -15. When corrective action is proceeding under a 3008(h) order, the Agency's longstanding policy is that the public's opportunity to review and comment on tentatively-selected remedies should be commensurate with the opportunity that would be available if the corrective action were conducted under a permit. At a minimum, this opportunity should include: publishing a notice and a brief analysis of the tentatively-selected remedy (this is typically referred to as a statement of basis) and making supporting information available; providing a reasonable opportunity for submission of written comments; holding a public hearing or public meeting, if requested by the public or determined necessary by the overseeing agency; preparing and publishing responses to comments; and, publishing the final remedy decision and making supporting information available. Additional guidance is available in OSWER Directives 9901.3, *Guidance for Public Involvement in RCRA Section 3008(h) Actions* (May 5, 1987) and 9902.6 *RCRA Corrective Action*

*Decision Documents: The Statement of Basis and Response to Comments (April 29, 1991).*

Conclusion: The Secretary must grant our public hearing request because draft DP-1835 is a matter of substantial public interest.

### General Comments

CCW remains concerned that the Applicant is not addressing, and NMED is not requiring in the draft DP-1835 permit, the co-located perchlorate plume. The Applicants have neglected to put forward a plan to address the co-located perchlorate and chromium plumes, both of which are migrating towards Pueblo de San Ildefonso and the drinking water wells of Los Alamos County and the City of Santa Fe. *Compare Fig. 1-4 Locations of chromium plume (>50 ppb concentration) and perchlorate plume (>4 ppb concentration) with groundwater flow direction of the draft Chromium EA with Fig. 1 Locations of current and proposed project activity in Mortandad Canyon in "Floodplain Assessment of the Chromium Plume Control Interim Measure and Plume-Center Characterization in Mortandad Canyon, Los Alamos National Laboratory" (draft Floodplain Assessment), p. 5.*

Right now, chromium, perchlorate and other hazardous and toxic chemicals are migrating in the regional aquifer approximately 1,000 feet below ground surface toward drinking water wells and the Rio Grande. In the draft Chromium EA, the Applicants proposed to bring contaminated groundwater to the surface for treatment and disposal

1. through land application by trucks or sprinklers – DP-1793 - ("Until LANL receives a permit to operate injections wells, the primary means of disposition of treated groundwater will be land application." *Id.*, p. 1);
2. mechanical evaporation (for which no permit application to the New Mexico Environment Department Air Quality Bureau has been submitted); and
3. re-injection (draft DP-1835).

Exposure to chromium and perchlorate through the air pathway is dangerous to human health and the environment. Land application will allow the pollutants to migrate in the wind, allowing exposure in downwind and downwind communities. The proposed action will allow hexavalent chromium to evaporate from storage, move in the air and be breathed, and again pollute the regional drinking water aquifer. The Environmental Protection Agency (EPA) provides acute and chronic health effects from exposure to hexavalent chromium through the air pathway:

### Health Hazard Information

#### *Acute Effects:*

## Chromium VI

- Chromium (VI) is much more toxic than chromium (III), for both acute and chronic exposures. (1,3,4)
- The respiratory tract is the major target organ for chromium (VI) following inhalation exposure in humans. Shortness of breath, coughing, and wheezing were reported in cases where an individual inhaled very high concentrations of chromium trioxide. (1,4)
- Other effects noted from acute inhalation exposure to very high concentrations of chromium (VI) include gastrointestinal and neurological effects, while dermal exposure causes skin burns in humans. (1,4,5)
- Ingestion of high amounts of chromium (VI) causes gastrointestinal effects in humans and animals, including abdominal pain, vomiting, and hemorrhage. (1)
- Acute animal tests have shown chromium (VI) to have extreme toxicity from inhalation and oral exposure. (1,6)

### *Chronic Effects (Noncancer)*

## Chromium VI

- Chronic inhalation exposure to chromium (VI) in humans results in effects on the respiratory tract, with perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, asthma, and nasal itching and soreness reported. (1,4,5)
- Chronic human exposure to high levels of chromium (VI) by inhalation or oral exposure may produce effects on the liver, kidney, gastrointestinal and immune systems, and possibly the blood. (1,4,5)
- Rat studies have shown that, following inhalation exposure, the lung and kidney have the highest tissue levels of chromium. (1,4,5)
- Dermal exposure to chromium (VI) may cause contact dermatitis, sensitivity, and ulceration of the skin. (1,4,5)
- The Reference Concentration (RfC) for chromium (VI) (particulates) is 0.0001 mg/m<sup>3</sup> based on respiratory effects in rats. The RfC is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious noncancer effects during a lifetime. It is not a direct estimator of risk but rather a reference point to gauge the potential effects. At exposures increasingly greater than the RfC, the potential for adverse health effects increases. Lifetime exposure above the RfC does not imply that an adverse health effect would necessarily occur. (7)
- EPA has medium confidence in the RfC for chromium VI (particulates) based on medium confidence in the study on which it was based because of uncertainties regarding upper respiratory tract, reproductive, and renal effects resulting from the exposures. (7)
- The Reference Concentration (RfC) for chromium (VI) (chromic acid mists and dissolved Cr (VI) aerosols) is 0.000008 mg/m<sup>3</sup> based on respiratory effects in humans. (7)
- EPA has low confidence in the RfC based on low confidence in the study on which the RfC for chromium (VI) (chromic acid mists and dissolved Cr (VI) aerosols) is based. This is because of (1) the uncertainties regarding the exposure characterization and the role of direct contact for the critical effect; and (2) low confidence in the

supporting studies which are equally uncertain regarding the exposure characterization. (7)

- The Reference Dose (RfD) for chromium (VI) is 0.003 mg/kg/d based on the exposure at which no effects were noted in rats exposed to chromium in the drinking water. (7)
- EPA has low confidence in the RfD based on: low confidence in the study on which the RfD for chromium (VI) was based because a small number of animals were tested, a small number of parameters were measured, and no toxic effects were noted at the highest dose tested; and low confidence in the database because the supporting studies are of equally low quality and developmental endpoints are not well studied. (7)

<http://www3.epa.gov/ttn/atw/hlthef/chromium.html>, accessed November 13, 2015.

Even so, these standards are based on the "reference man." CCW is honored to submit the comments of Beata Tsosie Peña, of Santa Clara Pueblo and Tewa Women United:

The health of our shared waters is inherently linked to the reproductive health of women, children and all of creation. It is an extreme act of environmental violence on Indigenous women and girls to be made vulnerable to "allowable" levels of toxic exposure from Los Alamos National Laboratory. It is an act of violence to have to bear the continued harm to our genetic and cultural memory of entire Peoples, while our Tewa worldview continues to be oppressed and suppressed as invalid, in order to maintain the dominant power structures that exist in the unrelenting military occupation of our sacred Jemez Plateau.

It is one aspect of environmental racism that enables regulatory policies to exist that are discriminatory to women, elderly, children, infants and our unborn. The obsolete "reference man" model that was developed when the nuclear industry began to be regulated, is based on an adult, white male, of western descent and custom. Custom meaning that he obtains his food and water, from industrial production, and his spiritual practices are indoors. This is opposed to Indigenous food systems that rely on reciprocity and direct relationship (direct exposure) with nature, and a spiritual practice that involves direct contact and drinking of/with natural springs and water systems.

This model needs to be abolished in the face of current nuclear science from The Institute for Energy and Environmental Research, that shows women are more than twice as likely to get cancer from the same dose as a man, and infants 75% as likely when exposed to radioactive iodine (Makhijani, 2008). Our pregnancies are only taken into account for female worker exposure, and not what is released into our habitat. Some of the toxins coming down from the top of our watershed now are able to cross placental boundaries and impact fetus health. Indigenous midwife, Katsi Cook, warns about how the eggs of future generations are already forming in utero, and toxins are impacting future generations before they are even mature enough to give birth to them. Our female children are born full of the eggs that will produce the generations to

come. Our environmental health and justice is interconnected with our rights to reproductive justice in regards to LANL legacy and current waste environmental releases.

Dr. Makhijani's 2008 report also states that:

The regulations and guidelines that rely mainly on Reference Man include the Nuclear Regulatory Commission's (NRC's) radiation protection regulations in the workplace and for the general public specified in 10 CFR 20, EPA Federal Guidance Reports 11 and 12, and DOE Order 5400.5 for the protection of the public. The default values in the official computer program used to estimate allowable residual radioactivity use Reference Man. He is also used to assess compliance with the Clean Air Act. **The Maximum Contaminant Levels for transuranic radionuclides in drinking water rely on Reference Man.**

Taken from: <http://ieer.org/wp/wp-content/uploads/2009/04/referenceman.pdf>

It is because of the immediate need to abolish the use of "reference man" that any determination in permit processes are unjust, inadequate and an act of violence against Indigenous, pregnant, farming, hunter/gatherer women, until regulatory policy is enacted on a federal level that Protects Those Most Vulnerable. Current radiation exposure regulations must be adopted that use the "Precautionary Principle" of zero harm given that the downwind Native Peoples have already been harmed and exposed, and our Pueblo lifeways threatened on a scale that has caused irreparable harm for thousands of years to come. The process to reverse what has happened must begin now. It is hoped that our plea to those in power and who are part of decisive mechanisms will create change enough so that these issues are taken seriously, so that life-affirming change is able to take root in our collective hearts, and sacred, ancestral homelands.

CCW thanks Ms. Tsosie-Peña for her detailed comments about the need to abolish the use of reference man.

### Specific Comments about draft DP-1835

1. I. Introduction. Add "for activities at Los Alamos National Laboratory (LANL)" before "pursuant to the New Mexico Water Quality Act."
2. It is not clear whether the three proposed extraction wells are covered under the UIC permit. Please clarify in the fourth paragraph.
3. Please clarify why "groundwater generated from injection well backflushing will be pumped into storage tanks, tested, transported to an IX treatment unit

- for treatment if necessary, and then land applied under DP-1793.” Is backflushed groundwater prohibited from being injected back into the regional drinking water aquifer? Please clarify.
4. The Applicants have not provided technical justification for achieving standards less than (<) 90 percent of the numeric standards of 20.6.2.3103 NMAC and < 90 percent of the numeric standards established for tap water in Table A-1 for constituents not listed in 20.6.2.3103 NMAC. CCW requests Applicants to explore more protective levels – 50 percent of New Mexico standards? How about 10 percent?
  5. II. Findings, No. 4. CCW questions whether the permit is properly under the Class V UIC wells. Class V classification for the proposed injection wells is inappropriate since the wastes may migrate in the foreseeable future exceeding standards to protect human health.
  6. IV.A.3. What is the technical justification for allowing the Applicants one year following the effective date of the DP to “demonstrate the mechanical integrity of the distribution piping and injection wells?” The draft permit allows too much time for the Applicants to do work that should be done within 30 days of the effective date of the DP. In the alternative, the Applicants should not be able to use the distribution piping and injection wells until they have demonstrated their mechanical integrity.
  7. The Applicants should be required to demonstrate mechanical integrity annually – not every five years.
  8. IV.A.4. Applicants should be required to post their written notification to NMED prior to discharging from the IX system to any of the injection wells to LANL’s Electronic Public Reading Room (EPRR).
  9. IV.A.5. Applicants have not provided technical justification for achieving standards < 90 percent of New Mexico’s numeric standards. CCW questions why not treatment of < 50 percent of the numeric standards? < 10 percent?
  10. IV.A.6. NMED should require Applicants to put up fences around the impoundments and storage vessels to “control access by the general public and animals,” as described for the IX treatment facilities.
  11. IV.A.7. CCW supports the requirements for signs in English, Spanish, and Tewa “indicating that the treated effluent is not potable.”
  12. IV.B.9(e). Please correct RCRA, which stands for Resource Conservation and Recovery Act.
  13. IV.B.12. The quarterly reports should include a breakdown of where the waste water was distributed – through injection; by land application (DP-1793); or by mechanical evaporator. The quarterly reports should detail whether the residues from the IX treatment process were disposed.
  14. IV.B.13. NMED should require the Applicants to also report the radionuclides detected in the discharge, as well as the levels. This has been a standard practice in other NMED and EPA permits.
  15. IV.B.17. The draft DP should required use of the (most recent **approved** version) of the *Interim Facility-Wide Groundwater Monitoring Plan*.

16. CCW supports the NMED GWQB requesting additional analytes or wells be added to the sampling regime that are not included in the *Interim Facility-Wide Groundwater Monitoring Plan*.
17. IV.B.18. Electronic Posting. Because this discharge permit is supposed to protect our drinking water supply, additional public notification is necessary, through LANL's EPRR, for the following permit conditions:
  - a. the Annual Plan (proposed condition);
  - b. written notification to NMED prior to discharging from the IX system to any of the injection wells (IV.A.4.);
  - c. the triggering of the SCADA (IV.C.19);
  - d. significant increase in analyte concentration (IV.C.20);
  - e. replacement wells (IV.C.21 and 22);
  - f. unauthorized discharge (IV.C.23);
  - g. request for permit termination (IV.D.25);
  - h. variance request (IV.D.25);
  - i. modifications and amendments (IV.E.29);
  - j. plans and specifications (IV.E.30); and .
18. IV.C.20 and IV.D.25. CCW supports a minimum of five years of consecutive ground water sampling where the 20.6.2.3103 standards are not exceeded - not two years.
19. IV.D.25. Please change "Consent Agreement" to "March 1, 2005 Compliance Order on Consent."
20. Does NMED envision a public notice for the Applicants' submitting a variance request? A public review and comment period? In the alternative, NMED should require Applicants to post their variance request to the EPRR.
21. IV.E.26(d). Recordkeeping. This condition should also reference the New Mexico Engineering Standards.
22. IV.E.29. Modifications and Amendments. The draft DP should require a public process. **Cite regs for public process. + include changes to GW monitoring network.**
23. IV.E.30. Plans and Specifications. **Cite to regs for public process.**
24. IV.E.30. CCW supports an annual report compiling the activities under the DP, as required in DP-1793, Condition IV.A.9. The annual report should be required to be posted to LANL's EPRR.
25. IV.E.34. Right to Appeal. This condition also should include the public's right to appeal the permit.
26. The draft DP-1835 does not address the Guaje and Rendija seismic faults that run north south in the area of review.
27. How is emergency preparedness and response addressed in the draft DP-1835?

28. We respectfully request that the following self-disclosure and notification of anticipated noncompliance documents be added to the administrative record for the DP-1835:

### CCW Reservation of Rights

CCW reserves its rights to provide additional public comments about draft DP-1835 when pertinent information becomes available, or when required permits for the proposed project are applied for, or when draft permits have been made available for public review and comment.

CCW reserves its rights to provide additional public comments on the draft DP-1835 when "a work plan to govern – to be submitted in early 2015 to govern activities on the chromium project in 2016" is submitted. Transcript of New Mexico Water Quality Control Commission, No. WQCC 15-07(A), *In the Matter of a Petition Appealing the Secretary of the Environment's Denial of a Hearing on DP-1793*, Ms. Lara Katz, appearing for DOE and LANS, October 13, 2015, p. 42.

### Conclusion

As explained in our comments, the draft DP-1835 incompletely and inadequately addresses the piecemeal approach of DOE/NNSA/LANL/LANS for the proposed eight-year ground water remediation project in our regional drinking water aquifer. CCW opposes the draft DP-1835.

There is substantial public interest in the draft DP-1835. For the reasons detailed in these comments, CCW requests a public hearing on DP-1835.

CCW is concerned about the safety of our drinking water aquifer. ReInjection of contaminated groundwater will not protect our drinking water aquifer. It does not appear that the Applicants have the right plan for addressing the chromium and perchlorate plumes.

Please contact us with any questions, comments or concerns.

Sincerely,

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Attachments:

Gilkeson, Robert H., Registered Geologist, "The Immediate Danger of LANL Waste to the Groundwater of the San Ildefonso Pueblo," ( July 12, 2006).

"Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory: Final Report," Committee for the Technical Assessment of Environmental Programs at the Los Alamos National Laboratory, National Research Council, ISBN: 0-309-10620-6 (2007).

United States Environmental Protection Agency, National Risk Management Research Laboratory, Ground Water and Ecosystems Restoration Division, Ada, OK,  
Memoranda:

- (a) September 30, 2005, Subject: Los Alamos National Laboratory, Los Alamos, NM (05RC06-001), Impacts of Well Construction Practices;
- (b) February 16, 2006, Subject: Los Alamos National Laboratory, Los Alamos, NM (05RC06-001), Well Screen Analysis Report (LA-UR-05-8615); and
- (c) March 30, 2009, Subject: Los Alamos National Laboratory (LANL), Los Alamos, NM (05RC06-001), Well Screen Analysis Report (WSAR), Rev. 2 (LA-UR-07-2852), Groundwater Background Investigation Report (GBIR), Rev. 3 (LA-UR-07-2853).