HISTORIC AND CURRENT DISCHARGES FROM LOS ALAMOS NATIONAL LABORATORY: ANALYSIS AND RECOMMENDATIONS

FINAL REPORT

Prepared by

Amigos Bravos
PO Box 238 • Taos NM 87571

Concerned Citizens for Nuclear Safety
107 Cienega Street • Santa Fe, NM 87501

September 2006

ACKNOWLEDGMENTS

We would like to thank our technical experts: Barry Sulkin for advice on citizen suits, water sampling, river studies, permit review, and TMDLs; George Rice, for groundwater flow and contaminant transport models, hazardous waste disposal analysis, and review of environmental documents and field programs; and Bob Gilkeson, for analysis of LANL's characterization well program. We would also like to thank staff of the New Mexico Environment Department, especially the DOE Oversight Bureau and Ralph Ford-Schmidt. Finally, we would like to thank the staff of LANL, NMED, and community organizations who accompanied us on our river and canyon sampling trips.

This study was made possible by a grant from the Citizens' Monitoring and Technical Assessment Fund. The contents of the study are solely the responsibility of the authors and do not necessarily represent the official views of Citizens' Monitoring and Technical Assessment Fund as part of the RESOLVE, Inc. grant program.

CONTENTS

EXECUTIVE SUMMARY

The movement of pollutants in stormwater is an issue of grave concern at Los Alamos National Laboratory (LANL). For the past 63 years, LANL's nuclear and industrial activities have generated an enormous amount of solid, hazardous, and radioactive waste. Most of the waste has been stored or buried on-site in unlined disposal pits, trenches and shafts. These contaminated areas are referred to as Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), or Potential Release Sites (PRSs).

Over time, contaminants have been released into the environment by overland dumping or leakage from storage pits, tanks, and landfills. Stormwater and melting snow run over these sites. Contaminants are then picked up and carried by the water into nearby canyons and streams and eventually into the Río Grande. Currently the stormwater issue is being haphazardly monitored with a Federal Facility Compliance Agreement (FFCA). An FFCA is a temporary means of controlling stormwater pollution and does not adequately protect water quality.

Radioactive liquid wastes did not exist on the Pajarito Plateau before Los Alamos National Laboratory (LANL) began operations in 1943. LANL's initial management decision was to dump untreated radioactive wastes into the Los Alamos and Pueblo Canyon system (one branch of which earned the name "Acid Canyon" because of these discharges). Lab scientists warned LANL managers as early as 1944 that such discharges would accumulate and lead to highly contaminated conditions in canyons that flow to the Río Grande. Despite these early warnings, LANL still discharges toxic metallic, chemical, and radioactive liquid wastes into canyons. Although these wastes now receive varying degrees of treatment, toxic and radioactive elements are discharged and in many cases move off LANL property into downstream waters including the Río Grande, a drinking water source for Santa Fe and Albuquerque, New Mexico's two largest cities.

Amigos Bravos and Concerned Citizens for Nuclear Safety (CCNS) have reviewed the historic and current discharges from LANL and taken steps toward ensuring that toxic wastes are cleaned up and future discharges are limited. Experts in hydrogeology, water toxicology, and state and federal regulatory processes have helped with this review. These experts and Amigos Bravos and CCNS staff:

- Reviewed and analyzed historic and current discharges to ephemeral and intermittent streams emanating from the Pajarito Plateau, their potential impacts on human and wildlife health, and their relationship to long-term stewardship efforts at LANL;
- Reviewed, analyzed, and commented upon National Pollutant Discharge Elimination System (NPDES) permits regulating discharges from LANL to ensure that the (re)issuance of new permits will result in the most stringent pollution limits and controls possible;
- Analyzed the nature and movement of pollutants between surface and groundwater discharges from LANL;
- Reviewed and analyzed stormwater runoff issues at LANL;

- Communicated our findings to the public, assisted communities surrounding and downstream from LANL in understanding the threat LANL poses to the Río Grande watershed, and explained the ways in which stringent NPDES permits helps to protect the river;
- Held conversations with decision-makers in state government, the Environmental Protection Agency (EPA), Santa Fe city and county governments, and Pueblo governments regarding oversight responsibilities and opportunities in protecting the Río Grande watershed and regional groundwater sources.

A wide range of radionuclide, metallic, and chemical pollutants have been identified based on four sampling trips along the Río Grande and in canyons below LANL. In light of third-party analyses of the hydrology of the Pajarito Plateau and LANL's well-drilling program, NMED sampling and analyses, and recent revelations from LANL, Amigos Bravos and CCNS have focused on three major toxins impacting surface and groundwater:

- **Hexavalent Chromium** detected in the regional aquifer below LANL
  - Sample results from January 2004 and December 2005 show increasing high levels of hexavalent chromium (Chromium 6) in LANL groundwater samples
  - Hexavalent chromium can be toxic to human health and has been shown to cause kidney, liver, circulatory, and nerve damage
- **PCBs** detected in extraordinarily high concentrations in soils, water, and fish tissue
  - Soil samples have shown PCB concentrations on LANL property as high as 2,464,497 nanograms per kilogram (ng/kg), while samples taken from other locations in the Río Grande watershed are typically not higher than 1,000ng/kg[1]
  - PCB concentrations in stormwater samples from Los Alamos, Pueblo, Sandia, Mortandad, and Water canyons are all above water quality standards that protect human health and wildlife habitat
  - In Los Alamos Canyon, PCB levels have been detected at 25,000 times the standard for human health and 1,000 times over the standard for wildlife habitat
  - In February 2006, the New Mexico Environment Department issued its first ever "do not eat" fish advisory for White Rock Canyon because of PCB contamination
  - PCBs are known to cause cancer, damage the thyroid, liver, and stomach, and impair reproduction
- **Perchlorate** was detected in the regional aquifer, leading to the closure of one Los Alamos County drinking well
  - Perchlorate was detected in groundwater sampling in Mortandad Canyon and in a Los Alamos County drinking water well
  - Perchlorate exposure can disable proper thyroid function

Additionally, the canyons running down from the LANL site on the Pajarito Plateau are listed by the State of New Mexico as being impaired (that is, contaminated) because of gross alpha (one measure of radioactivity), PCBs, mercury, and selenium and do not support two

[1] One ng/kg corresponds to one part per trillion; 1,000ng/kg corresponds to one part per billion; 1,000,000ng/kg corresponds to one part per million.

designated uses: livestock watering and wildlife habitat. In contrast, other canyons running down from the Pajarito Plateau, but not located on or crossing LANL property, are not impaired by these toxins and support designated uses.

The Clean Water Act requires federal National Pollutant Discharge Elimination System (NPDES) permits for all discharges from a "point source." Point sources are where pollutants may be discharged into water. We have identified areas of concern regarding all three permits under which LANL has coverage. The permits are:

- The individual wastewater discharge permit (NPDES Permit No. NM0028355);
- The Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (MSGP);
- The Stormwater General Permit for Construction Activities.

The State of New Mexico has the legal right to veto or amend any federal permit through the Clean Water Act permitting process. The process, know as "401 Certification Process" is a powerful yet underused tool that can ensure better water quality for our State.

RECOMMENDATIONS

Amigos Bravos and CCNS make the following general and specific recommendations for addressing both on-going and historic toxic, chemical and radionuclide discharges at LANL:

General Recommendations

- LANL must comply with existing federal and state laws and regulations
- LANL must be required to install pollution control measures at all 1,405 contaminated stormwater sites
- LANL must be required to perform adequate monitoring of all 1,405 contaminated stormwater sites
- All discharges must meet the numeric effluent limits, the quantitative means for identifying problems and ensuring enforcement
- Application of New Mexico State Water Quality Standards for Interstate and Intrastate Surface Waters. Specifically, intermittent waters at LANL should be protected by chronic aquatic life criteria and human health criteria, as are all other intermittent waters in the State of New Mexico

Individual Wastewater Permit

- Monitoring requirements for discharges in the individual wastewater permit must require sample collection at the "end of the pipe" where the discharge is released to the environment as required by the Clean Water Act. Currently some sampling collection sites are not at the end of the discharge pipe, but at some other point above potentially contaminated pipes, storage tanks, or other conveyances to the end of the pipe
- Effluent (pollution) limits that are protective of the aquatic life in LANL canyons must be required in LANL's individual wastewater permit; the current limits are not protective

Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (MSGP)

- Monitoring and effluent limits for discharges associated with the Multi Sector General Permit for Industrial Stormwater Discharges must be required when the receiving stream is impaired [must clarify]

Stormwater General Permit for Construction Activities

- Numeric effluent (pollution) limits must be included in the individual stormwater permit
- A thorough investigation and inspection – by LANL and with public review – must be completed of pollution prevention measures installed on the 1,942 acres of disturbed land and at the 52 separate current LANL construction projects (and any future projects).

RESUMEN EJECUTIVO

El movimiento de contaminantes en agua desperdiciada de tormentas fue un asunto de preocupación grave en LANL. Por los últimos 63 años, las actividades nucleares e industriales de LANL han generado una cantidad enorme de desperdicios sólidos, peligrosos y radioactivos. Con el tiempo, muchos de estos contaminantes han sido vertidos al medio ambiente por descargando sobre la tierra, ó fugas de hoyos de almacenaje, tanques y vertederos de desperdicios. Estas áreas contaminadas se refieren como Unidades para Desperdicios Sólidos, (SWMUs por sus siglas en ingles), Áreas de Preocupación (AOCs), ó Sitios Potenciales para Desperdicios (PRSs). Cuando llueve y el agua corre por encima de estos sitios, contaminantes se han levantado y llevado por el agua a los riachuelos y cañones cercanos y eventualmente, con el tiempo, en el Río Grande.

Desperdicios líquidos radioactivos no existan en el Altiplano Pajarito antes que el Laboratorio Nacional Los Álamos (LANL) comenzó operaciones en 1943. La decisión inicial del manejo de LANL fue de descargar desperdicios radioactivos no-tratados en el sistema de Los Álamos y Pueblo cañones. Científicos del Laboratorio advirtieron que tales descargos aumentarían y Llegarían a condiciones gravemente contaminadas en los cañones, y en el Río Grande. A pesar de estas advertencias, LANL todavía esta descargando desperdicios metálicos, químicos, y líquidos radionuclidos tóxicos adentro los cañones en el Laboratorio 63 años después. Aunque estos desperdicios ahora reciben varios grados del tratamiento, elementos tóxicos y radioactivos todavía se están descargando y en muchos casos se están moviendo fuera de propiedades de LANL, dentro de aguas corrientes cuesta abajo incluyendo el Río Grande, una fuente de agua potable para las dos ciudades mas grandes de Nuevo México, Santa Fé y Albuquerque.

Amigos Bravos y CCNS revisaron los descargos corrientes e históricos de LANL y tomaron pasos iniciales para asegurar que desperdicios tóxicos fueran limpiados y descargos futuros sean limpios. Expertos en hidrológica, toxicología de agua, y procesos reguladores estatales y federales fueron consultados para ayudar con esta revista. Estos expertos y Amigos Bravos y personal de CCNS:

- Revisaron y analizaron descargos corrientes e históricos a corrientes efímeros e intermedios saliendo del Altiplano Pajarito, sus impactos potenciales en la salud humana y animales silvestres, y su relación a esfuerzos del cuidado de término largo en LANL;
- Revisaron, analizaron e hicieron comentario de permisos del Sistema Nacional de Eliminación de Descargo de Contaminantes (NPDES, por sus siglas en ingles) regulando descargos de LANL para asegurar que el (re)expedición de nuevos permisos resultaría en los más rigurosos límites y restricciones de contaminantes posible;
- Analizaron la naturaleza y movimiento de contaminantes entre descargos desde LANL y aguas de la superficie y debajo la tierra o acuífero;
- Revisaron y analizaron asuntos de agua desperdiciada por tormentas en LANL;

- Comunicaron sus descubrimientos al público, ayudaron a comunidades alrededor y corriente debajo de LANL para comprender el peligro que LANL presenta al vertiente del Río Grande, y explicaron medios de cómo un permiso NPDES restringido ayuda a proteger el Río;
- Tuvieron dialogo con los que hacen decisiones en el gobierno estatal, Agencia de Protección Ambiental, gobiernos del condado y la ciudad de Santa Fe, y gobiernos de los Pueblo, tocante a sus varios responsabilidades de inadvertencia ó equivocación, en proteger del vertiente del acuífero y origines acuíferos regionales.

Basado en cuatro viajes para tomar muestras a lo largo del Río Grande y en cañones cuesta bajo de LANL; Análisis de individuos del tercer parte de la hidrológica del Altiplano Pajarito y el programa para sacar norias de LANL; Toma de pruebas de NMED y análisis; y revelaciones recientes de LANL, Amigos Bravos y CCNS han identificado tres tóxicos mayores teniendo impacto en agua de la superficie y agua terrestre:

- **Cromo 6** encontrado en el acuífero regional debajo de LANL
  - Enero 2004 y Diciembre 2005, muestras enseñan niveles altos de cromo en ejemplares de agua terrestre de LANL
  - Cromo 6 puede ser venenoso a la salud humana y se ha mostrado que causa daño a los riñones, hígado, sistema circulatorio y sistema nervioso
- **PCBs** (befineles policlorados) encontrados en concentraciones muy altas en tierras, agua, y tejidos de pescados
  - Muestras han mostrado que concentraciones de PCBs en propiedad de LANL están tan altas como 2, 464,497ng/kg, mientras que muestras de otras localidades en el vertiente del Río Grande típicamente no están más altas que l000ng/k.o.
  - Concentraciones de PCBs en muestras de agua de tormentas desde Pueblo, Mortandad, Los Álamos, Sandia y Cañones del Agua todos están arriba del nivel de estandartes de cualidad de agua que son protectivos de hábitat de animales silvestres y salud de humanos. En el Cañón de Los Álamos, niveles de PCB estaban arriba de 25,000 veces del estandarte para la salud humana y 1,000 veces arriba del estandarte para hábitat de animales silvestres se han encontrado
  - En Febrero 2006, el Departamento del Medioambiente de Nuevo México emitió su primer advertencia de "no coman" pescado para el Río Grande a causa de contaminación de PCB
  - Se conoce que PCBs causan cáncer, daño al tiroideo, hígado, y estómago, y perjudica la reproducción
- **Percollado** encontrado en el acuífero regional, resultando en que fue cerrado una noria de agua potable de Los Álamos
  - Percollado fue encontrado en una muestra de agua debajo la tierra en Cañón Mortandad y en una noria de agua potable de Los Álamos
  - Siendo expuesto a percollado puede inhabilitar la función del tiroideo

Además, cañones que corren desde el sitio de LANL en el Altiplano Pajarito están apuntados como empeorado craso por Alfa, mercurio y selenio y no mantienen dos usos designados: agua para ganado y hábitat de animales silvestres. Por contraste, cañones no

localizados en ó cruzando propiedad de LANL no tienen estas condiciones empeorados y mantienen usos designados.

El Acta de Agua Limpia requiere permisos de Sistema de Eliminación de Descargos Contaminantes (NPDES, por sus siglas en ingles) para todos descargos de un origen de punto. Hemos identificado áreas de preocupación tocante a estos tres permisos. LANL esta cubierto bajo permisos numerosos NPDES incluyendo:

- el permiso individual de descargo de agua desperdiciada (Permiso Numero NM0028355)
- el Permiso Multé-Sector General para Descargos de Agua de Tormentas Asociado con Actividades Industriales (MSGP por sus siglas en ingles)
- el Permiso General de Agua de Tormentas de Actividades de Construcción.

RECOMENDACIONES

Amigos Bravos y CCNS hacen las siguientes recomendaciones para enfrentar con ambos tóxicos a lo largo y legados y descargos radio nucleidos en LANL:

- LANL debe ser requerido de instalar medidas de control de contaminantes en todos los 1,405 sitios de agua desperdiciada de tormentas contaminados.
- LANL debe ser requerido de realizar control adecuada de todos los 1,405 sitios de agua de tormenta contaminados.
- Requisitos para amonestación de descargos en el permiso individual para agua desperdiciada deben requerir colección de muestras a la orilla de la pipa donde el descargo se suelta al medioambiente y no en algún otro punto antes de viajar por pipas posiblemente contaminadas, tanques de deposito u otros medios de conducción.
- Limites numéricos de efluentes son conclusivos para identificar problemas y asegurar el esfuerzo y deben ser incluidos en el permiso para agua desperdiciada de tormenta individual.
- Una aplicación justo de los Estandartes Para Agua de Cualidad del Estado de Nuevo México para Aguas de la Superficie Entre Estados y Dentro el Estado se debe requerir. Especifico, aguas intermitentes en LANL deben ser protegidos por criterio de vida acuática crónica y criterio de la salud humana así como son todos los otros aguas intermitentes en todo el estado.
- Límites de efluente (polución) que son protectivos de vida acuática encontrado en cañones de LANL deben ser requeridos en el permiso individuo para agua desperdiciada de LANL. (Los límites corrientes no son protectivos).
- Amonestación y límites de efluente para descargos asociados con el Permiso de Multe-Sector General para Descargos de Agua de Tormenta Industrial debe ser requerido cuando la corriente que los recibe es empeorada.
- Una investigación completa de medidas para prevención de polución instalada (o no) en los 1942 acres de tierra perturbada de los 52 proyectos de construcción separados en LANL se necesita.

PROJECT BACKGROUND

Purpose

The Citizen Monitoring and Technical Assessment Fund Program (MTA Fund) was established, "to provide monies to 'eligible organizations' to procure technical and scientific assistance to perform technical and scientific reviews and analyses of environmental management activities at DOE sites".

The MTA Fund awarded Concerned Citizens for Nuclear Safety (CCNS) a grant funding the *Río Grande Watershed Initiative* (MTA-05-031) in August 2004; the project focused on state groundwater permitting issues. The MTA Fund awarded Amigos Bravos a grant funding the *White Rock Canyon Project* (MTA-06-006) in October 2004.

Amigos Bravos and CCNS collaborated in order to review the expiring federal National Pollutant Discharge Elimination System (NPDES) permits regulating discharges from Los Alamos National Laboratory (LANL). The two groups also sought to ensure that the issuance or re-issuance of new permits would result in the most stringent permits possible. Reviews would specifically include the Radioactive Liquid Waste Treatment Facility at Technical Area-50 (TA-50).

CCNS and Amigos Bravos contracted with experts in hydrogeology, water toxicology, and state and federal regulations. As part of our review of the NPDES permits and participation in the permitting processes, these experts and Amigos Bravos and CCNS staff:

- Reviewed and analyzed historic and current discharges to ephemeral and intermittent streams emanating from Pajarito Plateau, their potential impacts on human and wildlife health, and their relationship to long-term stewardship efforts at LANL;
- Analyzed the nature of surface and groundwater discharges from LANL, the transference of pollutants between surface and groundwater in the area, and the potential or actual contamination of drinking water sources, including the Río Grande, in the region;
- Reviewed and analyzed stormwater runoff issues at LANL;
- Informed the public about our findings;
- Aided communities surrounding and downstream from LANL in understanding the threat LANL poses to the Río Grande watershed;
- Explained the ways in which stringent NPDES permits help to protect the river; and
- Continued the dialogue with decision-makers in the city, county, and Pueblo governments surrounding LANL and with the Environmental Protection Agency (EPA) and the State of New Mexico regarding their various oversight responsibilities and opportunities for protecting the Río Grande watershed and regional groundwater sources.

Organization Missions

Amigos Bravos. Amigos Bravos is a nationally recognized state-wide river conservation organization guided by social justice principles and dedicated to preserving and restoring the ecological and cultural integrity of New Mexico's rivers and watersheds. While rooted in science and the law, Amigos Bravos' work is inspired by the values and traditional knowledge of

New Mexico's diverse Hispanic and Native American land-based populations, with whom it works.

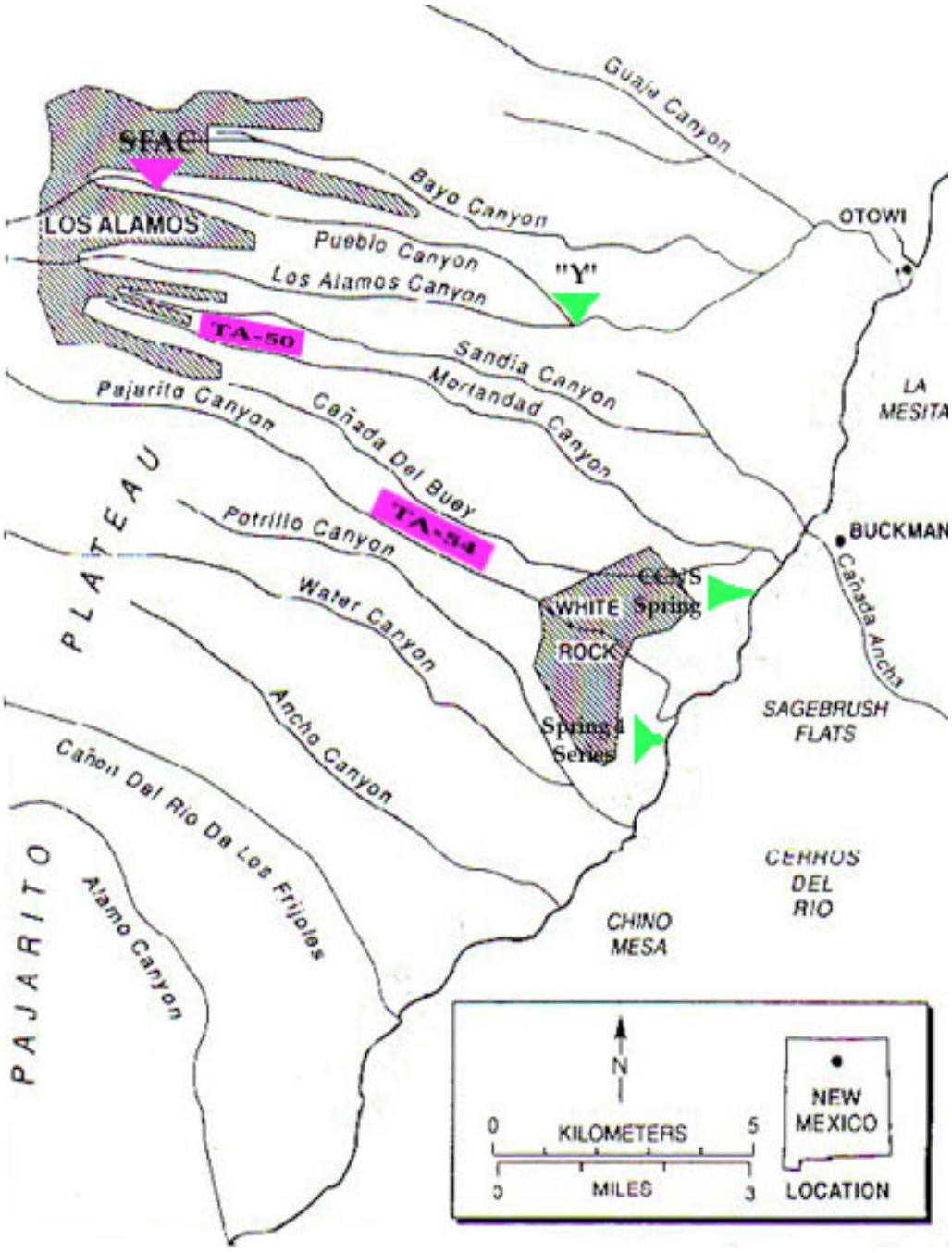
Founded in 1988 and based in Taos and Albuquerque, Amigos Bravos' mission is to return New Mexico's rivers and the Río Grande watershed to drinkable quality wherever possible and to contact quality everywhere else; to see that natural flows are maintained and where those flows have been disrupted by human intervention to see that they are regulated to protect and reclaim the river ecosystem by approximating natural flows; to preserve and restore the native riparian and riverine biodiversity; to support the environmentally sound and sustainable traditional ways of life of indigenous cultures; and to ensure that environmental justice and social justice go hand-in-hand. Drawing on this mission and the recommendations of the Board, staff, and Advisory Council, Amigos Bravos' most recent three-year Strategic Plan reaffirms three long-standing goals: Restore Watershed Health, Hold Polluters Accountable, and Build a River Protection Movement.

Concerned Citizens for Nuclear Safety. CCNS is a nonpartisan, non-profit organization, based in Santa Fe, focused on increasing public awareness about the environmental and public health impacts of the nuclear weapons complex in New Mexico. The mission of CCNS is to protect all living beings and the environment from the effects of radioactive and other hazardous materials now and in the future. CCNS formed in 1988 to give voice to community concerns about the transportation of nuclear materials from LANL to the Waste Isolation Pilot Plan (WIPP) through Santa Fe. CCNS is composed of a broad base of citizens from a wide range of cultures who share a commitment to making public information about the environmental and health impact of the research, production, handling, transportation and disposal of radioactive and hazardous materials. CCNS works locally for global disarmament.

Since the May 2000 Cerro Grande fire, which burned 7,000 acres of LANL property, CCNS has focused its efforts on surface and ground water contamination emanating from LANL. CCNS has organized four citizen-based independent sampling trips along the Río Grande in White Rock Canyon below LANL. Representatives from the New Mexico Environment Department, LANL, Amigos Bravos, and the Embudo Valley Environmental Monitoring Group, as well as independent technical experts, participated in the trips.

AREA HYDROLOGY AND WATER CONTAMINATION FROM LOS ALAMOS NATIONAL LABORATORY

Los Alamos National Laboratory (LANL) is located on the Pajarito Plateau, approximately 25 miles northwest of Santa Fe, New Mexico. The plateau consists of a series of west-east running mesas and canyons that flow to the Río Grande. Streams in the bottoms of the canyons generally flow only in response to rainfall or melting snow, although there are some limited areas where they flow perennially, either naturally or due to discharges from LANL.



Groundwater at LANL occurs in four zones [see definitions below]: 1) as shallow perched zones in volcanic rock, 2) as shallow perched zones in alluvium along canyon bottoms, 3) as intermediate perched zones, and 4) in the regional aquifer. Water from the perched zones infiltrates to the underlying regional aquifer.

Surface water and groundwater on the Pajarito Plateau flow toward the Río Grande. When there is a sufficient amount of flow, the streams in the canyons discharge to the Río Grande. The regional aquifer discharges to springs that emerge along the Río Grande.

Definition of hydrologic terms

Groundwater	All subsurface water, especially the part that is found in the zone of saturation (the zone where water fills the interstices within the rock layers and is under pressure)
Aquifer	A subsurface zone in a permeable body of rock that yields important quantities of water for wells and springs
Regional aquifer	The aquifer of a large region, from the viewpoint of the spatial distribution and position of geological strata, structural features, and landforms
Perched water zone	Groundwater that is unconfined and separated from an underlying main body of water (aquifer) by an unsaturated zone (the zone where water does not fill the interstices within the rock layers)
Surface water	All waters, including lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, reservoirs, or natural ponds. Surface waters also means all tributaries of such waters, including adjacent wetlands, any manmade bodies of water that were originally created in surface waters or resulted in the impoundment of surface waters. Surface waters does not include private waters that do not combine with other surface or subsurface water or any water under tribal regulatory jurisdiction pursuant to Section 518 of the Clean Water Act.
Perennial stream	When used to describe a surface water, a perennial stream means the water body contains water continuously throughout the year in all years; its upper surface, generally, is lower than the water table of the region adjoining the stream.
Intermittent stream	When used to describe a surface water, an intermittent stream means a water body that contains water only at certain times of the year, such as when it receives flow from springs, melting snow, or precipitation.
Ephemeral stream	When used to describe a surface water, an ephemeral stream means a water body that flows only in direct response to precipitation or melting snow in the immediate locality; its bed is always above the water table of the adjacent region.
Segment	The state classifies surface water into segments. The water within a segment should have the same uses, similar hydrologic characteristics or flow regimes and natural physical, chemical and biological characteristics, and exhibit similar reactions to external stresses, such as the discharge of pollutants. Segments are listed from the downstream location upstream.
Tributary	A perennial, intermittent, or ephemeral water body that flows into a larger water body, and includes a tributary of a tributary.
Alluvium / alluvial deposit	Fragmented organic and inorganic products that are eroded, transported, and deposited by streams onto solid rock shelves

LANL has always discharged liquid wastes from its industrial operations to the mesas and canyons of the plateau. LANL's mid-1940s management decision was to dump untreated

radioactive wastes into the Los Alamos and Pueblo Canyon system. Lab scientists warned at the time that such discharges would accumulate and lead to highly contaminated conditions in canyons that flow to the Río Grande, posing a considerable risk to both groundwater and the river itself. (LANL, 1996) These discharges have resulted in the contamination of surface water, soils and sediment, and groundwater. Contaminants have entered the perched aquifers as well as the regional aquifer. The regional aquifer serves as the sole drinking water supply for Los Alamos County, which includes the communities of Los Alamos and White Rock. Contaminants are also discharging from springs along the Río Grande.

Over the years, LANL has discharged liquid radioactive wastes to Pueblo, Los Alamos, and Mortandad canyons. The wastes contained tritium, cesium-137, plutonium-238, and americium-241. Sediments containing high concentrations of radionuclides have been found in Pueblo, Los Alamos, Mortandad, Pajarito, and Ancho canyons. Sediments contaminated with LANL-derived plutonium have been transported onto Pueblo of San Ildefonso lands. Plutonium contaminated sediments have also been transported to the Río Grande and deposited in Cochiti Reservoir, approximately five miles downstream of LANL. (LANL, 2004, P148)

From the beginning of operations at LANL, starting in 1943, raw radioactive liquid wastes generated at the lab were discharged without any treatment directly into Pueblo and Los Alamos Canyons. (LANL, 1996, P9) In memos dating back to the late 1940s, the lab categorized these areas as "highly contaminated" and acknowledged that the waste generated at LANL could eventually enter the Río Grande (LANL 1947). By 1947, the lab had knowledge that areas of these canyons that were accessible to the public were contaminated with plutonium, polonium, and uranium. At this time – in a pattern that has become familiar – LANL resisted installing fences to keep members of the public from coming in contact with this contaminated material. (LANL 1996, p14)

Contaminants associated with LANL include:

- Radionuclides, e.g., tritium, strontium-90, and plutonium-238
- Organics, e.g., benzoic acid, bis(2-ethylhexyl)phthalate, PCBs
- High explosives, e.g., 2,4-dinitrotoluene, HMX, RDX)
- Metals, e.g., arsenic, chromium, lead
- Nitrates
- Perchlorates

Concentrations of plutonium in lower Pueblo Canyon continue to rise every year (LANL, 2005) indicating that historic contamination is still moving downstream and towards the Río Grande. LANL has recently acknowledged that radioactive contamination has moved off LANL property onto Pueblo of San Ildefonso lands and has reached the Río Grande (LANL 2005, p168). Even though the lab has known of this off-site transport of radioactive contamination since 1997, and most likely well before that, sampling to determine the total inventory of radionuclides that

moved off the Lab and into adjacent lands and waters from Pueblo and Los Alamos canyons was not conducted until 2000 – and then only for three years. Despite the fact that this data indicated a substantial increase of plutonium-239 and -240 from estimated levels in 1997, the sampling was stopped in 2004. (LANL, 2005)

In addition to direct discharges into the canyon systems running down from the LANL site, radioactive liquid waste and other radioactive wastes have been disposed of in unlined pits, trenches, and shafts across LANL property. For example, large volumes of laundry wastewater that was contaminated with high levels of gross alpha, gross beta, plutonium, and radioactive strontium were disposed of in unlined pits above Los Alamos Canyon from 1945-1961. In 1993, the Omega West reactor was discovered to be leaking tritium into Los Alamos Canyon. In 2004, high concentrations of hexavalent chromium (over 400 micrograms per liter (µg/L)[2]) were detected in the regional aquifer beneath Mortandad Canyon.[3] (LANL, 2006b)

In 1995, the All Indian Pueblo Council (AIPC) Environmental Office notified the Agency for Toxic Substances and Disease Registry (ATSDR) that tritium contamination had been detected in several groundwater wells in and around LANL. ATSDR reviewed the data and determined in their report that the source of the tritium could not be determined and that the levels of tritium in the wells were not high enough to exceed EPA drinking water limits. (ATSDR, 1995a) Also in 1995, Indian Health Service notified ATSDR that three residential wells on the Pueblo of San Ildefonso had concentrations of nitrates above the maximum contaminant level (MCL) of 10ppm. ATSDR provided the Pueblo with information about how to avoid contamination, but the source of the nitrates was not identified in their report. (ATSDR, 1995b)

LANL-derived contaminants are discharging from springs along the Río Grande. Perchlorate and organics (e.g., bis(2-ethylhexyl)phthalate, naphthalene) have been detected in the discharge of Spring 4, near the mouth of Pajarito Canyon. Explosives (e.g., 2,4-dinitrotoluene, RDX) have been detected in springs discharging near the mouth of Ancho Canyon (Ancho Spring, Spring 6, and Spring 9). (CCNS, 2004; LANL, 2006)

SURFACE WATER QUALITY STANDARDS

The Clean Water Act was passed in 1972. Its primary goal is "to restore and maintain the chemical, physical and biological integrity of the Nation's waters." CWA, Section 303(d)(4)(B).

State surface water quality standards have been developed for all rivers and streams in New Mexico in order to prevent pollution and improve the quality of our water. There are three parts to water quality standards: designated uses, water quality criteria, and antidegradation

[2] Regional Well R-28. The New Mexico Water Quality Control Commission standard for total chromium is 50µg/L or 50 parts per billion (ppb). The EPA Maximum Contaminant Level (MCL) for chromium in drinking water is 100µg/L or 100ppb. Generally, if total chromium is found above 50µg/L, it is in the hexavalent form.

[3] LANL did not report the finding until late December 2005; the NMED has proposed a significant fine for this failure to report.

requirements. Water quality standards define the water quality goals and pollution limits for streams, rivers, lakes and other water bodies. Different standards are set for different water bodies depending on how the bodies are used. Specific standards for LANL may be found in the next section of this report.

"Designated uses" are the foundation of water quality standards.[4] Designated uses are the official human and ecological uses of the water that must be protected by standards. Human use includes a range of uses, from recreation on the water, such as boating and fishing, to direct (primary) contact with the water, such as swimming. It also includes drinking of surface water for ceremonial or cultural purposes (although, in general, drinking water standards for home and industrial purposes are established under the Safe Drinking Water Act). Ecological uses include the ability for native aquatic life to live and propagate in the water and, more specifically for this area of New Mexico, for cold water fishery.

Water quality criteria, such as narrative criteria and numeric pollution limits, are then set to protect these designated uses. Narrative criteria can be general statements that establish the water quality goals. Narrative criteria supplement the more specific numeric criteria, which set the maximum acceptable concentration for listed pollutants found in water.[5] They can also set the standards for a healthy water body, with data such as pH levels.

Antidegradation requirements work in two ways; one is to protect water quality once the minimum goals are reached for a water body through the designated uses and water quality criteria; the second is to protect a water body that is meeting or exceeding the standards.

Definition of designated uses and related terms

Designated use	A use specified in Sections 20.6.4.101 through 20.6.4.899 New Mexico Administrative Code (NMAC) for a surface water whether or not it is being attained.
Existing use	A use actually attained in a surface water of the state on or after November 28, 1975, whether or not it is a designated use.
Criteria	Elements of state water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a use. When criteria are met, water quality will protect the designated use.
Impaired	Waters are defined as impaired when they do not support, or only partially support, one or more of five designated uses, (i.e. aquatic life, fish consumption, shellfish consumption, swimming, and drinking water).
Aquatic life	Any plant or animal life that uses surface water as primary habitat for at least a portion of its life cycle, but does not include avian or mammalian species.
Limited aquatic life	As a designated use, limited aquatic life means the surface water is capable of supporting only a limited community of aquatic life. This subcategory of aquatic life includes surface waters that support aquatic species selectively adapted to take advantage of naturally occurring rapid environmental changes, ephemeral or

[4] The information in this section comes from River Network's, The Clean Water Act Owner's Manual, 2nd Ed.
[5] There is a large and growing number of pollutants that are not "listed" and for which there are no standards, though some have "goals" (which are not enforceable). These contaminants are often referred to as "emerging contaminants".

	intermittent water, high turbidity, fluctuating temperature, low dissolved oxygen content, or unique chemical characteristics.
Livestock watering	The use of a surface water of the state as a supply of water for consumption by livestock.
Wildlife habitat	A surface water used by plants and animals not considered as pathogens, vectors for pathogens, or intermediate hosts for pathogens for humans or domesticated livestock and plants.
Primary contact	Any recreational or other water use in which there is prolonged and intimate human contact with the water, such as swimming and water skiing, involving considerable risk of ingesting water in quantities sufficient to pose a significant health hazard. Primary contact also means any use of surface waters for cultural, religious, or ceremonial purposes in which there is intimate human contact with the water, including but not limited to ingestion or immersion that could pose a significant health hazard.
Secondary contact	Any recreational or other water use in which human contact with the water may occur and in which the probability of ingesting appreciable quantities of water is minimal, such as fishing, wading, commercial and recreational boating, and any limited seasonal contact.
Acute toxicity	Toxicity involving a stimulus severe enough to induce a response in 96 hours of exposure or less. Acute toxicity is not always measured in terms of lethality, but may include other toxic effects that occur within a short time period.
Chronic toxicity	Toxicity involving a stimulus that lingers or continues for a relatively long period relative to the life span of an organism. Chronic effects include, but are not limited to, lethality, growth impairment, behavioral modifications, disease, and reduced reproduction.
Turbidity	Turbidity is lack of clarity in water caused by suspended fine solids. It is expressed as an optical property in water that causes incident light to be scattered or absorbed rather than transmitted in straight lines.

Source: New Mexico Water Quality Control Commission, 2005. State of New Mexico Standards for Interstate and Intrastate Surface Waters, as amended through May 23, 2005 Water Quality Control Commission, Santa Fe, NM. http://www.nmcpr.state.nm.us/nmac/parts/title20/20.006.0004.pdf; except "impaired".

SURFACE WATER QUALITY AT LANL

As of May 23, 2005, the following are the New Mexico water quality standards (set by the New Mexico Water Quality Control Commission) for waters on LANL property (NEW MEXICO WATER QUALITY CONTROL COMMISSION, 2005):

> **"20.6.4.128 RÍO GRANDE BASIN**- Ephemeral and intermittent portions of watercourses within lands managed by U.S. department of energy (DOE) within LANL, including but not limited to: Mortandad canyon, Canada del Buey, Ancho canyon, Chaquehui canyon, Indio canyon, Fence canyon, Potrillo canyon and portions of Canon de Valle, Los Alamos canyon, Sandia canyon, Pajarito canyon and Water canyon not specifically identified in 20.6.4.126 NMAC. (Surface waters within lands scheduled for transfer from DOE to tribal, state or local authorities are specifically excluded)
>
> **A. Designated Uses**: livestock watering, wildlife habitat, limited aquatic life and secondary contact.

B. Criteria:

(1) The use-specific criteria in 20.6.4.900 NMAC, except the chronic criteria for aquatic life are applicable for the designated uses listed in Subsection A of this section.
(2) The monthly geometric mean of E. coli bacteria 548 cfu/100mL or less; single sample 2507cfu/100mL or less (see Subsection B of 20.6.4.14 NMAC).
(3) The acute total ammonia criteria set forth in Subsection K of 20.6.4.900 (salmonids absent) are applicable to this use."

Under the Clean Water Act, states are required to review their water quality standards every three years. This review is commonly known as the Triennial Review. During the 2004-2005 Triennial Review of New Mexico's water quality standards, there were a number of improvements to surface water quality standards relevant to LANL property. First of all, aquatic life and human contact uses were added to the designated uses for LANL's waters. Previously, the only designated uses for LANL waters were the less stringent livestock watering and wildlife habitat standards.

The changes that were finalized on May 23, 2005 were a step in the right direction, but unfortunately they did not go far enough. The current standards are insufficient in that water quality standards on LANL property are less stringent than standards applied to similar intermittent waters in other parts of New Mexico in two ways. First, LANL now has the only intermittent waters in the state that have water quality standards that do not fully protect aquatic life. Other intermittent waters in New Mexico have *acute aquatic life* numeric criteria protections and the more stringent *chronic aquatic life* numeric criteria protections. The intermittent waters on LANL property only have acute aquatic life criteria protections. Second, intermittent waters on LANL property are not protected with the *human health* numeric criteria that apply to all other intermittent waters in the state.

The ephemeral waters on LANL are given the same protections as ephemeral waters in other places in New Mexico. However, many experts do not believe that these are sufficiently protective. Ephemeral waters do not receive chronic aquatic life protections or human health criteria protections. The US Fish and Wildlife Service has indicated that they believe that chronic life protections should apply to both ephemeral and intermittent waters on LANL property to protect aquatic life, such as the native pill clam and the spade-foot toad, both of which are found on LANL property. (LUSK, J.D., R.K. RUSSELL, D. CHAPMAN, AND A. ALLERT, 2002)[6] Efforts to make the standards on LANL property more protective of both human uses and aquatic ecosystems should be pursued by the public during the next Triennial Review process, which may begin in 2008.

[6] And personal communication with Joel D. Lusk on March 9th 2006.

REVIEW OF LANL CANYONS FINDINGS

Even with the less stringent standards currently applied to LANL's discharges and waste sites, there are numerous water bodies, partially or wholly on LANL property, that are not meeting New Mexico water quality standards. In addition to the findings listed below, sediments containing high concentrations of radionuclides have been found in Pueblo, Los Alamos, Mortandad, Pajarito, and Ancho canyons. LANL is known to have discharged untreated and treated liquid radioactive wastes to Pueblo, Los Alamos, and Mortandad canyons. The wastes contained tritium, cesium-137, plutonium-238, and americium-241. (LANL, 2004; CCNS, 2004)

Many of the canyons found on LANL property are officially listed as polluted by the New Mexico Environment Department for gross alpha[7], selenium, mercury or all three. The US Fish and Wildlife Service, in a 2002 study of water quality at LANL, found elevated concentrations of aluminum, barium, chromium, molybdenum, explosives, and polychlorinated biphenyls (PCBs) in either water, sediment, sediment porewater, caddisflies, or caged fish.[8] (LUSK, 2002) Transport of radionuclides from LANL to beyond LANL's downstream boundary had increased by as much as 50 to 80 times from levels recorded in the late 1990s. (LANL 2005) This may be due to increased runoff following the May 2000 Cerro Grande fire[9], which has increased the volume and velocity of water hitting contaminated sites on LANL and mobilizing contaminants through increased stormwater runoff.

There are many chemical, metallic, and radionuclide toxins discharged and detectable on LANL property and in the streams and canyons below the lab. These include:

- A wide range of radionuclides such as uranium, tritium, barium, cesium-137, strontium, plutonium-238, plutonium–239,240, and americium-241;
- Metals such as copper, silver, lead, aluminum, molybdenum, zinc, cadmium, and mercury;
- Explosives such as HMX and RDX;
- Acids and solvents. (LANL, 2005, P168; CCNS, 2004)

[7] Gross alpha is the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample; alpha particles are positively charged particles – identical to the nucleus of the helium atom – that are emitted by a number of radioactive substances. There are other measures of radioactivity that involve different particles.

[8] Sediment *porewater* is water filling the spaces between grains of sediment; sediment is particles of organic or inorganic material suspended in water or which has settled to the bottom of slow-moving streams or ponds and lakes. *Caddisfly* is the common name for all members of the insect order Trichoptera; the adults are mothlike, while the immature stages are aquatic. *Caged fish* are exactly that: fish held in place in bodies of water in order to test the affects or levels of pollution.

[9] The Cerro Grande fire (May 2000) was the largest, most destructive wildfire in New Mexico history, burning nearly 48,000 forested acres in Bandelier National Monument, the Santa Fe National Forest, Los Alamos National Laboratory, Los Alamos County, and the Pueblos of Santa Clara and San Ildefonso. It caused about $1billion in property damage, left over 400 families homeless, and burned over 100 LANL structures.

The following is a list of pollutant concerns by canyon systems beginning from the north and moving to the southern canyons across the Pajarito Plateau:[10]

Guaje Canyon

Guaje Canyon from the Pueblo of San Ildefonso boundary to its headwaters is impaired for gross alpha and selenium. [11] The probable causes of impairment identified by the state include inappropriate waste disposal, natural sources, post-development erosion, surface mining, and increased watershed runoff following a forest fire. Because of these impairments, two designated uses are not being supported – livestock watering and wildlife habitat.

Pueblo Canyon

Pueblo Canyon, from Los Alamos Canyon to its headwaters, is impaired for gross alpha, mercury, and selenium. The New Mexico Environment Department (NMED) has identified a number of probable causes of impairment such as contaminated sediments, impervious surface water runoff, inappropriate waste disposal, industrial site stormwater discharge, post-development erosion and sedimentation, RCRA hazardous waste sites[12], and increased watershed runoff following a forest fire. Because of these impairments, two designated uses are not being supported – livestock watering and wildlife habitat. LANL has identified elevated levels of radioactivity in both the surface water and stream bottom deposits in Pueblo Canyon. (LANL 2005)

On June 10, 2000, NMED DOE Oversight Bureau sampling of stream sediment in Pueblo Canyon showed PCB concentrations at 8878.9ng/kg.[13] Samples taken on January 23, 2001, in Graduation Canyon, a tributary of Pueblo Canyon, showed PCB concentrations ranging from 309,852 to 723,032ng/kg. Samples of stream sediment taken from other locations in the Río Grande watershed are typically not higher than 1000ng/L.[14]

LANL has discharged liquid radioactive wastes including tritium, cesium-137, plutonium-238, and americium-241 into Pueblo Canyon. (LANL, 2005, P168; CCNS, 2004) High concentrations of waste-related radionuclides such as plutonium-239 and -240 have been detected in stormwater runoff in Pueblo Canyon. (LANL, 2005) NMED estimates 21mCi of

[10] A summary of this information may be found in a number of fact sheets, prepared by the authors and distributed to concerned members of the public. The fact sheets can be found in the appendices, A1-9.
[11] All information about impaired waters and probable causes is found in New Mexico Water Quality Control Commission, 2004.
[12] The Resource Conservation and Recovery Act (RCRA) of 1976 gave EPA the authority to regulate hazardous waste from the generation, transportation, treatment, storage, and disposal of hazardous waste, which is sometimes referred to as a "cradle-to-grave" regulatory scheme. RCRA also set forth a framework for the management of non-hazardous wastes.
[13] All PCB concentration data was taken from NMED DOE Oversight Bureau, 2004. All samples from this report were analyzed using EPA method 1668A.
[14] However, there was a sample taken on June 10, 2003, from the San Jose Drain in Albuquerque that contained PCB concentrations of 196,140ng/kg.

plutonium -239/-240 were transported out of Pueblo Canyon in six of thirty-five stormwater events between 2000 and 2002 in 5,800 tons of suspended sediment. (NMED 2004)

Los Alamos Canyon

Los Alamos Canyon from the San Ildefonso boundary to Los Alamos Reservoir is impaired for gross alpha and selenium. The probable causes of impairment identified by the state include inappropriate waste disposal, industrial stormwater discharge, natural sources, post-development erosion, and increased watershed runoff following a forest fire. Because of these impairments, two designated uses are not being supported – livestock watering and wildlife habitat. LANL has found radioactivity in both surface water and stream bottom deposits (sediments) in Los Alamos Canyon and has detected concentrations of copper, lead, and zinc above acute water quality standards. (LANL, 2005)

In 2004, mercury was detected in surface water sampling in Los Alamos Canyon at 1.5 times the water quality standards for the canyon. (LANL 2005) Stormwater sampling done in 2003 showed high levels of PCBs in Los Alamos Canyon. On August 25, 2003, the NMED DOE Oversight Bureau collected stormwater samples that had concentrations of PCBs at 14,178ng/L. The NM PCB water quality standard for wildlife habitat is 14ng/L and the human health standard is 0.64ng/L. On August 23, 2003, a stormwater sample taken from Los Alamos Canyon upstream from DP canyon had a PCB concentration of 16,900ng/L. At one time there were 12 NPDES permitted discharges into Los Alamos Canyon. Under the current permit, the discharges have been reduced to three.

In 1993, the Omega West reactor was discovered to be leaking tritium into Los Alamos Canyon. It is not known how long the reactor had been leaking, but it could have leaked since it began operating in 1956. The leakage rate was estimated to be three gallons per hour and the tritium concentration of the leakage was probably greater than 100,000pCi/L.[15] (CCNS, 2004) The federal drinking water standard for tritium is 20,000pCi/L.

LANL has identified probable contaminants of Los Alamos Canyon as uranium, plutonium, tritium, strontium, cesium, chromium, mercury, acids, and solvents. (LANL 1995) In addition to contaminants presently found in the canyon, there is also mesa top contamination from LANL activities and from the Los Alamos town site that may reach the canyons through erosion, runoff, flooding, and storm and melting snow events. (LUSK, 2002)

Sandia Canyon

Sandia Canyon from the Pueblo of San Ildefonso boundary to its headwaters is impaired for PCB aroclors including PCB-1254 and PCB-1260. Because of this impairment, the wildlife habitat designated use is not being met for Sandia Canyon. The New Mexico Environment Department has identified atmospheric deposition, inappropriate waste disposal, landfills, and

[15] pCi/L (Pico curies per liter): A unit of measurement for radioactivity. A Pico curie is equivalent to the radioactivity present in one trillionth of one gram of pure radium. mCi/L means Micro curie per liter and corresponds to one billionth of one gram.

post-development erosion and sedimentation as probable causes of the contamination. On January 10, 2001, stream sediment samples taken in Sandia Canyon showed PCB concentrations ranging from 611,471 – 2,464,497ng/kg. In 2004, dissolved copper concentrations in stormwater runoff were measured at 12 times over water quality standards. Dissolved lead was detected at 2 times the standard and dissolved zinc was measured at 9 times above the standard. (LANL 2005) In 2003, perchlorate was detected in a January base-flow sample taken in Sandia Canyon at concentrations of 18.5ug/L. Sampling in 2004 found perchlorate concentrations of .5-.7ug/L (LANL 2005)

The US Fish and Wildlife Service found that taxa richness (the diversity of types) of benthic macro-invertebrates[16] was one-fourth that of the reference site. The Service has determined that Sandia Canyon has a 30 percent impairment. (Lusk, 2002)

Mortandad Canyon

Mortandad Canyon from the Pueblo of San Ildefonso boundary to its headwaters is impaired for gross alpha and selenium. The probable causes of impairment identified by the state include inappropriate waste disposal, natural sources, impervious surface runoff, post-development erosion, and increased watershed runoff following a forest fire. Because of these impairments, two designated uses are not being supported – livestock watering and wildlife habitat. Stormwater data from 2003 show high levels of PCBs in Mortandad Canyon. In samples collected on October 6, 2003, PCB concentrations were at 41.4ng/L. In 2004, a stormwater sample contained radioactive americium-241 at 1.4 times over the DOE recommended concentration. Americium-241, cesium-137 and plutonium-239/-240 are consistently found in sediments in Mortandad Canyon (LANL 2005). Stormwater samples in 2004 found dissolved copper at 1.4 times greater than the acute aquatic life standard. Radioactivity is consistently detected in sediment samples in Mortandad Canyon. (LANL 2005)

Pajarito Canyon

Pajarito Canyon from the Río Grande to the headwaters is impaired for gross alpha and selenium. The probable causes of impairment identified by the state include inappropriate waste disposal, natural sources, post-development erosion, and increased watershed runoff following a forest fire. Because of these impairments, two designated uses are not being supported – livestock watering and wildlife habitat.

LANL has identified the most probable contaminants in Pajarito Canyon as explosives, radionuclides, asbestos and heavy metals, including lead, iron, mercury, and cadmium. (LANL, 1999) Elevated levels of radioactive americium-241, plutonium-238, and plutonium-239/-240 have been detected in the canyon. Dissolved copper concentrations were found at concentrations

[16] Benthic macroinvertebrates are bottom -dwelling animals larger than ½ mm. They include crustaceans, mollusks, aquatic worms, and immature aquatic insects. They can give reliable information about stream and lake water quality and their long life cycles allow studies to determine any decline in environmental quality, including detection of past pollution events, such as pesticide spills and illegal dumping.

above New Mexico water quality standards. Sediment samples showed cesium-137 levels four times above background levels in this canyon. (LANL 2005)

There once were 17 NPDES outfalls into Pajarito Canyon, but these discharges have been eliminated or consolidated into other discharges in other canyons. Now there are no longer any permitted NPDES point-source discharges in the canyon. Questions remain as to the whereabouts of the historic contaminants that were discharged into the canyon system prior to the development of water quality standards.

The US Fish and Wildlife Service determined in 2002 that the benthic macro-invertebrate community was slightly impaired in Pajarito Canyon compared to a reference site in Los Alamos Canyon upstream from the lab. (LUSK, 2002)

Water Canyon

Water Canyon from the Río Grande to the headwaters is impaired for gross alpha and selenium. The probable causes of impairment identified by the state include inappropriate waste disposal, industrial point source discharge, industrial stormwater discharge, natural sources, post-development erosion, and increased watershed runoff following a forest fire. Because of these impairments, two designated uses are not being supported – livestock watering and wildlife habitat.

There were once eight outfalls into the Water Canyon system. Now there are four active NPDES point-source discharges into the canyon.

In 2002, the US Fish and Wildlife Service found Valle Canyon, a smaller tributary to Water Canyon, to be 30 percent impaired. They also detected surface water toxicity to laboratory invertebrates. (LUSK, 2002) LANL has identified the most probable contaminants in the Valle Canyon to be explosives, PCBs, and heavy metals, such as lead, mercury, silver, and barium. (LANL, 1999) Elevated levels of barium and explosives, such as HMX and RDX, have been detected in both sediment and surface waters. (LANL, 2005)

Ancho Canyon

Ancho Canyon is fully supporting the wildlife habitat designated use. The livestock watering designated use has not been fully assessed by the state.

Río Grande – White Rock Canyon

The Río Grande from Cochiti Reservoir to the Pueblo of San Ildefonso boundary is impaired for turbidity. This impairment has resulted in two uses not being supported in this stretch of the Río Grande – marginal coldwater fishery and warmwater fishery[17]. The New

[17] A "fishery" is a surface water of the State where the water temperature and other characteristics are suitable for the support or propagation or both of fish. "Coldwater" fish (stream temperature below 68^{O}) in New Mexico are trout and salmon; "warmwater" fish are bass, channel catfish, pike, and others. "Marginal" coldwater fisheries sometimes have temperatures that can support coldwater fish. "High Quality" coldwater fisheries also have aesthetic characteristics. Bureau of Land Management, *Water Quality Law Summary – New Mexico*, http://www.blm.gov/nstc/WaterLaws/newmexico2.html

Mexico Environment Department has identified natural sources and unknown sources as the cause of this impairment. Turbidity is often caused by stormwater run-off and EPA has identified serious stormwater pollution control problems at LANL.[18]

Non-LANL Canyons of the Pajarito Plateau

Rito de los Frijoles is a tributary to the Río Grande from the Pajarito Plateau, but is not located on LANL property and is not used by LANL as an outfall. It is not presently impaired for selenium or for gross alpha. The designated use wildlife habitat is being fully supported, but the livestock watering use has not been assessed. This segment is impaired for the pesticide DDT, fecal coliform, temperature, and turbidity. The New Mexico Environment Department has identified natural sources, recreational pollution sources, spill related impacts, and unknown sources as the probable sources of the impairment.

Capulin Creek, another tributary to the Río Grande from the Pajarito Plateau is also not impaired for selenium or gross alpha. The wildlife habitat designated use is fully supported, but it has not been assessed for livestock watering. This drainage is impaired for sedimentation/siltation and for benthic macro-invertebrates. The New Mexico Environment Department lists increased watershed runoff following a forest fire as the probable source of impairment.

OTHER WATER QUALITY CONCERNS AT LANL AND IMPLICATIONS FOR HUMAN HEALTH

Chromium

Chromium is a hard, lustrous, silvery-white metal. It occurs in nature and is found in plants and soils. Chromium is naturally present at low-levels in groundwater. Generally, chromium levels found in groundwater above 50ppb are hexavalent chromium (see below). Chromium is also found in the atmosphere as a result of emissions from chemical manufacturing and combustion of coal, oil, and natural gas. In industry, chromium is used to harden steel, form metal alloys, and manufacture stainless steel. It is also used in metal plating and to prevent corrosion in steam power plants.

There are two forms of chromium that are important at LANL: trivalent (or chromium 3) and hexavalent (or Chromium 6). Trivalent chromium is known to positively contribute to health. Hexavalent chromium was the controversial toxin dramatized by the Hollywood production, *Erin Brockovich*. Hexavalent chromium is toxic and a major concern to public health. The EPA has found chromium to be toxic, even from brief exposure. Exposure to hexavalent chromium may be irritable to the gastrointestinal tract, skin and lungs, cause carcinoma of the lung, and perforation of the nasal septum. Long-term exposure to chromium

[18] See section below on stormwater issues for details about LANL stormwater problems on page **.

above the New Mexico Drinking Water Standards and the EPA Maximum Contaminant Level has the potential to cause the following human health effects: damage to kidney, liver, circulatory, and nerve tissues, including skin irritation.

In December 2005, LANL reported to the New Mexico Environment Department (NMED) high levels of total chromium in a LANL characterization well, drilled to detect contamination in the regional aquifer. This was nearly two years after the hexavalent chromium was detected.[19] The January 2004 chromium findings were 270ppb, but have increased over a two-year period to 405ppb. In 1992, federal regulation of chromium went into effect. The New Mexico Drinking Water Standard (NMDWS) is 50ppb. The Environmental Protection Agency (EPA) Maximum Contaminant Level (MCL) standard is 100ppb. The chromium may be migrating to five drinking water supply wells in the regional aquifer surrounding R-28. The nearest drinking water supply well is approximately 5000 feet from the portion of the aquifer that is known to be contaminated with chromium.

PCBs

Polychlorinated Biphenyls (PCBs) are a group of industrial chemicals used in electrical equipment, such as transformers and capacitors, and as lubricants and coolants. Up to 209 individual chlorinated compounds can be combined to make different PCBs and are called aroclors. PCBs can be oily liquids, solids, or vapors in air and have no taste or smell. PCBs can travel long distances through the air. Once settled, they bind strongly to soil. In water, PCBs travel on organic particles and bottom sediments. The manufacturing of PCBs was banned in 1977 because they were proven to bioaccumulate in the environment and cause adverse health effects. Small aquatic organisms and fish take up PCBs, and then other animals eat the small organisms, thus bioaccumulating the PCBs. Tissue samples taken from fish, birds, animals, and humans indicate PCB levels thousands of times higher than found in water. Humans are exposed to PCBs by eating contaminated food, including fish, dairy products, and meat caught from contaminated locations. Other exposure routes include drinking contaminated well water and breathing air near hazardous waste sites.

PCBs are known to cause cancer, damage the thyroid, liver and stomach, impair reproduction, change the immune system, and alter behavior in animals. They are a possible carcinogen in humans. Other human health effects include acne-like skin conditions and liver damage. Pregnant women who eat PCB-contaminated fish may have babies with damaged immune systems and abnormal responses to infant behavior tests, including a decrease in short-term memory and problems with motor skills. The main exposure pathway for infants is through breast-feeding. In children, exposure may cause neurobehavioral and immunological changes.

[19] NMED says in its December 29, 2005 letter to LANL that, "[s]ince notification, NMED has discovered that elevated chromium was first detected in a sample collected January 12, 2004, at 270ppb. This result was included in the R-28 Completion Report, dated April 28, 2004. The 15-month sampling hiatus between January, 2004 and May, 2005 remains unexplained."

In early February 2006, the New Mexico Environment Department and the New Mexico Health Department issued their first ever "do not eat" fish advisory for White Rock Canyon, as well as for Abiquiu and Cochiti reservoirs – located above and below the Canyon, respectively – because of PCB contamination. Sampling done in 2003 by the NMED DOE Oversight Bureau at NPDES outfalls show levels of PCBs to be above the human health standard. On March 11, 2003, concentrations at outfall 001 (power plant cooling towers), which discharges into Sandia Canyon, was 6.4ng/L. On March 27, 2003, concentrations of PCBs at outfall 051 (industrial and radioactive wastewater), which discharges into Mortandad Canyon, were at 4.7ng/L. On March 19, 2003, concentrations of PCBs at outfall 13S (sanitary wastewater), which discharges into either Sandia Canyon or Cañada del Buey, were at 3.7ng/L.

Perchlorate

Perchlorate is both naturally occurring and manufactured. It is produced for industrial purposes and is used in rocket fuel, explosives, pyrotechnics, and munitions. Perchlorate can be both soluble and insoluble; perchlorate salts dissolve easily in water, are highly mobile, and persist for many decades in groundwater and surface water. Humans are exposed to perchlorate through drinking water and breathing.

Exposure to perchlorate causes interference with proper thyroid functioning by disrupting uptake of iodide, a necessary thyroid nutrient, into the thyroid gland. When changes happen to thyroid hormone levels, thyroid gland tumors may result. Perchlorate exposure to pregnant women and children is especially dangerous. Impairment to the thyroid of a pregnant mother may result in impacts to the fetus and newborn child. The impacts can include behavioral problems, late development, and decreased learning capabilities.

In 2000, DOE and LANL detected perchlorate in a drinking water well at Otowi-1. The levels were detected at 2-3ppb. Los Alamos County residents rely solely on groundwater for drinking. Since the detection of perchlorate at Otowi-1 in 2000, Los Alamos County has shut down the well. A perched groundwater zone near Mortandad Canyon had perchlorate detected at 12ppb. The perched zone is about 250 feet above the regional aquifer. The EPA has not established a drinking water standard for perchlorate, but has set a preliminary clean up goal (n0n-enforceable) for perchlorate of 24.5ppb in water. However, New Mexico has listed perchlorate as a toxic water pollutant, which mandates reporting requirements.[20]

Selenium

Selenium naturally occurs as a mineral element in the environment and can be found in soil and rocks. Processed selenium compounds are primarily used in photocopier and electronic

[20] Massachusetts is the only state with an enforceable drinking water limit, which the state set at 2ppb; it went into effect July 2006. In August 2006, the California Department of Health Services proposed to set an enforceable drinking water standard of 6ppb. In early 2006, the EPA set a much higher "interim" cleanup *goal* for perchlorate of 24.5ppb, which is not an enforceable standard.

components. Other common uses are in photographic emulsions, glass, rubber, inks, textiles, paints, metal alloys, medical, pesticide formulations, petroleum, and preparation of pharmaceuticals. Selenium can be released in its processed form from manufacturing, agricultural, and industrial waste. Selenium particles are either soluble or insoluble. Insoluble selenium will remain on soil and can be re-suspended in high winds; selenium dust can travel through the air and then settle on both land and water. Soluble selenium is dangerous because it can enter surface water through soil and is highly mobile in water. Plants will absorb selenium through the soil. It is known that selenium accumulates in the food chain. Humans can ingest selenium through the foods they eat.

At low levels, selenium is a nutrient that is essential to a healthy body. However, higher doses of selenium are extremely toxic to the body. High exposure is associated with a disease known as *selenosis*. Symptoms of *selenosis* include nail and hair loss and neurological abnormalities. Other health effects of selenium exposure include damage to the nervous and circulatory system, damage to liver and kidney tissue, and feelings of irritability and fatigue. If inhaled, selenium creates respiratory and bronchial damage.

The New Mexico Environment Department has indicated that the high levels of selenium in the drainages below LANL may be from naturally elevated sources in the watershed that were mobilized by the Cerro Grande Fire. Yet this does not explain why neither Frijoles nor Capulin Creek are impaired for selenium. Capulin Creek was heavily impacted by the Dome Fire in the mid-1990s. For example, the New Mexico Environment Department lists increased watershed runoff following a forest fire as one of the probable causes for the elevated levels of *sedimentation* in Capulin Creek. Therefore, if, as is claimed by LANL, the selenium levels detected in other canyons are the result of naturally occurring selenium and were merely mobilized by the forest fire, why do we not see similar problems in Capulin Creek?

CURRENT DISCHARGES

The Clean Water Act requires National Pollutant Discharge Elimination System (NPDES) permits for all discharges from a point source. A point source is defined as "any discernible, confined and discrete conveyance" of pollutants to a water body (40 CFR122.2). Basically, point sources are discharges that come out of a pipe, ditch, channel, or any other "discrete conveyance." NPDES permits set effluent limits or pollution limits for different types of pollution that must be controlled and/or monitored by the polluting entity. NPDES permits require monitoring the types and frequency of discharges and require that the polluting entity report monitoring results to the EPA and, in some cases, the New Mexico Environment Department, in reports called Discharge Monitoring Reports (DMRs). Members of the public can request a copy of the permit, the fact sheet about the permit, DMRs, and any correspondence or enforcement actions associated with the permit from the EPA under a Freedom of Information

Act (FOIA) request. The EPA has a request form on their website to help the public submit requests for information.

EPA has issued numerous NPDES permits to LANL, including their individual wastewater discharge permit (NPDES Permit No. NM0028355), the Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (MSGP), and the Stormwater General Permit for Construction Activities. The individual wastewater permit and the MSGP were both up for renewal and thus open for public comment during late 2005 and early 2006. Amigos Bravos and CCNS submitted comments to EPA about the first two permits. The construction general permit was not open for public comment while this report was prepared. Below is a detailed summary of our concerns.

Los Alamos County discharges sanitary wastewater into Bayo Canyon, a tributary of Pueblo Canyon at LANL's eastern property boundary, under another NPDES Permit (Permit No. NM0020141). Although the County is the permitee in charge of the discharge, at this time it is unclear if this discharge is located on LANL property or County property. CCNS and Amigos Bravos reviewed and submitted comments to EPA about this permit as well when it was up for renewal in March, 2006 (see appendices, F1-3).

The regulation of the discharge of some radioactive contaminants is held exclusively by the DOE under the Atomic Energy Act[21]. The situation is complicated by State and EPA exclusions regarding radioactive pollutants. Though there are discharges of radioactive pollutants from LANL, the exclusions prohibit both the State and the EPA from regulating most radioactive contaminants and therefore the permits do not include effluent limits for radioactive parameters. While EPA has a more general exclusion that most states could address through permit certification or delegation, the exclusion in the NM regulations applies to "*…source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954…*". Due to recent changes, accelerator-produced radioactive materials are no longer excluded from the Atomic Energy Act, but it still does not apply to *"…all other radioactive materials, including but not limited to radium and accelerator-produced isotopes."* Therefore accelerator-produced radioactive materials can be regulated under state law. Unfortunately it is not a simple matter to determine if the radioactive pollutants being discharged at LANL are accelerator produced, special nuclear, or by-product material, or if they are a mix of both.

STORMWATER ISSUES

The movement of pollutants in stormwater is an issue of grave concern at LANL. The Clean Water Act provides regulation for stormwater runoff from industrial sites, construction sites and other impervious surfaces. Stormwater carries pollution from these areas into other bodies of water. Importantly, stormwater is regulated independently from surface water. Since its

[21] See, for example, http://www.eh.doe.gov/oepa/laws/aea.html

inception, LANL's nuclear and industrial activities have generated an enormous amount of solid, hazardous, and radioactive waste. Contaminants that could potentially be carried by stormwater have been detected and released at LANL; they include:

- Explosives, such as RDX, HMX, TNT;
- Volatile organic compounds and semi-volatile organic compound;
- Metals, such as arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, molybdenum, selenium, silver, zinc;
- Inorganic compounds, such as ammonia, nitrate, and fluoride;
- Perchlorate;
- PCBs;
- Radionuclides, including plutonium, americium, cesium, strontium and tritium.

Over time, many of these contaminants have been released into the environment by overland dumping, or leakage from storage pits, tanks, and landfills. These contaminated areas are referred to as Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), or Potential Release Sites (PRSs). When it rains and water runs over these sites, contaminants are picked up or eroded away and carried by the water into nearby canyons and streams, and eventually, over time, into the Río Grande. There were originally 2,093 of these contaminated areas documented at LANL. EPA has delisted 688 of these sites resulting in 1,405 contaminated areas.

Stormwater samples from LANL canyons, taken and analyzed by the New Mexico Environment Department, have shown extremely elevated levels of PCBs. High concentrations of waste-related radionuclides have been detected in stormwater runoff in Pueblo and Mortandad canyons. (LANL 2004, P148; CCNS 2004)

Stormwater from LANL is currently regulated by the two general permits discussed above, the MSGP and the General Construction Stormwater Permit, which are written with general language and are not site-specific to LANL. Many other industrial facilities and construction sites are also regulated under these general permits. Due to the complexities of LANL's site, geology, and pollution, the general permit is clearly not adequate or appropriate for coverage of the lab's stormwater discharge. This fact has been recognized by the state and the EPA, and apparently accepted by LANL; the process has begun to move them under an individual permit.

During the negotiations for the NMED Order on Consent for cleanup at LANL, EPA, in recognition that LANL is not adequately controlling their stormwater pollution, issued a Federal Facility Compliance Agreement (FFCA) to LANL on February 2, 2005. The FFCA requires a stormwater control program and schedule of compliance from all stormwater sites at LANL until an individual stormwater permit is issued to address industrial stormwater on the site. This, however, is not being done through a quick or simple process, nor is it clear that EPA is moving towards issuing a satisfactory individual permit.

One problem with the FFCA and the current plan for an individual permit is that EPA is not addressing the importance of monitoring the points of release (outfalls) from each site and setting numeric limits for the quality of the water that is discharged. Numeric effluent or pollution effluent limits are important because they make identifying and documenting violations easier and more clear-cut. Instead, the FFCA requires watershed or area monitoring in streams below various sites, and using data to trigger further study or action rather than be counted as violations directly. One of the problems with area monitoring is that it allows for a great deal of dilution and is not in keeping with EPA regulations that require outfall monitoring. Another issue of grave concern is that under the FFCA – and presumably under the individual stormwater permit – LANL is only proposing to monitor and install pollution control measures on approximately 25% of the 1,405 known contaminant sites. This leaves over 1,000 unmediated sites that will continue to discharge contaminants into the Río Grande watershed.

The EPA is currently drafting the individual stormwater permit for LANL and expects to have a draft permit out for public comment late in 2006. A number of issues of concern about the yet-to-be-released stormwater permit have already been identified:

- Numeric effluent limits are crucial for identifying problems and ensuring enforcement of the permit and should be included in the permit;
- Adequate monitoring of all 1,405 contaminated sites must be required in the permit
- Pollution control measures at all 1,405 sites must be required.

Amigos Bravos and CCNS will continue to follow the development of the individual stormwater permit and will solicit comments and input from other New Mexicans when the draft permit is issued.

CLEAN WATER ACT SECTION 401 CERTIFICATION PROCESS

In order to ensure that federal activities, such as issuing NPDES permits, will not violate state water quality standards, the Clean Water Act gives states, some tribes, and other agencies the authority to review and then either veto, certify, or certify with conditions federally issued permits. Because the EPA, a federal agency, writes the NPDES permits that are issued in New Mexico, the New Mexico Environment Department has the ability to veto or condition the permits through this 401 process. We believe that the state could more effectively use 401 opportunities to have more state control in mandating pollution control and cleanup of our rivers statewide and at LANL in particular. Amigos Bravos and CCNS identified several areas of concern in the draft NPDES permit for industrial wastewater at LANL and we brought these concerns to the New Mexico Environment Department. As a result, a few of our concerns were addressed in the State's 401 process and stricter conditions were added to the permit.

ISSUES OF CONCERN FOR EACH NPDES PERMIT

OVERVIEW OF OUTFALLS

Outfall Type	Type of Wastewater
001	Power plant discharge and re-used treated sanitary wastewater
02A	Neutralized demineralizer regeneration brine and boiler blowdown
03A	Cooling tower blowdown, evaporative coolers, chillers, condensers, and air washer blowdown.
05A	High explosive wastewater discharge
051	Industrial and radioactive wastewater
13S	Sanitary wastewater

Outfall Type and Number	Technical Area (TA)	Receiving Stream/Canyon System
001	3-22	Sandia Canyon
02A-129	21-357	Los Alamos Canyon
03A-021	3-29	Mortandad Canyon
03A-022	3-66	Mortandad Canyon
03A-027	3-285, –2327	Sandia Canyon
03A-028	15-185, -202	Water Canyon
03A-048	53-964, -979, 53-293, 294, 952	Los Alamos Canyon
03A-113	1032, 1038	Sandia Canyon
03A-130	11-30	Water Canyon
03A-158	21-209	Los Alamos Canyon
03A-160	35-124	Ten Site Canyon
03A-181	55-6	Mortandad Canyon
03A-185	15-625, 626	Water Canyon
03A-199	3-1837	Sandia Canyon
05A-055	16-1508	Canon de Valle
051	50-1	Mortandad Canyon
13S	46-347	Sandia Canyon or Cañada del Buey

Individual Wastewater Permit No. NM0028355

PERMIT OVERVIEW

This permit authorizes and regulates LANL's industrial and sanitary wastewater discharges into Río Grande tributaries in Los Alamos County from 17 separate outfall locations that are spread out across LANL property (see table above). These outfalls come from various wastewater sources and each has numerous pollutants or parameters, some of which are given numeric limits, and others none. The permit identifies the category of wastewater discharged at the different outfall types. (EPA NPDES) For instance, the outfall number 001 is a power plant discharge into Sandia Canyon and the re-use of treated sanitary wastewater at Technical Area 3-22; 05A055 indicates a high explosive wastewater discharge into Canon de Valle at Technical Area 16.

One of the 17 outfalls is the Radioactive Liquid Waste Treatment Facility (TA-50) which has discharged wastes to Mortandad Canyon since 1963. TA-50 is the largest treatment facility for LANL's radioactive liquid waste. (DOE/NNSA) It currently treats waste from approximately 1,800 sources and discharges approximately 10,000 gallons per day. The discharges have contained high concentrations of a number of contaminants, including plutonium, tritium, strontium-90, cesium-137, americium-241, nitrate, and perchlorate. All of these contaminants have been detected in groundwater underlying Mortandad Canyon. (CCNS, 2004) Based on self-monitoring reports, LANL is generally meeting all numeric discharge limits most of the time. According to these reports, there have been a few excursions for things such as chlorine, but such items are usually addressed and corrected quickly. More significant items, such as the finding of perchlorate in some of the discharges, have been largely addressed by additional treatment prior to discharge.

However, TA-50 is over 43 years old, in poor condition, and does not meet seismic requirements. When designed, it had a 25 year expected life. LANL recently gave TA-50 a failing grade in its analysis of essential facilities. LANL is planning a significant upgrade project to extend the life of the facility or entirely replace it. The upgrade project may begin in 2006 and cost approximately $67 million. Plans may include eliminating all liquid discharges from the facility. However, LANL may expand its on-site evaporation capabilities to dispose of contaminants, such as tritium.

There are no permit violations, which may reflect how the current permit is written. It contains what appear to be loose (that is, high) limits for some parameters at some of the outfalls, making it relatively easy to meet effluent limits, which may, therefore, not be as protective of health as they could be.

Another matter related to wastewater discharges is the question of discharge or outfall locations. Most of the discharges flow into canyons with intermittent streams that disappear or sink into the canyon bottoms much of the year before reaching the Río Grande. River sampling trips have found that there are discharges from springs along the Río Grande and in side canyon tributaries that are impacted by some of these so-called "sinking discharges". Some of the contaminants in these springs are believed to be coming from a combination of LANL wastewater discharges (past and present) and storm water flowing over contaminated ground and buried waste.

PROCESS

LANL has been discharging under an NPDES permit for many years. The last permit was valid from February 1, 2001 to January 31, 2005. LANL applied for a new permit on July 30, 2004 and EPA issued a new draft permit on January 28, 2006. The 2001 permit remains in effect until the 2006 draft permit is finalized. Amigos Bravos and CCNS requested a 30-day extension of the comment period for the new permit; this request was granted, resulting in a March 31st comment deadline. A public hearing was held on Monday March 20th in Espanola, NM on the

draft permit. Representatives from CCNS and other concerned citizens attended the meeting, communicated concerns, and asked questions. A phone meeting to discuss concerns with the permit occurred between Amigos Bravos and EPA officials on Tuesday March 28th. Amigos Bravos prepared comments on the draft NPDES Permit No. NM0028355 for LANL's discharges of industrial and sanitary wastewater into Río Grande tributaries in Los Alamos County. The comment letter was circulated around the state and 14 individuals and organizations signed onto the final comments that were sent to the EPA during the official NPDES comment period. Below is a summary of the technical concerns raised in the comment letter to the EPA about the NPDES permit (the comment letter is in the appendices, B1-6).

SUMMARY OF ISSUES OF CONCERN

Outfall Numbers and Effluent Limits Are Confusing

The numbering of the outfall locations (the locations where discharges come out of a pipe and are released into the environment) in the permit is extremely confusing. Clarifying the outfall numbers will help the public better understand the permit and track the Discharge Monitoring Reports (DMRs).

For a number of reasons, the expression of effluent limits, the numbers set to control the concentration of pollutions, are very confusing for the general public and in many cases even for the well informed members of the public to understand. The effluent limits should be better explained and presented in the permit to facilitate public understanding and involvement.

The Water Quality Standards of Nearby Pueblos Should Be Protected

Several Pueblos are located near LANL, including the Pueblos of San Ildefonso, Santa Clara, and Cochiti. The permit should be re-written to be protective of water quality standards, whether they are federally approved or not, of *all three* Pueblos surrounding LANL.

Joint and Several Liability

The discharge permit must require joint and several liability among the DOE and The Regents of the University of California.

Monitoring Locations

LANL has a complex discharge history – which includes leaking butterfly valves, extensive decommissioned pipelines, and numerous consolidated outfalls – that justifies additional precaution in the draft permit. The permit should require that sampling of all outfalls, including discharges 051, 001, and 13S, occur where the discharges are actually released into the environment and not at some point in transit to the actual outfall location, which is in violation of the Clean Water Act.

Chronic Life Criteria

The draft permit is written to protect acute aquatic life criteria, but not the more sensitive chronic aquatic life criteria. The permit must be protective of both for the following reasons:

- The New Mexico State Water Quality Standards are not consistent;
- There is ample evidence demonstrating that more protective effluent requirements are needed in order to protect aquatic life in LANL canyons, such as the Pill Clam and the Spade Foot Toad;
- The draft permit is not in compliance with the narrative standards of the State of New Mexico's Surface Water Quality Standards.

Limits for Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD) and Ammonia Are Not Protective of Receiving Waters[22]

The current limits for all of these parameters are very high for zero- to low-flow receiving streams. The limits for COD, BOD, and Ammonia at the outfalls that discharge sanitary waste (including but not limited to outfalls 001 and 13S) should be Water Quality Based Effluent Limits, not Technology Based Effluent Limits standards.

Total Suspended Solids (TSS) Limits Are Too High

TSS limits should be based on the assimilative capacity of the stream. Many streams in New Mexico are impaired for stream bottom deposits and siltation and therefore TSS effluent limits should be water quality based and not, as they are in this permit, technology based.

Too Many Parameters Have Been Removed from the Permit

Effluent limits and monitoring requirements for a large percentage of the parameters included in the 2000 permit have been removed from the draft permit. The discharges from LANL are dangerous enough to merit mandatory monitoring and effluent limits for many of the parameters that the EPA is proposing to remove. Furthermore, the drinking water supplies for the two largest communities in New Mexico are downstream from LANL. Precautionary

[22] The *chemical oxygen demand* (COD) test is commonly used to indirectly measure the amount of organic compounds (pollutants) in surface water (e.g. rivers and lakes), which makes COD a useful measure of water quality. It is expressed in milligrams per liter (mg/L), which indicates the mass of oxygen consumed per liter of liquid. *Biological oxygen demand* (BOD) is a measure of the oxygen used by microorganisms to decompose waste. If there is a large quantity of organic waste in the water supply, there will also be a lot of bacteria present working to decompose this waste. As the waste is consumed or dispersed through the water, BOD levels will begin to decline. When BOD levels are high, dissolved oxygen (DO) levels decrease because the oxygen that is available in the water is being consumed by the bacteria. Since less dissolved oxygen is available in the water, fish and other aquatic organisms may not survive. The range of possible readings can vary considerably: water from an exceptionally clear lake might show a BOD of less than 2 ml/L of water. Raw sewage may give readings in the hundreds and food processing wastes may be in the thousands.

monitoring should be restored to the draft permit in order to ensure the safety of the drinking water for ten million people downstream of LANL.

Polychlorinated Biphenyls (PCB) Effluent Limits Are Needed

Currently there are no limits for PCBs in the permit. New Mexico Environment Department (NMED) monitoring has shown that PCBs occur in a number of outfalls. Stormwater and sediment samples have shown extremely high levels of PCBs in LANL canyons and the State will, most likely, soon list many of the canyons as impaired for PCBs. There should be PCB effluent limits and monitoring requirements added to all outfalls of the permit.

Copper, Aluminum, and pH Limits Should Be Applied Immediately

The new copper, aluminum, and pH effluent limits proposed in the draft permit should apply immediately. New standards have been adopted to protect uses that exist now in the receiving waters – not uses that will only exist in three years. The new limits, protective of existing water quality standards, should be put into effect immediately.

Outfall 03A027

Effluent limits for specific parameters contributing to increased conductivity at this outfall, as well as conductivity effluent limits, must be added to the permit.

Margins of Safety (MOS)

MOS must be added to the draft permit.

Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (MSGP)

REGULATORY BACKGROUND

The 1987 Amendments to the Clean Water Act established regulations to control stormwater through a two-phased approach. The first phase, initiated in the early 1990s, required cities with populations over 100,000, industrial facilities and construction sites of 5 acres or more to obtain a NPDES permit for stormwater discharges. The second phase, which began in 2003, requires urbanized areas, and construction sites of 1 acre or more to obtain a NPDES permit for stormwater discharges. The MSGP is part of phase 1 of stormwater control.

PHASE I - PERMIT OVERVIEW

The purpose of the MSGP is to control stormwater discharges from industrial sites. The MSGP is a general permit, which means that many different dischargers apply for coverage under one permit. In non-delegated states, such as New Mexico, the EPA writes the general permit (in delegated states the state writes the general permit) and then individual dischargers submit to the EPA a Notice of Intent (NOI) to obtain coverage under the general permit. The MSGP has 23 different "sectors" which represent different industrial activities. Each sector has

different monitoring and effluent limitation requirements. For example, LANL has Sector K (Hazardous Waste Treatment, Storage, or Disposal Facilities) stormwater requirements with effluent limits for Biochemical Oxygen Demand (BOD), TSS, ammonia, alpha terpineol, aniline, benzoic acid, naphthalene, p-Cresol, phenol, pyridine, total recoverable arsenic, total recoverable chromium, total recoverable zinc and pH. There are benchmark monitoring requirements for contaminants from hazardous waste facilities for numerous other constituents, such as mercury, selenium, and arsenic. Benchmark values have less regulatory weight than effluent limitations. When an effluent limit is exceeded, it is a permit violation; when a benchmark is exceeded it triggers additional monitoring, but does not rise to the level of a permit violation.

PROCESS

The EPA proposed a new MSGP (MSGP 2006) on December 1st, 2005 to replace the MSGP 2000 which expired on October 30th 2005. Unfortunately, the 30 day comment period was scheduled for the middle of the winter holiday season and there was only one public meeting (not a public hearing, which is more formal and usually more useful to the public) scheduled – and it was planned for Washington D.C. Amigos Bravos and CCNS both wrote to EPA requesting a public meeting in New Mexico and for an extension of the comment period. After some stalling, our requests were finally granted. On February 6th, 2006 Amigos Bravos and CCNS attended the public meeting that was hosted by EPA in Albuquerque on the MSGP. An informational flyer with details about the meetings and key issues in the permit was distributed across the state (see appendices, C-1). Amigos Bravos and CCNS prepared comments on the MSGP and circulated them statewide for sign-on (see appendices, D1-4). Ten groups signed on from New Mexico. Amigos Bravos also prepared and submitted more detailed comments on the permit (see appendices, E1-9)

SUMMARY OF MSGP ISSUES OF CONCERN

Public Access and Involvement

The Clean Water Act requires each discharger to write its individual Storm Water Pollution Prevention Plans (SWPPPs). The plans contain most of the information about the discharges from industrial sites. These documents provide the public with information to make informed comments about the discharges in order to protect the rivers and streams of New Mexico. Because many of the sites covered under this general permit, such as LANL, Sandia National Laboratory, Phelps Dodge Mines, Molycorp Mine, and other large industrial sites across the state, are large polluters with legacies of toxic releases into our watersheds, it is essential that the public have the opportunity to review and provide comments about the SWPPPs. The public has the right to review the plans that are supposed to be protective of their drinking water supplies, the water with which they irrigate, and the water in which their children and families swim and fish. The current draft MSGP 2006 denies the public this right.

Individual Permits

Entities over a certain size should be required to obtain an individual permit. The fact that a large industrial site, such as LANL, has been operating under the general permit for years is unacceptable. The only reason that they are now being required to obtain an individual permit (only for a limited portion of their stormwater discharges) is because the State of New Mexico, over a period of years, aggressively pushed the federal government to require them to do so. To adequately protect our watersheds in New Mexico, a set of criteria that triggers the requirement for facilities to apply for coverage under an individual stormwater permit must be developed and included in the MSGP.

Impaired and TMDL Waters

There are many impaired waters on LANL property that this draft permit does not adequately protect. Discharges of pollutants into impaired waters are explicitly prohibited by Clean Water Act regulations, which clearly state, "no permit shall be issued… if the discharge from its construction or operation will cause or contribute to the violation of water quality standards." (40 CFR 122.4(i)) The draft general permit illegally permits discharges into these impaired sensitive water bodies.

Monitoring and Inspection Requirements Are Lacking

Both monitoring and visual inspection requirements in the proposed MSGP 2006 are confusing and inadequate. The draft permit requires only one year of monitoring over a five-year permit period. This requirement is not adequate to protect the rivers and streams of New Mexico. In addition, requiring an average of four samples that exceed the benchmark to trigger more monitoring is not protective enough. More monitoring and visual inspections must be required, especially where effluent limitations apply or when there is a discharge into an impaired receiving water body. EPA proposed a loophole for both monitoring *and* visual inspections which allows for dangerous and unacceptable discharges. This "representative outfall" loophole must be removed from the permit in order to protect water quality.

Antidegradation Review

Antidegradation implementation procedures identify the steps and questions that must be addressed when regulated activities are proposed that may affect water quality. The specific steps to be followed depend on which tier(s) of antidegradation apply. **Tier 1** maintains and protects existing uses and water quality conditions necessary to support such uses. Where an existing use is established, it must be protected even if it is not listed in the water quality standards as a designated use. Tier 1 requirements are applicable to all surface waters. **Tier 2** maintains and protects "high quality" waters – water bodies where existing conditions are better

than necessary to support "fishable/swimmable" uses. **Tier 3** maintains and protects water quality in Outstanding National Resource Waters (ONRWs).[23]

Antidegradation procedures and review are not given adequate attention in the proposed permit. The general permit should include more information about the principles of antidegradation water quality standards. The one sentence on page 9 of over 200 pages of permit requirements does not place enough significance on this very important and potentially time-consuming step in obtaining coverage under the general permit.

Coverage under the general permit should not be granted unless EPA or the appropriate state agency has certified that an antidegradation review has concluded that the proposed discharge is "necessary to accommodate important economic or social development" and that the discharge does not cause or contribute to impairment of water quality standards.

More Information Needed about the Notice of Intent (NOI) to Obtain Coverage under the General Permit

Amigos Bravos made the following suggestions about the NOI. The NOI needs to include information about the receiving stream, such as identifying impaired waters and identifying whether or not the receiving stream is an Outstanding National Resource Water (ONRW). The NOI should require the permitee to certify that they have actually read the entire permit. The NOI should also require the applicant to indicate that a SWPPP has been completed for the site. Currently the NOI only requires identification of where the SWPPP will be stored and the contact person for the Storm Water Pollution Prevention Plans. Written confirmation that the SWPPP has been completed prior to sending in the NOI should be required. The NOI should also indicate that the appropriate antidegradation review has occurred and whether the antidegradation review has resulted in an approval of the discharge. The applicant should also be required to indicate what agency completed or oversaw the review. Of course, all of these concerns could easily be addressed by requiring applicants to submit their SWPPPs with the NOI.

Illegal Discharges

The proposed MSGP 2006 permit is different from the MSGP 2000 in that it no longer prohibits coverage by the permit to dischargers that are currently causing violations to water quality standards. Because meeting water quality standards is now a permit requirement rather than an eligibility requirement, the permit allows dischargers that are exceeding water quality standards to obtain coverage under the permit. This contradicts the Clean Water Act requirements that all NPDES permits must ensure compliance with water quality standards 40 CFR 122.44(d).

[23] Tier 3 is described as follows in the CWA: "...Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected..."

Spills Not Adequately Identified

For many facilities, identifying the spills and leaks that have occurred only in the 3 years prior to the date that the facilities are required to prepare a Storm Water Pollution Prevention Plan is not adequate. LANL has over 2,000 contaminated toxic dumps. These contaminated areas are referred to as Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), or Potential Release Sites (PRSs), many of which are spread out and exposed to the elements. These dumps represent a 63-year legacy of haphazard disposal of toxic materials. Almost all of the SWMUs and other areas identified as areas of concern were created prior to the last three years. This leaves almost 2,000 contaminated areas unidentified by the SWPPP. The permit needs to require facilities to identify and mitigate all spills and leaks that have occurred over the entire life of the facility, unless they prove that a spill has been completely cleaned up.

Phase II - General Construction Stormwater Permit

PERMIT OVERVIEW

Under phase two of EPA's stormwater regulations, all construction projects of one acre or more require coverage under a general NPDES permit. LANL has coverage for 52 projects under the Clean Water Act NPDES General Construction Stormwater Permit. These 52 projects represent 1,942.18 disturbed acres on the Lab's property. All of these sites drain into tributaries of the Río Grande and represent the potential for a large amount of sediment movement during storm events. The historic dumping practices at these sites are unknown at this time. There is the potential that some of these construction sites are located over historic waste dumps and the disturbance of soil could expose and facilitate movement of historic contaminants. By obtaining coverage under the General Stormwater permit and implementing Best Management Practices (BMPs), all sediment and potential associated contaminants are supposed to be maintained on each site.[24] Construction projects are scattered across the lab and with limited or no access we were unable to determine if permit conditions are being met at this time. Through our research, we were able to obtain an accounting of where some of the sites are located and how many acres are being disturbed for each project. The following tables summarize this information:

PROJECT NAME	RECEIVING WATER	ACRES
TA-63 FWO-DO PROJECT	Canada Del Buey	5
CHARACTERIZATION WELL R-26	Canon De Valle	1
PAJARITO ROAD ACCESS CONTROL	Mortandad Canyon	15
TA-16 WEST JEMEZ RD UPGRADE,	Water Canyon	21
TA-63 FWO RECORDS BUILDING	Canada Del Buey	1

[24] The EPA *Watershed Handbook* defines BMPs as: "A method that has been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources.

PROJECT NAME	RECEIVING WATER	ACRES
TA33 CONSTRUCTION ACTIVITES	Chaquehui Canyon	1.18
NSSB	Sandia Canyon	12
TA-16 BUILDING 7 DEMOLITION	Water Canyon	1
TA-53LEDASTORAGEYARDBASECOURSE	Sandia Canyon	1
CINT	Sandia Canyon	2.25
ENVIRONMENTAL RESTORATION CONS	Río Grande Tributaries	100
TA-16-540 D&D	Water Canyon	1
TA-50 RLWTF UPGRADE CONST.	10-Site Canyon; Pajarito Canyon	75
POWER GRID INFRASTRUCTURE UPGR	Tributaries Of The Río Grande	115
RED NET INFRASTRUCTURE EXPANSI	Tributaries Of The Río Grande	15
TA-60 RADIO SHOP REPLACMENT FA	Sandia Canyon	1.5
TA-60 ROADS & GROUNDS RELOCATI	Mortandad Canyon	3.25
NMSSUP PHASE II	Mortandad Canyon	1.25
PM-IP OFFICE TRAILERS		1.25
TA-16 DRAIN AND DETENTION POND	Water Canyon	5
TA-3 BUILDING 31 DEMOLITION	Two Mile Canyon	2.5
SECURITY PERIMETER PROJECT	Los Alamos Canyon	37
TA-3 BUILDING 31 DEMOLITION	Two Mile Canyon	2.5
TA-3 CONSTRUCTION	Mortandad Canyon	250
PAJARITO LAYDOWN AREA	Pajarito Canyon Then To	2
TA-69 WATER LINE REPLACEMENT	Two Mile Canyon	2
TA-16 193 REMODEL	Water Canyon	1.5
TA-3 CONSTRUCTION	Mortandad Canyon	1.5
LADP-5	DP Canyon	1.5
TA-63 FWO-DO PROJECT	Canada Del Buey	5
TA-50 PUMPHOUSE	Ten Site Canyon	2
NSSB EARLY UTILITIES	Sandia Canyon	4
CMRR GEOTECHNICAL/SEISMIC INV	Two-mile Canyon	1
CERRO GRANDE FIRE RECOVERY	Río Grande Tributaries	80
DARHT	Water Canyon	7.5
DEACTIVATION & DECOMMISSION	Río Grande	1000
DX STRATEGIC PLAN	Starmers Gulch	50

PROJECT NAME	RECEIVING WATER	ACRES
NMSSUP	Mortandad Canyon	10
LAND TRANSFER PROJECT	Río Grande Tributaries	30
TA-55 CONSTRUCTION	Two Mile Canyon	13
TA-54 CONSTRUCTION ACTIVITIES	Canada Del Buey	9
TA-16 WEAPONS ENGR CAMPUS	Water Canyon	35
LAOI-7	Los Alamos Canyon	1.5
R-3	Pueblo Canyon	1.5
R-17	Pajarito Canyon	1.5
R-23I	Pajarito Canyon	1.5
R-24	Bayo Canyon	1.5
R-27	Water Canyon	1.5
R-10A	Sandia Canyon	1.5
R-10 SANDIA CANYON	Sandia Canyon	1.5
CDV-16-2(I)R	Canon De Valle	1.5
LADP-5	DP Canyon	1.5
LAOI-3.2A	Los Alamos Canyon	1.5

Summary of construction activities by canyon:

CANYON	NUMBER OF PROJECTS	ACRES OF CONSTRUCTION
Sandia	7	23.75
Canada Del Buey	4	20.00
Canon de Valle	2	2.50
Mortandad	6	282.50
Water	8	73.50
Chaquehui	1	1.18
Other	7	1341.25
Ten Site	2	77.00
Two Mile	5	21.00
Los Alamos	3	40.00
Bayo	1	1.50
DP	1	1.50
Starmers	1	50.00

Pueblo	1	1.50
Pajarito	3	5.00
TOTALS	**52**	**1942.18**

APPENDICES

LANL CONTAMINANTS FACT SHEETS

On the following pages are Fact Sheets regarding specific contaminants discussed in this report. The Fact Sheets have been used at community meetings, tabling events, in media packets, and similar uses.

Source:
Environmental Protection Agency (EPA):
http://www.epa.gov/OGWDW/contaminants/dw_contamfs/chromium.html

Chromium Contamination in Drinking Water for Los Alamos County

In December 2005, Los Alamos National Laboratory (LANL) submitted documents to the New Mexico Environment Department (NMED) reporting high levels of chromium in a LANL well. The well was drilled to detect contamination in the regional aquifer. The January 2004 chromium findings were 270 parts per billion (ppb), but have increased over a two-year period to 405ppb. In 1992, federal regulation of chromium went into effect. The New Mexico Drinking Water Standard (NMDWS) is 50ppb. The Environmental Protection Agency (EPA) Maximum Contaminant Level (MCL) standard is 100ppb. LANL neglected to report the findings to NMED for almost two years.

What is Chromium?

Chromium is a hard lustrous, silvery white metal. It occurs in nature and is found in plants and soils. Chromium is naturally present at low-levels in groundwater. Chromium is also found in the atmosphere as a result of emissions from chemical manufacturing and combustion of coal, oil and natural gas. In industry, chromium is used to harden steel, form metal alloys and manufacture stainless steel. It is also used in metal plating and to prevent corrosion.

There are two forms of chromium that are important at LANL: trivalent and hexavalent. Trivalent chromium is known to positively contribute to health. Hexavalent chromium is toxic and a major concern to public health. Hexavalent chromium was the controversial toxin in the Hollywood production, Erin Brockovich. Generally, chromium levels found in groundwater above 50ppb are hexavalent chromium.

Why Is This Important To You?

Los Alamos County residents rely on the regional aquifer for all of their drinking water. At this time, LANL does not know the true extent of the chromium plume or the form of the chromium. Data is expected at the end of March about whether the chromium is trivalent or hexavalent. The public is concerned about the quality of the water they are drinking.

Exposure

Humans may be exposed to hexavalent chromium in drinking water.

Health Effects

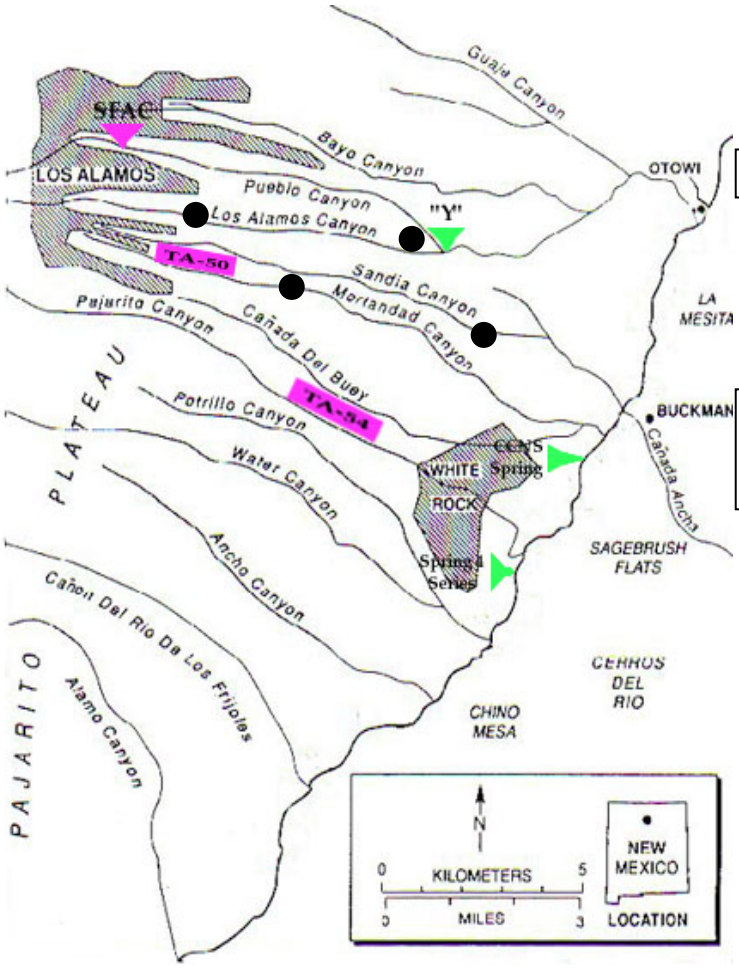
Hexavalent chromium is dangerous to your health. The EPA has found chromium to be toxic, even from brief exposure. Exposure to hexavalent chromium may be irritable to the gastrointestinal tract, skin and lungs, cause carcinoma of the lung and perforation of the nasal septum. Long-term exposure to chromium above the NMDWS and MCL has the potential to cause the following human health effects: damage to kidney, liver, circulatory and nerve tissues, including skin irritation.

Source:
Environmental Protection Agency (EPA):
http://www.epa.gov/OGWDW/contaminants/dw_contamfs/chromium.html

Chromium Contamination in LANL Canyons and Wells

Abiquiu Reservoir

Española



Rio Grande

40% of Santa Fe's drinking water comes from the Buckman Wellfield

Santa Fe

Cochiti Reservoir

- **Chromium:** is found in the atmosphere as a result of emissions from chemical manufacturing and combustion of coal, oil and natural gas. In industry, chromium is used to harden steel, form metal alloys and manufacture stainless steel. Humans may be exposed to hexavalent chromium in drinking water. Hexavalent chromium is dangerous to your health. Exposure to chromium hexavalent may be irritable to the gastrointestinal tract, skin and lungs, cause carcinoma of the lung and perforation of the nasal septum. Long-term exposure to chromium has the potential to cause the following human health effects: damage to kidney, liver, circulatory and nerve tissues, including skin irritation.

PCB Contamination at LANL and Surrounding Areas

In early February 2006, the New Mexico Environment Department issued its first ever "do not eat" fish advisory for the Rio Grande, Cochiti and Abiquiu reservoirs because of PCB contamination. The New Mexico Water Quality Control Commission standards are 0.00064 parts per billion (ppb) for human health and 0.014 ppb for wildlife habitat. The Environmental Protection Agency (EPA) has set a limit for PCBs in drinking water of 0.5 (ppb). The federal Food and Drug Administration has set a standard of 200 to 3000 ppb for fish and shellfish, poultry and red meat, eggs, milk and other dairy products and infant foods. PCB contamination has been detected above these standards in waters and fish upstream and downstream of LANL. PCBs have been detected in LANL waters at levels more than 25,000 times over the New Mexico water quality standard that is protective of human health and 1,000 times over the New Mexico water quality standard that is protective of wildlife habitat.

What are PCBs?

Polychlorinated Biphenyls (PCBs) are a group of industrial chemicals used in electrical equipment such as transformers, capacitors, and as lubricants and coolants. The manufacturing of PCBs was banned in 1977 because they were proven to bioaccumulate in the environment and cause adverse health effects. Up to 209 individual chlorinated compounds can be combined to make different PCBs. PCBs can be oily liquids, solids or vapors in air. PCBs have no taste or smell.

Why is This Important to You?

PCBs travel in air and can travel long distances. Once settled, they bind strongly to soil. In water, PCBs travel on organic particles and bottom sediments. Small aquatic organisms and fish take up PCBs. Other animals then eat the small organisms, thus bioaccumulating the PCBs. Tissue samples indicate PCB levels thousands of times higher than in water.

Exposure

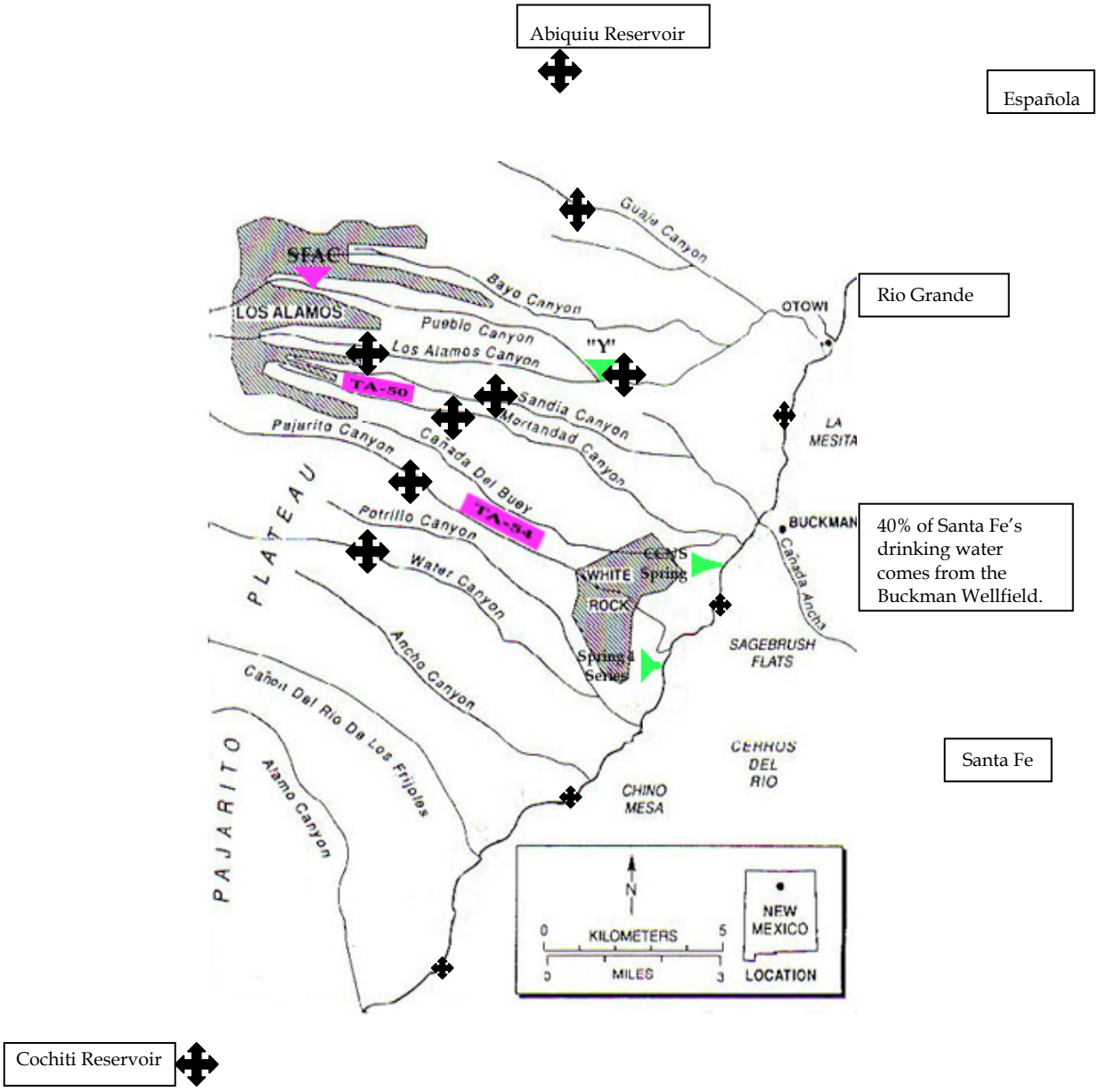
Humans are exposed to PCBs by eating contaminated food, including fish, dairy products and meat caught from contaminated locations. Other exposure routes include drinking contaminated well water and breathing air near hazardous waste sites.

Health Effects

PCBs are known to cause cancer, damage the thyroid, liver and stomach, impair reproduction, change the immune system and alter behavior in animals. In humans, health effects include acne-like skin conditions and liver damage. Pregnant women who eat PCB-contaminated fish may have babies with damaged immune systems and abnormal responses to infant behavior tests. These responses include a decrease in short-term memory and problems with motor skills. The main exposure pathway for infants is through breast-feeding. In children, exposure may cause neurobehavioral and immunological changes. PCBs are also a possible human carcinogen.

Agency for Toxic Substances and Disease Registry: http://www.atsdr.cdc.gov/tfacts17.html

PCB Contamination at LANL and Surrounding Areas



PCBs: are industrial chemicals used in transformers and capacitors, and as lubricants and coolants. The manufacturing of PCBs was banned in 1977 because they were proven to bioaccumulate in the environment and cause adverse health effects. PCBs have been detected in LANL waters at levels more than 25,000 times over the water quality standard that is protective of human health and 1,000 times over the water quality standard that is protective of wildlife habitat. Health effects include damage to liver. Pregnant women who consume PCBs can have children with birth defects. Humans are exposed to PCBs through foods such as fish, meat and dairy products and through air and water. Early this year, the first "do not eat" fish advisory for the Rio Grande was issued by the New Mexico Environment Department.

Perchlorate Contamination in Drinking Water for Los Alamos County

In 2000, the Department of Energy (DOE) and Los Alamos National Laboratory (LANL) detected perchlorate in a drinking water well at Otowi-1. The levels were detected at 2 to 3 parts per billion (ppb). Los Alamos County residents rely on groundwater for drinking. A perched groundwater zone near Mortandad Canyon had detected levels of perchlorate at 12 ppb. The perched zone is close to 250 feet above the regional aquifer. The Environmental Protection Agency (EPA) has not established a drinking water standard for perchlorate. There is no regulatory standard for perchlorate. However, New Mexico has listed perchlorate as a toxic water pollutant. EPA has established a preliminary clean up goal for perchlorate of 24.5 ppb in water.

What is Perchlorate?

Perchlorate is a naturally occurring and synthetic chemical. It is produced for industrial purposes. Manufactured perchlorate is used in rocket fuel, explosives, pyrotechnics and munitions.

Why Is This Important To You?

Perchlorate is both soluble and insoluble. Perchlorate salts dissolve easily in water and persist for many decades in groundwater and surface water. Since the detection of perchlorate at Otowi-1 in 2000, Los Alamos County has shut down the well.

Exposure

Humans are exposed to perchlorate in drinking water and through breathing air.

Health Effects

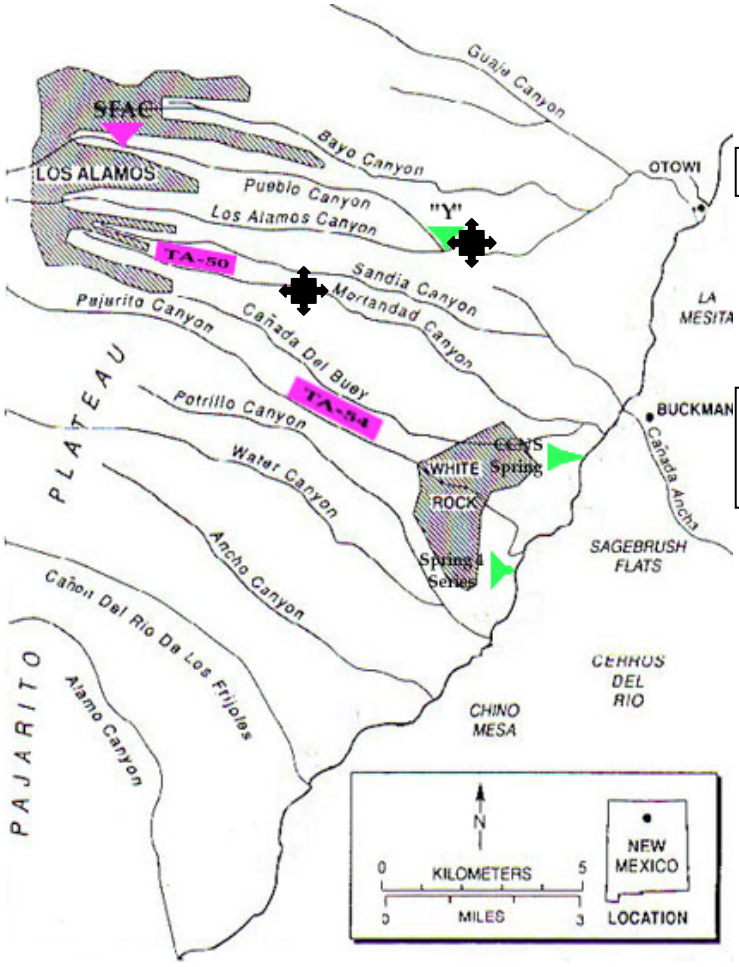
Exposure to perchlorate causes interference to the thyroid. Perchlorate disrupts iodide uptake into the thyroid gland. Iodide is necessary to thyroid hormones. Perchlorate disables proper thyroid function. When changes happen to thyroid hormones levels, thyroid gland tumors may result. Perchlorate exposure to pregnant women and children is especially dangerous. Impairment to the thyroid of a pregnant mother may result in impacts to the fetus and newborn child. The impacts can include behavioral problems, late development and decreased learning capabilities.

Sources
Los Alamos National Laboratory: http://www.lanl.gov/news/index.php?fuseaction=home.story&story_id=1055
Environmental Protection Agency:
http://www.epa.gov/OGWDW/ccl/perchlorate/perchlorate.html
The Impact Area Groundwater Study Program:
http://groundwaterprogram.army.mil/community/facts/perchlorate.html

Perchlorate Contamination in Drinking Water for Los Alamos County

Abiquiu Reservoir

Española



Rio Grande

40% of Santa Fe's drinking water comes from the Buckman Wellfield.

Santa Fe

Cochiti Reservoir

Perchlorate: is a naturally occurring and synthetic chemical. Manufactured perchlorate is used in rocket fuel, explosives, pyrotechnics and munitions. Perchlorate salts dissolve easily in water and persist for many decades in groundwater and surface water. Humans are exposed to perchlorate in drinking water. Exposure to perchlorate causes interference to the thyroid potentially leading to thyroid gland cancer. Exposure to pregnant women and children is especially dangerous. Impairment to the thyroid of a pregnant mother can result in impacts to the fetus and newborn child. The impacts can include behavioral problems, late development and decreased learning capabilities.

Selenium Contamination Found in LANL Canyons

Elevated levels of selenium have been found in many streams in canyons at Los Alamos National Laboratory (LANL). All of these streams eventually empty into the Rio Grande and will reach groundwater.

What is Selenium?

Selenium naturally occurs as a mineral element in the environment. It can be found in soil and rocks. Processed selenium compounds are primarily used in photocopier and electronic components. Other common uses are in photographic emulsions, glass, rubber, inks, textiles, paints, metal alloys, medical, pharmaceuticals, pesticides, and petroleum.

Why is This Important to You?

Selenium occurs naturally in our environment. However, it can be released in its processed form from manufacturing, agricultural and industrial waste. Processed selenium is a danger to your health.

Selenium dust can travel through the air. It then will settle on both land and water. Plants will intake the selenium through the soil. It is known that selenium accumulates in the food chain. Humans then will ingest selenium through the foods they eat.

Selenium particles are either soluble or insoluble. Insoluble selenium will remain on soil and can be re-suspended in high winds. Soluble selenium is dangerous because it can enter surface water through soil and is highly mobile in water.

Exposure

Humans intake selenium through the air they breathe, water they drink and their diet of local foods. Elevated exposure to selenium occurs to those that live within close vicinity of hazardous waste sites or industries that use it.

Health Effects

At low levels, selenium is a nutrient that is essential to a healthy body. However, higher doses to selenium are extremely toxic to the body. High exposure is attributed to a disease known as *selenosis*. Symptoms of *selenosis* include nail and hair loss and neurological abnormalities. Other health effects of selenium exposure include damage to the nervous and circulatory system, liver and kidney tissue and feelings of irritability and fatigue. If inhaled, selenium creates respiratory and bronchial damage.

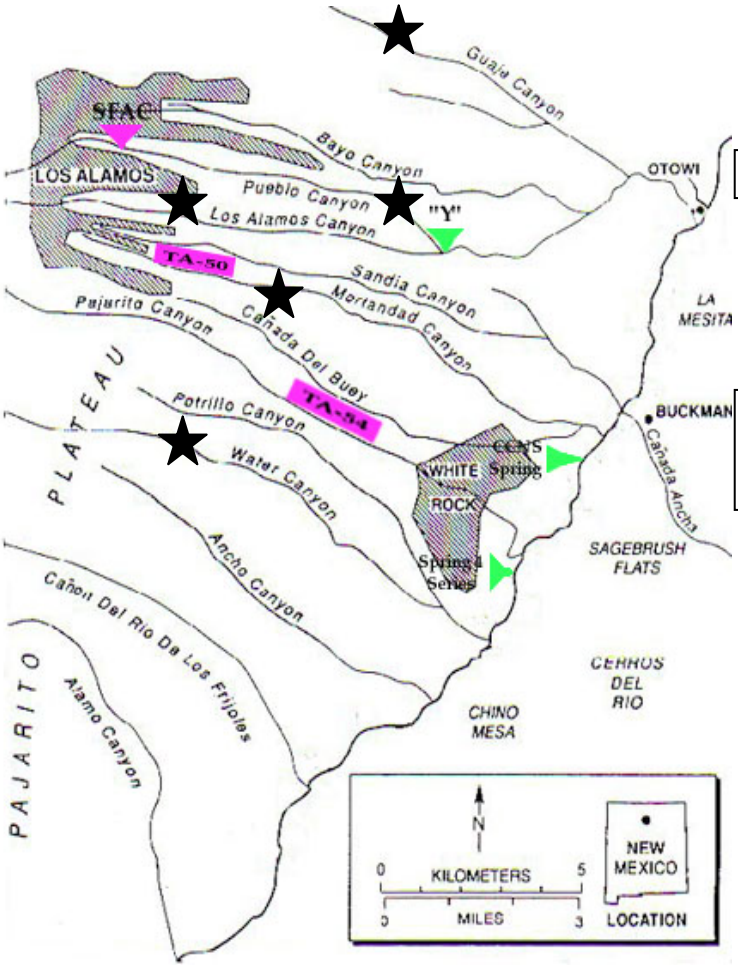
Sources

*Environmental Protection Agency (EPA):
http://www.epa.gov/OGWDW/contaminants/dw_contamfs/selenium.html
*Agency for Toxic Substances and Disease Registry: http://www.atsdr.cdc.gov/tfacts92.html

Selenium Contamination in LANL Canyons

Abiquiu Reservoir

Española



Rio Grande

40% of Santa Fe's drinking water comes from the Buckman Wellfield.

Santa Fe

Cochiti Reservoir

★ **Selenium:** can be released in its processed form from manufacturing, agricultural and industrial waste. It travels through air, in water and settles on soil. Plants uptake selenium that has settled on the soil. Humans are exposed to processed selenium by air they breathe, water they drink and the local foods they eat. Selenium is dangerous to your health. It is attributed to *selenosis*. Other health effects of selenium exposure include damage to nervous and circulatory system, liver, kidney, bronchial and respiratory. Selenium has been detected in Guaje, Pueblo, Los Alamos, Mortandad and Water Canyons.

AMIGOS BRAVOS COMMENTS ON DRAFT NPDES PERMIT

March 31, 2006

Sent Via Electronic Mail to:

Ms. Diane Smith
U.S. Environmental Protection Agency (EPA)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

RE: Los Alamos National Laboratory NPDES Permit No. NM0028355

Dear Ms. Smith:

Please accept the following comments about the Draft National Pollutant Discharge Elimination System (NPDES) Permit No. NM0028355 for Los Alamos National Laboratory's (LANL) discharges of industrial and sanitary wastewater into Rio Grande Tributaries in Los Alamos County on the behalf of Amigos Bravos, Concerned Citizens for Nuclear Safety, Citizens for Alternatives to Radioactive Dumping, New Mexico Environmental Law Center, Tewa Women United, New Mexico Farmers Marketing Association, GRACE Policy Institute, Rio Grande Restoration, Embudo Valley Environmental Monitoring Group, Loretto Community, La Montanita Coop, Marian Naranjo, Pat D'Andrea, Norty Kalishman and Tawnya Laveta.

Many of the undersigned organizations are committed to stop groundwater and surface water pollution migrating from LANL facilities into our state's water resources. Our organizations believe that this NPDES discharge permit provides the public with a unique opportunity to work with the Environmental Protection Agency (EPA) and the State of New Mexico to develop the best possible protection for surface water on and downstream from the LANL facility. By preventing additional pollution from being released, and by requiring clean up of historic releases, the public's right to clean water will be protected. Advocating for a protective and comprehensive NPDES permit provides our organizations with an opportunity to serve New Mexico's citizens by protecting the state's future drinking water resources.

Because the cultural and ecological survival of the communities of New Mexico is intricately tied to the health of our rivers, acequias and other water bodies, we strongly urge the EPA to address the following concerns about the proposed permit:

Outfall Numbers and Effluent Limits are Confusing:

The numbering of the outfall locations is extremely confusing. The 17 outfall locations are given numbers such as 13S, 001, and 05A055. The permit should require that the technical area be added to the outfall number. Clarifying the outfall numbers will help the public better understand the permit and track Discharge Monitoring Reports (DMRs).

The effluent limits in the draft permit for metals are given as totals whereas the New Mexico Water Quality Criteria are expressed as dissolved. This makes it difficult to determine if the effluent limits and the actual discharges reported on DMRs are protective of State water quality standards. To make it even more difficult, for a number of metals, a calculation using the hardness of the receiving water is needed to get to the dissolved criteria. The formulas provided in the fact sheet are cryptic and next to impossible to follow. At the very least, a spreadsheet listing the water quality criteria as totals (whether the EPA is simply using the dissolved as the total equivalent or if they are using a conversion factor), should be added to the permit, or at least the fact sheet. When water quality criteria are hardness based, the permit should include the calculated value for both dissolved and total.

The effluent limits are expressed as both ug/L and mg/L at the same outfall. Some parameters have effluent limits in ug/L at one outfall and mg/L at others. This is extremely confusing and should be addressed by having the same unit of measurement throughout the permit – or at least for the same parameter across the 17 outfalls.

The Water Quality Standards of Nearby Pueblos Should be Protected:

Several Pueblos are located near LANL, including the Pueblo de San Ildefonso, Santa Clara and Cochiti. Santa Clara Pueblo has developed federally approved water quality standards and the other pueblos are in the process of developing their own. Santa Clara Pueblo's standards must be taken into account in order to protect wildlife that may be used by the Santa Clara Pueblo people for ceremonial uses. Therefore, Santa Clara Pueblo should be granted tribal §401 certification authority for the draft permit. Fact Sheet, p. 2.

Furthermore, because EPA has created a time and resource roadblock, by not processing proposed standards and related paperwork in a timely manner, - the permit should be re-written to be protective of the water quality standards, whether they are federally approved or not, of *all three* Pueblos surrounding LANL.

Joint and Several Liability:

The discharge permit must require joint and several liability among the applicants. The proposed discharge permit is addressed to the Department of Energy (DOE) and the University of California (UC), but it does not indicate which of those entities is responsible for what actions under the permit. The permit must be issued to the DOE and UC for operations at LANL. In order to make clear that each of the applicants is responsible for everything required by the permit, it should specify that the applicants are jointly and severally liable for all of the actions to be performed under the permit.

Monitoring Locations:

The draft permit as it stands now does not require LANL to take monitoring samples at TA-50 (outfall 051) from the location where their discharge is released into the environment in Mortandad Canyon. Rather, LANL is allowed to sample in the sink in the TA-50 building. We have concerns about historic contamination in this pipe, which has been itself categorized as a solid waste management unit (SWMU), and believe that the appropriate sampling location is at the end of the pipe where the discharge is released into the environment. The New Mexico Environment Department (NMED) DOE Oversight Bureau sampled both at the end of the pipe and inside the building on the same day. The sampling results show higher contaminants at the end of the pipe than those taken in the building. We conclude that he discharge is picking up contaminants in the pipe somewhere between leaving the building and discharging into the canyon. LANL claims that it is not possible to take samples from the end of the pipe, yet the NMED DOE Oversight Bureau has taken the samples and thus proven that it is possible.

Furthermore, there are some questions as to the locations where sampling occurs at outfall 001 and 13S. It appears that the sampling may occur before the effluent enters a storage tank or pipelines and not when it is actually released into the environment.

LANL has a complex discharge history, which includes leaking butterfly valves, extensive decommissioned pipelines, and numerous consolidated outfalls that justifies additional precaution in the draft permit. The permit should require that sampling of all outfalls, including discharge 051, 001 and 13S, occur where the discharges are actually released into the environment and not at some point in transit to the actual outfall location.

Chronic Life Criteria:

The draft permit is written to protect acute aquatic life criteria, but not the more sensitive chronic aquatic life criteria. The permit must be protective of both:

- The New Mexico State Water Quality Standards are not consistent. Standards are biased in favor of LANL the only intermittent waters in the state that do not have numeric chronic aquatic life criteria are located in LANL canyon bottoms. Sections 20.6.4.98 and 20.6.4.128 NMAC.
- There is ample evidence that demonstrates that more protective effluent requirements are needed in order to protect the aquatic life in LANL Canyons, such as the Pill Clam, which is one of the only remaining native mountain clams left. The United States Fish and Wildlife Service (USFWS) has completed studies which show, that in order to survive, the Pill Clam requires, at a minimum, the application of numeric chronic life criteria applied. According to USFWS, the Pill Clam is supposed to be found in all LANL canyons. However, the Pill Clam is not presently found in Sandia Canyon, most likely because the ammonia levels are too high.
- The USFWS also raised concerns about the Spade-Foot Toads found in LANL canyons. They are very adapted to the intermittent and ephemeral nature of the water bodies found at LANL as they bury

themselves in the mud and dirt of the canyon bottoms and only emerge when there is flow. The tadpole form of the Spade-Foot Toad (actually a frog) has been shown to die if copper levels exceed the numeric chronic life criteria.

- Because the draft permit does not protect the aquatic life found in LANL canyons, it does not comply with the State of New Mexico's Surface Water Quality Standards. Narrative criteria found in New Mexico's Water Quality Standards requires that "Surface waters of the state shall be free of water contaminants ... in quantities that damage or impair the normal growth, function or reproduction of aquatic life..." and "...surface waters of the state shall be free of toxic pollutants…that affect the propagation of fish or that are toxic to humans…. fish or other aquatic life." (20.6.4.13.A. and 20.6.4.13.F NMAC). These narrative criteria should be used to establish more stringent effluent limits to protect aquatic life in LANL canyons.

Limits for Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD) and Ammonia are Not Protective of Receiving Waters:

The limits for COD, BOD, and Ammonia, at the STP outfalls (including but not limited to outfalls 001 and 13S) should be Water Quality Based Effluent Limits, not Technology Based Effluent Limits. The COD limit at outfall 051 is very high (125 mg/L). These levels of COD in a small stream will zap out all the dissolved oxygen (DO). The fact sheet on page 12 states that there is no in-stream dilution so the effluent limits themselves need to be protective of the standards. Yet, the effluent limits seem to be much too high for a zero flow stream. It is unlikely that a small stream with low or no background flow can assimilate a BOD of 30 mg/L monthly average, 45 mg/L weekly average (and a presumed daily max of over 60 mg/L) and not violate the DO criteria. Has there been a DO model done for New Mexico streams in general or LANL streams specifically? EPA should require LANL to perform a DO model on LANL streams to help develop appropriate effluent limits. Until one is performed, more protective BOD, COD and Ammonia limits should be set according to limits used in other states such as those listed below. EPA has indicated that they follow guidance from the New Mexico Water Quality Management Plan that calls for secondary treatment technology based effluent to be broadly applied to all sanitary wastewater permits in New Mexico. Because many of New Mexico's streams are low flow and effluent dominated, this guidance is simply not protective enough of the water quality uses and criteria of New Mexico's waters. The EPA has the duty to write permits that are protective of existing and designated uses and the current of practice of applying secondary treatment technology based effluent limits blindly to all waters in the state is, in many cases, not protective of either. Water quality based effluent limits should be established, or, if the numeric water quality standards are not available at the state level, tertiary treatment should be required for discharges into effluent dominated waters.

Similar permits for low or zero dilution flow (also called effluent dominated) streams in other states have monthly averages of:

BOD limits in the range of 6 to 15 mg/L
Ammonia of 0.4 to 5 mg/L.

Unpolluted streams should have BOD in the range of:

BOD 0 to 3 mg/L
Ammonia 0 to 1 mg/L

This is a statewide problem and should be addressed in all sanitary treatment plant permits.

Total Suspend Solids (TSS) Limits Are Too High:

TSS limits should be based on the assimilative capacity of the stream. Many streams in New Mexico are impaired for stream bottom deposits / siltation and therefore TSS effluent limits should be water quality based and not, as they are in this permit, technology based. To determine the reasonable potential for discharging constituents into LANL canyons an assumed stream TSS background of 6.4 mg/L was used. This background number should be used to calculate water quality based TSS effluent limits until a TSS water quality standard is developed by the state of New Mexico.

Too Many Parameters Have Been Removed from the Permit:

Effluent limits and monitoring requirements for a large percentage of the parameters included in the 2000 permit have been removed from the draft permit. This is true even for Selenium, when many of the receiving waters

are impaired for Selenium. The permit erroneously states in the fact sheet on page 18 that it is appropriate to remove Selenium as well as the other parameters because the receiving waters meet the State WQS for those parameters. The discharges from LANL are dangerous enough to merit mandatory monitoring and effluent limits for many of the parameters that the EPA is proposing to remove.

New findings of chromium-VI at levels four times the EPA's Maximum Contaminant Levels in a characterization well surrounded by the majority of drinking water wells in Los Alamos County indicate that LANL must be required to conduct precautionary monitoring.

Furthermore, the drinking water supplies for the two largest communities in New Mexico are downstream from LANL. Therefore, precautionary monitoring must be restored to the draft permit in order to ensure the safety of the drinking water for millions downstream of LANL.

Polychlorinated Biphenyls (PCB) Effluent Limits Are Needed:

Currently there are no limits for PCBs in the permit. New Mexico Environment Department (NMED) monitoring data show that PCBs occur in at least outfalls 001, 051, and 13S.[1] PCBs are explicitly prohibited at outfall 001 on page 3 of the permit yet there are no monitoring requirements for PCBs at outfall 001 or at any other outfalls. Stormwater and Sediment samples have shown extremely high levels of PCBs in LANL canyons and the State will, most likely, soon list many of the canyons as impaired for PCBs. There should be PCB effluent limits and monitoring requirements added to all outfalls of the permit.

Copper, Aluminum and pH Limits Should Be Applied Immediately:

The new Copper, Aluminum, and pH effluent limits proposed in the draft permit should apply immediately. Why does LANL get 3 years to comply with limits when the water quality standards apply now? LANL has known about the new standards for almost a year, and therefore have had more than enough time to comply. The standards have been adopted to protect uses that exist now in the receiving waters not uses that will only start existing in three years. The new limits, protective of existing water quality standards, should be put into effect immediately.

Outfall 03A027:

Amigos Bravos and Concerned Citizens for Nuclear Safety raised the following questions during our tour of the Sanitary Waste Water System (SWWS) Facility at LANL last fall. We have not received adequate response and raise them again in these comments:

- What constituents contribute to the increased conductivity of the water discharged at outfall 03A027 after it has left the cooling towers?
- Does EPA know if biocides are added to the water when it is cycled through the cooling towers? If they are, what is the concentration of the biocide when it is discharged into the canyon?
- If the water is treated through the SERF plant's reverse osmosis system prior to entering the cooling towers and only diluted slightly with other treated sanitary water, then why is the water only able to be cycled through the cooling towers a couple of times before the conductivity increases too much for continued use and the discharger is required to discharge the water? The reverse osmosis process should almost completely reduce the presence of constituents in the water. Thus, even when exposed to conditions that cause a high rate of evaporation, the water should not have a substantial amount of constituent concentration.

EPA must require LANL to answer these questions before the final permit is issued. Effluent limits for specific parameters contributing to the increased conductivity, as well as conductivity effluent limits, must be added to the permit.

Margins of Safety (MOS):

MOS must be added to the draft permit. The current draft of the permit does not take into account MOS. For example, discharge limits for chlorine at outfall 001 is set right at the standard, which does not take into account a margin of safety.

---

[1] (DOE Oversight Bureau sampled three outfalls in 3/2003. They found concentrations of 6.4ng/L of PCB at outfall 001, 4.7 ng/L at outfall 051, and 3.7 ng/L at outfall 13S.

Pharmaceuticals and other Organic Wastewater Contaminants:

There is increasing worldwide concern about evidence that pharmaceuticals and other organic wastewater contaminants are now being found in many drinking water supplies. In a 2000 study by the USGS, pharmaceuticals, hormones and other organic wastewater contaminants were found in 80% of the 139 streams sampled in the study. The detection of multiple contaminants was common. [2] The individual and synergistic toxicity of these contaminants could be devastating our waterways and drinking water supplies. We are aware that there are presently no groundwater or surface water standards in place in New Mexico for pharmaceuticals and many organic wastewater contaminants. Yet, this does not mean that these contaminants are not a serious threat to our state's waters. In an attempt to quantify the amount of these contaminants that enter our environment from wastewater streams, we suggest adding a monitoring requirement for several of the more prevalent pharmaceutical contaminants to the monitoring requirements for outfalls 001, 13S and possibly 03A027. Some of the more common pharmaceuticals, hormones and other organic wastewater contaminants are identified in the attached study.

LANL is an ideal place to begin to understand how to sample for hormones and pharmaceuticals in industrial discharges, as well as how to start thinking about how to reduce concentrations in our treated effluent. Adding pharmaceuticals to the monitoring requirements in the permit would be a good first step toward understanding and controlling this widespread threat. If the regulatory handle is not available to require monitoring and reporting of pharmaceuticals, then we request that LANL do so on a voluntary basis as a public service to help protect New Mexico's public health and water resources. LANL's motto is "The World's Greatest Science Protecting America." We believe that protecting our precious water is one step toward protecting America and we encourage LANL to move forward with developing scientific methods to sample and test for pharmaceuticals, hormones and other organic wastewater contaminants.

Sincerely,

Rachel Conn
Amigos Bravos, Friends of the Wild Rivers
P.O. Box 238
Taos, NM 87571
Joni Arends
Concerned Citizens for Nuclear Safety

[2] "Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance," March 15, 2002, Environmental Science and Technology, V. 36, No. 6. (Copy attached for inclusion in the administrative record.)

Janet Greenwald
Citizens for Alternatives to Radioactive Dumping

Douglas Meiklejohn
New Mexico Environmental Law Center

Kathy Sanchez
Tewa Women United

Sarah Grant
New Mexico Farmers Marketing Association

Alice Slater
GRACE Policy Institute

Steve Harris
Rio Grande Restoration

Sheri Kotowski
Embudo Valley Environmental Monitoring Group

Penelope McMullen, SL
Loretto Community

Robin Seydel
La Montanita Coop

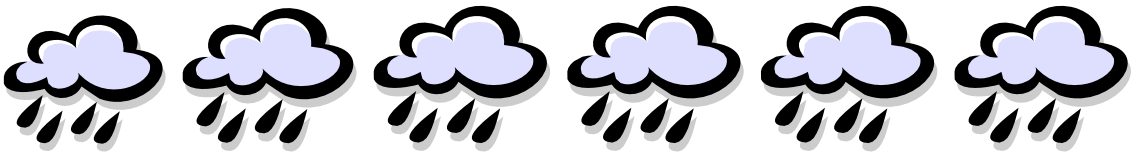
Marian Naranjo
Member of Santa Clara Pueblo

Pat D'Andrea

Norty Kalishman, MD

Tawnya Laveta

MSGP FACT SHEET



State-Wide Water Permit

Comment Period Now Open – Public Meeting

WHAT: The EPA has written a new draft "Multi-Sector General Permit" to control contaminated stormwater from polluting New Mexico's rivers and streams. Coverage under this permit will be required for many industries across New Mexico ranging from small industrial sites to larger areas like the Los Alamos National Laboratory. This is a general permit that allows many entities to get coverage under one permit.

WHY SHOULD YOU CARE? Runoff from rainfall hitting the ground (or buildings, parking lots, or streets) and flowing into our rivers and streams - called stormwater runoff- is the biggest source of water pollution in the country. Many of New Mexico's rivers are polluted because of the devastating impacts from stormwater runoff. For example, Los Alamos National Laboratory has, for decades, been discharging contaminated stormwater in the Río Grande. This stormwater contains sediment, PCBs and other toxic chemicals. Sediment can clog up the bottom of our rivers destroying habitat for fish and other aquatic life. PCBs and other toxic chemicals hurt the aquatic ecosystem and endanger public health by threatening our drinking water supplies.

PUBLIC MEETING: February 6, 2006 at 7:00 pm - Albuquerque, NM
Albuquerque Technical Vocational Institute, Workforce Training Center
5600 Eagle Rock Ave NE, Albuquerque, NM 87113

COMMENT DEADLINE: The comment period ends February 16th 2006.

WHERE TO SEND COMMENTS: Email: ow-docket@epa.gov and put "Attention Docket ID No. OW-2005-007" in the subject line. Mailing Address: Send the original and three copies of your comments to: Water Docket, Environmental Protection Agency, Mailcode 4101T, 1200 Pennsylvania Ave., NW, Washington, DC, 20460

WHAT TO INCLUDE IN YOUR COMMENTS:

- Ask the EPA to require industries that are applying for coverage under the permit to submit their Storm Water Pollution Prevention Plan (SWPPP) to the EPA.
- Ask the EPA to make these SWPPPS accessible to the public by posting them online. This could be easily done by requiring industry to submit their SWPPP electronically.
- The Notice Of Intent (NOI), the document that industry submits stating that they would like to obtain coverage under the general permit, should be required to identify impaired (polluted) waters near the industrial site.
- Tell the EPA that major polluting entities should not be allowed to use the general permit. These major polluters need an individual permit specifically designed to address their pollution problems

CCNS & AMIGOS BRAVOS COMMENTS ON MSGP

February 16, 2006

By email to: ow-docket@epa.gov and by U.S. Mail

Water Docket OW-2005-0007
Environmental Protection Agency
Mailcode: 4101T
1200 Pennsylvania Ave., NW
Washington D.C. 20460

RE: Comments on 2006 Draft MSGP, Docket ID No. OW-2005-0007

Dear Water Docket Staff:

Please accept the following comments on the Draft 2006 Multi Sector General Permit (MSGP) for Industrial Stormwater discharges. The undersigned New Mexico based organizations are working either locally or statewide on various issues including public health, conservation and social justice.

Because the cultural and ecological survival of the communities of New Mexico is intricately tied to the health of our rivers, acequias and other water bodies, we strongly urge the Environmental Protection Agency (EPA) to address the following concerns about the proposed MSGP 2006. Our comments have been organized into the following areas of concern: Public Access and Involvement; Individual Permits; Impaired and TMDL Waters; Monitoring and Inspection Requirements; Antidegradation Inadequacies; and NOI inadequacies and Illegal Discharges.

Public Access and Involvement

The Storm Water Pollution Prevention Plans (SWPPPs), required of each discharger, contain most of the information about the discharges from industrial sites and it is these documents that the public needs to be able to access and comment on in order to protect the rivers and streams of New Mexico. Because many of the sites covered under this general permit, such as Los Alamos National Laboratory (LANL), Sandia Labs, Phelps Dodge Mines, Molycorp Mine, and other large industrial sites across the state, are large polluters with legacies of toxic releases into our watersheds, it is essential that the public have the opportunity to review and comment on their SWPPPs. The public has the right to review the plans which are supposed to be protecting their drinking water supplies, the water with which they irrigate, and the water in which their children and families swim and fish. The current MSGP 2006 denies us this right.

Discharging facilities should be required to submit their SWPPP electronically to EPA when they submit their Notice of Intent (NOI). The EPA should then post SWPPPs with the NOIs on the EPA website to facilitate public accessibility to these key documents. Without access to SWPPPs, the public participation and comment requirements of this permit under the Clean Water Act (CWA) are not being met. 33 U.S.C. 1342(j). The public's ability to request a public hearing prior to the approval of permit coverage is also being denied. 33 U.S.C. 1342(a)(1).

There should be additional public notification requirements for NOI submittals added to this permit. Members of the public in New Mexico should be notified when the EPA receives a NOI to discharge into waters of the state. An official comment period for each NOI should also be required. Without these provisions public notice and participation aspects of this permit are seriously deficient. 33 U.S.C. 1342(j).

The general permit is not complying with the public participation requirements of a number of federal court decisions, such as the Ninth Circuit's decision in Environmental Defense Center, Inc. v. EPA, 344 F.3d 832 (9th Cir. 2003), and the Second Circuit's decision in Waterkeeper Alliance, Inc. v. EPA, 399 F.3d 486 (2d Cir. 2005). These court decisions held that there must be public comment on documents that contain the details about how the discharger planned to control discharges.

In the case of the proposed MSGP 2006, most of the information about the discharge is contained in the SWPPPs and therefore, to meet requirements of the various regulations and court decisions indicated above, the public needs access to and public comment periods on each proposed SWPPP.

Individual Permits
Entities over a certain size should be required to obtain an individual permit. We are concerned that at this point hardly anything seems to trigger an individual permit. Since the majority of the pollution reaching our river systems does so during rain and snow melt events, it is time to require individual stormwater permits for larger industrial sites. For example, that an industrial site as large as Los Alamos National Laboratory (LANL), has been operating under the general permit for years is unacceptable. The only reason that they are now being required to obtain an individual permit (only for a limited portion of their stormwater discharges) is because the State of New Mexico, over a period of years, aggressively pushed the federal government to require them to do so. There are many other sites that are large and complicated like LANL that should also be regulated under individual permits. For example, here in New Mexico, Sandia Labs and some of the larger mining sites, such as Phelps Dodge and Molycorp, should also be required to obtain an individual stormwater permit. To adequately protect our watersheds in New Mexico, a set of criteria that triggers the requirement to gain coverage under an individual stormwater permit should be developed and included in the MSGP.

Another reason that the general permit is not adequate for these larger facilities is the 3-year cut-off for reporting and controlling stormwater from running onto and off of contaminated spills. Many of these larger and more complicated sites have been discharging contaminants into our environment here in New Mexico for over 50 years and have a long legacy of toxic spills. It is completely inappropriate to only require them to control runoff from spills and problem areas created over the 3 years prior to requesting coverage. Individual permits that require these large sites to control stormwater pollution from all of the spills and contaminated areas on their property is necessary to protect the environment and public health of New Mexico. At the very least this 3-year cut-off needs to eliminated from the general permit.

Impaired and TMDL Waters –
The draft permit does not adequately protect the numerous impaired waters in New Mexico. Discharges of impaired constituents into impaired waters is explicitly prohibited by Clean Water Act regulations which clearly state that "no permit shall be issued… if the discharge from its construction or operation will cause or contribute to the violation of water quality standards." 40 CFR 122.4(i). This general permit illegally permits discharges into the impaired sensitive water bodies. In addition, a discharge into an impaired water with a TMDL written for it, when the potential discharger does not have a specific Waste Load Assigned (WLA) assigned, is in direct conflict with CWA regulations that state "no NPDES permit may be issued which is in direct conflict with an approved Water Quality Management (WQM) plan." 40 CFR 130.12 (a).

Tier I Antidegradation regulations require that "instream water uses and level of water quality necessary to protect the existing uses shall be maintained and protected." 40 CFR 131.12(1). If antidegradation were implemented correctly, discharges of impaired constituents into impaired waters would not be allowed nor would discharges of a constituent that would result in causing or contributing to the impairment of a water body be allowed because otherwise you are not "maintaining and protecting" water quality. The proposed MSGP 2006 is not protecting our already impaired rivers and streams here in New Mexico. The permit should be revised to prohibit and better control discharges into these sensitive river segments.

Monitoring and Inspection Requirements are Lacking
Both monitoring and visual inspection requirements in the proposed MSGP 2006 are confusing and inadequate. One year of monitoring over a 5-year permit period is not adequate to protect the rivers and streams of New Mexico. In addition, requiring an average of 4 samples that exceed the benchmark to trigger more monitoring is not protective enough. More monitoring and visual inspections need to be required especially where effluent limitations apply or when there is a discharge into an impaired receiving water body. The representative outfall loopholes for both monitoring *and* visual inspections are dangerous and unacceptable and should be removed from the permit.

Antidegradation Review
Antidegradation procedures and review are not given adequate attention in the proposed permit. The general permit should include more information about the principles of antidegradation water quality standards. The one sentence

on page 9 of over 200 pages of permit requirements does not place enough significance on this very important [step in obtaining coverage under the general permit.

Antidegradation review should be required to be conducted on the proposed issuance of this general permit as well as on each NOI. There is no indication in the draft permit that antidegradation has been taken into account in the drafting of the general permit. Antidegradation review is triggered by "any one of or a combination of several activities" according to section 4 of the EPA Water Quality Standards Handbook and is certainly required of each new or expanded NPDES permit. Therefore, an antidegradation review should be triggered by the drafting of a revised general NPDES permit, as well as by individual NOI submittals.

Discharges into tier II waters should trigger tier II antidegradation review to ensure that the lowering of water quality by allowing the discharge is necessary to "accommodate important economic or social development in the area where the waters are located." 40 CFR 131.12 (2). A tier III review should be conducted to ensure that none of the waters impacted by the discharge are Outstanding National Resource Waters (ONRWs). No discharges of any pollutants that results in any impact to the water quality in an ONRW should be allowed. 40 CFR 131.12(3). At no point does the permit require a review by either the discharger or the EPA to check that no discharges are allowed into ONRWs.

Coverage under the general permit should not be granted unless EPA or the appropriate state agency has certified that an antidegradation review has concluded that the proposed discharge is "necessary to accommodate important economic or social development" and that the discharge does not cause or contribute to impairment of water quality standards.

More Information Needed on the NOIs:
The NOI needs to include information about the receiving stream, such as identifying impaired waters and identifying whether or not the receiving stream is an Outstanding National Resource Water (ONRW). The NOI should require the permitee to certify that they have actually read the entire permit. The NOI should also require the applicant to indicate that a SWPPP has been completed for the site. Currently the NOI only requires identification of where the SWPPP will be stored and the contact person for the SWPPP. Written confirmation that the SWPPP has been completed prior to sending in the NOI should be required. The NOI should also indicate that the appropriate antidegradation review has occurred and whether or not the antidegradation review has resulted in an approval of the discharge. The applicant should also be required to indicate what agency completed or oversaw the review. Of course, all of these concerns could be easily addressed by requiring applicants to submit their SWPPPs with the NOI. We strongly urge EPA to create a cover sheet for the NOIs which would provide an easy way for the applicant to indicate whether the above suggested points have been addressed.

Illegal Discharges:
The proposed MSGP 2006 permit is different from the MSGP 2000 in that it no longer prohibits coverage by the permit to dischargers that are currently causing violations to water quality standards. Because meeting water quality standards is now a permit requirement rather than an eligibility requirement, the permit allows dischargers that are causing the exceedance of water quality standards to obtain coverage under the permit. This contradicts CWA requirements that all NPDES permits must ensure compliance with water quality standards. 40 CFR 122.44(d).

Thank you for the consideration of these comments. Unless the concerns indicated above are fully addressed, we are opposed to the issuance of the proposed MSGP 2006.

Sincerely,

Joni Arends
Concerned Citizens for Nuclear Safety
107 Cienega
Santa Fe, NM 87501
P: (505) 986-1973; F: (505) 986-0997
jarends@nuclearactive.org

Joan Brown, osf
Ecology Ministry
Social Justice Office of the Archdiocese of Santa Fe

Dick Wisner, Executive Director
Ruidoso River Association, Inc.

John Buchser
Water Issues Chair
Rio Grande Chapter, Sierra Club

Doug Meiklejohn
Executive Director
New Mexico Environmental Law Center

Patricia Sabourin, SC
Sisters of Charity-New Mexico Cluster
2621 Granite Ave NW
Albuquerque,New Mexico 87104-1701
Rachel Conn
Clean Water Circuit Rider
Amigos Bravos, Friends of the Wild Rivers

Sheri Kotowski
Embudo Valley Environmental Monitoring Group
PO Box 291
Dixon, NM 87527

Bryan Bird
Forest Program Director
Forest Guardians

Mike Maurer
New Mexico Trout

AMIGOS BRAVOS COMMENTS ON MSGP

Friends of the Wild Rivers
P.O. Box 238, Taos, NM 87571
Telephone: 505.758.3474
Fax: 505.758.7345

February 16, 2006

Water Docket OW-2005-007
Environmental Protection Agency
Mail code 4101T
1200 Pennsylvania Ave., NW
Washington D.C. 20460

Sent by email to: ow-docket@epa.gov

RE: Comments on 2006 Draft MSGP Docket ID No. OW-2005-007

Please accept the following comments on the Draft 2006 Multi Sector General Permit for Stormwater discharges.

Amigos Bravos is a nationally recognized river conservation organization guided by social justice principles. Amigos Bravos' mission is to protect and restore the rivers of New Mexico, and ensure that those rivers provide a reliable source of clean water to the communities and farmers that depend on them, as well as a safe place to swim, fish, and go boating. Amigos Bravos works locally, statewide and nationally to ensure that the waters of New Mexico are protected by the best policy and regulations possible. In this capacity Amigos Bravos works to make sure that New Mexico's water quality standards are protective enough to support the diverse human and non-human uses of our state's water resources. Strong application and enforcement of NPDES permits is a critical component of our work to protect clean water and the cultures that depend upon clean water here in New Mexico.

Amigos Bravos' comments have been divided up into 7 broader comments and then numerous sections specific comments.

General Comments:

1. Public Participation

• SWPPP Submittal and Public Access - Discharging facilities should be required to submit their SWPPP electronically to EPA when they submit their NOI. The EPA should then post SWPPPs with the NOI on the web to facilitate public accessibility to these key documents. The SWPPPs contain the majority of the important and relevant information about the discharge and about how the discharger will reduce discharges and it is these documents that we need to access and review to ensure that our watersheds here in New Mexico are being protected. Without access to SWPPPs the public participation and comment requirements of this permit under the CWA are not being met. 33 U.S.C. 1342(j) The public's ability to request a public hearing prior to the approval of permit coverage is also being denied. 33 U.S.C. 1342(a)(1) • NOI Submittal and Public Access – There should be additional public

notification requirements for NOI submittals added to this permit. The members of the public in New Mexico (and members of the public from other states for discharges in their state) should be notified when the EPA receives a NOI to discharge in their state. An official comment period for each NOI should also be required. Without these provisions public notice and participation aspects of this permit are seriously deficient. 33 U.S.C. 1342(j)

• The general permit is not complying with the public participation requirements of a number of federal court decisions. Such as the Ninth Circuit's decision in Environmental Defense Center, Inc. V. EPA, 344 F.3d 832 (9th Cir. 2003), and the Second Circuit's decision in Waterkeeper Alliance, Inc. V. EPA, 399 F.3d 486 (2d Cir. 2005). These court decisions held that there must be public comment on the documents that contain the bulk of the details about how the discharger plans to control discharges.

2. Individual Permits Entities over a certain size should be required to obtain an individual permit. We are concerned that at this point hardly anything seems to trigger an individual permit. Amigos Bravos is not aware of any individual stormwater permits in region 6 except for the promise of a yet to be seen individual stormwater permit for Los Alamos National Laboratory (LANL). Since the majority of the pollution that is reaching our river systems does so during rain events it is time to require individual stormwater permits for larger industrial sites. It is unacceptable for example, that an industrial site as large as LANL has been operating under the general permit for years. The only reason that they are now being required to obtain an individual permit, though it should be noted only for a small portion of their stormwater discharges, is because the State of New Mexico aggressively, over a period of years and years, pushed EPA to require them to do so. There are many other sites that are large and complicated like LANL that should also be regulated under individual permits. For example, in New Mexico, Sandia Labs and some of the larger mining sites such as Phelps Dodge and Molycorp, should also be required to obtain an individual stormwater permit. To adequately protect our watersheds in New Mexico, a set of criteria that triggers the requirement to gain coverage under an individual stormwater permit should be developed and included in the MSGP.

3. Impaired Receiving Waters –

• Discharges of impaired constituents into impaired waters is explicitly prohibited by Clean Water Act regulations which clearly state that "no permit shall be issued… if the discharge from its construction or operation will cause or contribute to the violation of water quality standards." 40 CFR 122.4(i) Therefore discharges into impaired water bodies should be prohibited unless a WLA has been set by a TMDL that specifically applies to the discharge, otherwise the discharge is causing or contributing to the violation of water quality standards. If a WLA has been assigned then effluent limits (not benchmarks) should be set on discharges into TMDL streams to ensure that they are meeting their WLA. A discharge into an impaired water with a TMDL written for it when the potential discharger does not have a specific WLA assigned is also in direct conflict with Clean Water Act regulations that state that "no NPDES permit may be issued which is in direct conflict with an approved Water Quality Management (WQM) plan." 40 CFR 130.12 (a) TMDLs are considered WQM plans (40 CFR 130.6 (c)(1)) and therefore discharges into a TMDL stream are prohibited unless they have been specifically assigned a WLA because otherwise they are in direct conflict with the TMDL which is a WQM plan. Entities that are discharging into impaired receiving waters without a TMDL should be completely prohibited. It is totally unacceptable to have discharges into impaired streams without even effluent limits for the impaired constituent(s).

• Tier I Antidegradation regulations require that "instream water uses and level of water quality necessary to protect the existing uses shall be maintained and protected." (40 CFR 131.12(1)). If antidegradation were implemented correctly, no discharge of an impaired constituent that would be allowed into impaired waters nor would discharge of an constituent that would result in causing or contributing to the impairment of the water body because otherwise

you are not “maintaining and protecting” water quality. This means that effluent limits (not benchmarks) of 0 for impaired constituents in 303d waters should be set.

• What really should be required is that all dischargers that are discharging into impaired streams, whether there is a WLA and/or TMDL or not, should be required to obtain an individual stormwater permit – also with effluent limits.

4. Antidegradation Review (Section 1.2.4.10)

• The general permit should require an antidegradation review of each new discharge (40 CFR 131.12) regardless of whether or not the state has adopted antidegradation policies. For states that have not implemented adequate antidegradation policies an EPA antidegradation review should be triggered.

• The general permit should include more information about the principles of antidegradation water quality standards. The one sentence on page 9 of over 200 pages of permit requirements does not place enough significance on this very step in obtaining coverage under the general permit.

• Antidegradation review should be conducted on the proposed issuance of this general permit as well as on each NOI. There is no indication in the draft permit that antidegradation has been taken into account in the drafting of the general permit. Antidegradation review is triggered by “any one of or a combination of several activities” according to section 4 of the EPA Water Quality Standards Handbook and is certainly required of each new or expanded NPDES permit. Therefore an antidegradation review should be triggered by the drafting of a revised general permit as well as by individual NOIs submittals under this new permit.

• Impaired waters as well as waters that are just barely meeting water quality standards especially need to be protected by Tier I antidegradation protections – see comment 3 above.

• Discharges into tier II waters should trigger tier II antidegradation review to ensure that the lowering of water quality by allowing the discharge is necessary to “accommodate important economic or social development in the area where the waters are located.” 40 CFR 131.12 (2)

• A Tier III review should be conducted to ensure that none of the waters impacted by the discharge are ONRWs. No discharges of any constituent that results in any impact to the water quality in an ONRW should be allowed. 40 CFR 131.12(3) At no point does the permit require a review by either the discharger or the EPA to check to ensure that no discharges are allowed into ONRWs.

• How does the EPA know if an antidegradation review has taken place from the limited information provided in the NOI? Coverage under the permit should not be granted unless EPA or the appropriate state agency has certified that an antidegradation review has concluded that the proposed discharge is “necessary to accommodate important economic or social development” and that the discharge does not cause or contribute to impairment of water quality standards.

5. NOI Requirements are Lacking:

The NOI needs to include information about the receiving stream such as identifying impaired waters and identifying whether or not the receiving stream is an Outstanding National Resource Water (ONRW). The NOI should require the permitee to certify that they have actually read the entire permit. The NOI should also require the applicant to indicate that a SWPPP has been completed for the site. Currently the NOI only requires identification of where the SWPPP will be stored and the contact person for the SWPPP. Written confirmation that the SWPPP has been completed should be required. Of course, this could be easily addressed by requiring that the SWPPP be

submitted with the NOI – see comment #1. The NOI should indicate that the appropriate antidegradation review has occurred and whether or not the antidegradation review has resulted in an approval of the discharge. The applicant should also be required to indicate what agency completed or oversaw the review.

6. Monitoring and Inspection Requirements are Inadequate:
The representative outfall loopholes for both monitoring *and* visual inspections are dangerous and unacceptable and should be removed from the permit. Under this scenario a discharger can claim representative outfall exemptions for an outfall for both monitoring and visual inspections. This means that there is not any way to know what is going on at these outfalls. There is no way to even know if the outfall over time could still be considered a representative outfall. There should at least be visual inspections requirements to verify that an outfall still falls under the category of a "representative outfall" if a discharger wants to claim the monitoring representative outfall provision. As indicated here and below in the section specific comments both the monitoring and visual inspection representative outfall loopholes should be removed.

7. Permit Authorizes Illegal Discharges:
The proposed permit is different from the MSGP 2000 in that it no longer prohibits coverage by the permit to dischargers that are causing violations to water quality standards. Because meeting water quality standards is now a permit requirement rather than an eligibility requirement the permit allows dischargers that are causing the exceedance of water quality standards to obtain coverage under the permit. This contradicts CWA requirements that all NPDES permits must ensure compliance with water quality standards 40 CFR 122.44(d).

Section Specific Comments:
1. Fact Sheet page 25 A waiver of the public comment period for new operators who submit NOIs during the first 30-day comment period should not be waived. This would not enable "new facilities no longer able to seek coverage under MSGP 2000 to seek coverage as soon as possible under MSGP 2006" as the fact sheet indicates. It may allow them to obtain coverage faster but nothing is stopping these operators from seeking coverage by filing their NOIs on the first day that the MSGP 2006 is issued. This proposed waiver of the public comment period would be in direct violation of the already illegally inadequate public participation provisions of the proposed general permit.

2. Section 1.2.4.8 – This language should be changed to "discharge of a hazardous substance or oil caused by a non-stormwater discharge are not authorized by this permit". The way the language is written now it appears that discharges of hazardous substances, under certain levels, caused by a non-stormwater event are permitted by this permit. A stormwater permit should not be authorizing discharges of hazardous substances during a non-storm situation even if the discharge is below reporting quantities- these reporting quantities are not even identified in the permit. A general permit for stormwater should not be authorizing non-storm event discharges that should require an individual NPDES.

3. Section 1.4.2. - If the benchmark monitoring is supposed to be the mechanism by which dischargers determine if their SWPPP is effective then why are dischargers only required to monitor for one year? BMPS have been known to fail after a year or two and thus monitoring throughout the life of the permit should be required. We all know that straw bales decompose! Requiring an average of 4 samples that is over the benchmark to trigger more monitoring is not protective enough. If quarterly monitoring is not going to be required for the full life of the permit then at the very least one exceedance of the benchmark should trigger additional monitoring.

4. Section 1.4.4.1. – As mentioned in comment 3 above, discharges into TMDL streams of constituents of concern must be specifically prohibited unless a specific WLA has been made for that discharge. The second paragraph of

this section should be entirely replaced with language that prohibits discharges into impaired streams with a TMDL if a specific WLA has not been set that applies to that discharge.

5. Section 1.4.4.2 For reasons expanded upon in comment 3 above, this entire section should be replaced with language that prohibits discharges into impaired streams or, at the very least, requires effluent limits for those constituents.

6. Section 1.5.1 – The language "prior to submitting a NOI" should be added to the end of the second bullet. A bullet should be added to this section that requires electronic submittal of an NOI to better facilitate the electronic posting of the NOIs. An additional bullet should be added to this section that requires the electronic submittal of the SWPPP or at the very least require that the entity have an updated copy of the SWPPP electronically available and require them to provide it to members of the public upon request.

7. Section 1.5.2 – Amigos Bravos appreciates the change of a waiting period from 2 days to 30. This will help us to better track discharges and better protect our rivers and streams in New Mexico. Of course this is assuming that we happen to check the website during those 30 days. This is an example of why public notice of NOIs should be required.

8. Section 2 – Amigos Bravos recommends that EPA add language in this section recommending that dischargers have a professional engineer draft the SWPPP. A mere recommendation does not unduly burden the regulated community, as they are not required to follow the recommendation. It could however, in some cases, result in much more comprehensive and effective SWPPS, which would result in better protection for some receiving waters. A simple recommendation could make a big difference.

9. Section 2.1.3 – "Ephemeral" should be added to the list of surface waters that the discharger must identify in their SWPPP. In New Mexico we have a large percentage of ephemeral waters and we want to make sure that they are protected by SWPPPs.

10. Section 2.1.3.2 – Language should be change from "If not stipulated in Part 5" to "In addition to specific stipulations in Part 5"

11. Section 2.1.4.2 – This section should require that the applying entity identify pollutants that are currently being used at the facility as well as pollutants that they anticipate they will use during the life of the permit.

12. Section 2.1.4.3 – For many facilities identifying the spills and leaks that have occurred in the 3 years prior to the date that they have to prepare a SWPPP is not adequate. For example in New Mexico the Molycorp Mine has a long history of tailings spills in the Red River Watershed in Northern New Mexico. There were over 350 spills that wouldn't be included in a current SWPPP because they occurred before 2003. These spills have occurred over the last 35 years of mining operations and represent over a thousand tons of spilled tailings sitting on the mine's property. If the mine only has to identify spills that have occurred during the last 3 years these 350 individual spills of contaminated tailings are left undocumented and presumably untreated and uncontrolled by the SWPPP. Another looming example of how the 3 three-year cutoff for identifying spills in Northern New Mexico is inadequate is the Los Alamos National Laboratory (LANL). LANL has over 2,000 contaminated toxic dumps (SWMUs) many of which are spread out and exposed to the elements. These dumps represent a 50-year legacy of haphazard disposal of toxic materials. Almost all of the SWMUs and other areas identified as areas of concern were created prior to the last 3 years. This leaves almost 2,000 contaminated areas uncovered by the SWPPP. The permit needs to require facilities to identify and mitigate all spills and leaks that have occurred over the entire life of the facility unless they

prove that that a spill has been completely cleaned up and either contained on or removed from the property. The 3-year cut off should be removed.

13. Section 2.1.4.7 – In addition to requiring a summary of stormwater monitoring data from the previous permit this section should require that the discharger keep copies of their monitoring data in close proximity to the SWPPP. This data should not be required to be submitted to the EPA (although as mentioned in previous comments the SWPPP should be submitted, preferably electronically to the EPA) but should be stored near the SWPPP at the facility so that the EPA or state officials can easily access it if necessary. Having historic monitoring information on hand is crucial in determining if there is a pattern of permit violations and thus what corrective actions and penalties should be undertaken.

14. Section 2.1.5.5 – Instead of merely documenting in their SWPPP a reason why they are going to do inspections at a different frequency, dischargers should be required to obtain EPA approval for a different inspection schedule. Since typically- at least the way the permit is now written - no one but the discharger sees the SWPPP simply documenting a reason in the SWPPP is not adequate. If the SWPPP were required to be submitted to the EPA and posted online then documenting the justification for a different inspection frequency in the SWPPP may be appropriate. Again, public notice and participation is compromised in that there is no way for the public to find out about altered inspection frequencies.

15. Section 2.1.5.9 – The last sentence in this section is confusing. The EPA should consider rephrasing this sentence to make their intentions clear to both the regulated community and to the public.

16. Section 2.3 – The list of circumstances that mandates a SWPPP update needs to be expanded. A SWPPP should be updated when materials are stored in new locations, when new activities are planned or are occurring, when an impacted water body is put on an impaired list, when a TMDL is written for an impacted water body, or when a water body is designated an ONRW.

17. Section 2.4 – To ensure that the public is able to review a SWPPP upon request in a timely fashion a time requirement on providing the SWPPP needs to be added to this section. Suggested language to be added to this section – “You must provide a copy of the SWPPP to any member of the public who makes such a request in writing within 10 business days of receipt of the request.” Otherwise the public could be left waiting for months to access a SWPPP.

18. Section 3.1.3 – Again only inspecting spills or leaks that have occurred in the past three years is not adequate for many sites. See comment 12.

19. Section 3.1.5- The Compliance Evaluation Report should also require that the discharger identify the intensity of the storm event during which the inspection took place.

20. Section 3.2.1- Under the waiver section (the fifth bullet of this section) a time limit on waivers needs to be set before they either commence monitoring again or terminate coverage under the permit.

21. Section 3.2.1 – The Representative Outfalls section (sixth bullet of the section) should be eliminated. Different circumstances always apply to some degree to different locations. There could be different activities that occur in one area during one month that didn’t occur in the other area. For example a mechanical problem in one area that required movement or repair of equipment or materials resulting in spills or leaks would cause problems in one area that wouldn’t show up in another similar area. Or BMPs may have been installed at different times and with

differing expertise in two different areas resulting in very different runoff scenarios between two similar areas. Therefore all outfalls should be inspected and monitored regardless of whether or not they appear on the surface to be similar to other outfalls. This combined with the other layers of protection that can be peeled away by the discharger can leave an entire outfall without any sort of oversight for the entire period of coverage under the permit – no monitoring, no visual inspections, and presumably no follow up corrective actions (because how would they be triggered if monitoring is not required?). What happens if benchmarks are exceeded at the representative outfall? Is the discharger required to implement corrective actions at all outfalls that are being "represented" that the one outfall?

22. Section 3.2.2.3- Monitoring should be required throughout the period of coverage under the general permit. If monitoring is only required for the first year then at least the determination that more monitoring is needed should be triggered if a benchmark is exceeded once in the first year of quarterly monitoring not only if the average of 4 quarterly monitoring events exceeds a benchmark. Quarterly monitoring could occur during very different storm events where the intensity or lack of intensity of a number of events could trigger a runoff scenario that results in a no exceedances of benchmarks yet under a different type of storm event there could be consistent benchmark exceedances. To protect our river systems we need to be sure that benchmarks are not exceeded under any runoff scenario. The permit already exposes the rivers in New Mexico to risk by only requiring monitoring during the first year (see comment 8) we should at least have the assurance that continued monitoring would occur if benchmarks are exceeded.

23. Section 3.2.2.4 – If the benchmarks are being exceeded then the SWPPP requirements are obviously not being met. Either that, or the permit is flawed and is not requiring adequate SWPPP requirements. Under no circumstances should a discharger be allowed to continue with what they have been doing if benchmarks are being exceeded. What is the point of the benchmarks if the only penalty that dischargers may have to face is business as usual with once per year monitoring. The discharger should be required to identify and correct the flaw in the SWPPP and associated on-theground actions that resulted in benchmark exceedances. If the benchmark exceedances are not stopped within a reasonable time period – for example after three consecutive quarterly monitoring reports- then a permit violation should be issued. This section provides an incentive for no action. This section clearly makes it a lot easier for the discharger to find ways to justify that their SWPPP is adequate and then not only not have to initiate any corrective action but also they only have to monitor once per year. Whereas if they initiate corrective action for at least 4 quarters.

24. Section 3.2.2.5 – The representative outfall bullet of this section should be removed for reasons described in comment 21.

25. Section 3.2.3.1 – DMRs should be required to be submitted electronically to facilitate public access to information. More and more often FOIA requests are denied to the public because of the costs of reproducing paper copies. If documents were submitted electronically then the EPA could pass on the DMRS electronically when requested and the copy cost, not to mention paper waste, could be eliminated resulting in easier and cheaper public accessibility to documents.

26. Section 3.2.5.1 – What if the specific monitoring requirements in Part 5 are less than once a year? This section should specify that they should follow whichever requires more monitoring. As mentioned in previous comments (comment 4) this permit does not protect impaired waters. The last sentence in this section should be removed. Monitoring of the impaired constituent(s) should be required for every year of the term of the permit regardless of whether or not it is detected during the first year.

27. Section 3.2.5.2- As mentioned in previous comments (comment 4) discharges into impaired waters with a TMDL when there isn't a WLA for the discharge should be prohibited.

28. Section 3.2.5.2 – When a discharger is subject to corrective action requirements does that mean that they are in violation of the permit? If not, then they should be.

29. Section 3.3. – Corrective actions should be required when a benchmark is exceeded not only after a benchmark has been exceeded and the discharger has determined that their SWPPP is not meeting requirements. The fact that a benchmark has been exceeded - and in this case not only has a benchmark been exceeded once, the average of four monitoring events have exceeded a benchmark, which means either there was one extremely high exceedance or a benchmark was exceeded more than once – is proof that the SWPPP does not meet the requirements and corrective action is necessary.

30. Section 3.3 – Copies of the corrective actions should be required to be kept on site with the SWPPP and should be made available to the public by the discharger upon request.

31. Section 3.6- Corrective actions should be added to the list of documents that must be maintained for at least 3 years from the date that facilities coverage under the permit expires or is terminated.

32. Sector M- Add at least a benchmark if not an effluent limit for Mercury to requirements for this sector. Automobile salvage yards are susceptible to mercury pollution as indicated in the draft permit itself. The fact that mercury was not detected above average in enough salvage yards when gathering data to establish the benchmarks to set a benchmark for sector M does not remove the risk of mercury contamination running off of auto salvage industrial sites. Because Mercury is so toxic and dangerous to public health a mercury benchmark should be added to sectors that are likely to have Mercury products – such as Sector M,

33. Sector M- Amigos Bravos urges the EPA to require vehicle recyclers and auto salvage yards to remove mercury-containing auto switches prop to vehicle crushing. This should be accompanied with a requirement for auto makers to fully fund switch removal and mercury disposal. This is a recommendation that many states are adopting and it is time for the EPA to start implementing this recommendation in the regulatory process.

34. Appendix E – The determination of whether a discharger is meeting criterion E is a purely subjective determination that should not be left entirely up to the discharger as the discharger typically does not have the expertise to make the determination that "the industrial activity and allowable non-stormwater discharges are not adversely affecting any federally-listed endangered or threatened species or designated critical habitat". This criterion should be completely removed. This provides an easy out of ESA review for applicants. They can merely make the determination themselves that their discharge is not adversely affecting endangered species or associated habitat and indicate that they meet criteria E. Dischargers are not able to provide an objective opinion of these facts even if they did have the appropriate expertise.

35. Appendix G- The NOI should require the applicant to certify that a SWPPP has been completed for the facility. The NOI now only requires that an address of where the SWPPP will be kept and a contact person for the SWPPP. By requiring a the applicant to check a box that certifies that the SWPPP has been completed will discourage applicants from trying to speed up the process by applying before the SWPPP has been completed.

36. Footnote Sector K- The footnote for sector K is confusing and needs to be clarified. Over the past 5 years, under the MSGP 2000 Amigos Bravos had a problem identifying to whom these effluent limits apply. For example, do

these effluent limits apply to the SWMUs and AOCs located on Los Alamos National Laboratory property? We are unable to determine if they do or not from this footnote.

37. Footnotes- All Sectors- This monitoring footnotes are confusing. Do the industrial site in sectors with effluent limits have to monitor quarterly for the first year and then once a year thereafter? Or do they only have to monitor once a year for the entire term of the permit. It is the former then there is not enough monitoring required to determine if the facilities are meeting the effluent limits. They should be required to monitor quarterly for the parameters with effluent limits for the first year as they are for benchmark parameters and then continue to monitor quarterly if they exceed the effluent limit, if they don't exceed the limit during the first year of quarterly monitoring then they could lower to once a year monitoring for the rest of the permit period. Under the once a year monitoring scenario for the entire life of the permit the parameters with effluent limits are monitored and controlled less than the parameters with benchmarks. This doesn't make sense when presumably the parameters with effluent limits are the more dangerous and problematic parameters.

38. All Sectors- Hardness Based Benchmarks- Many of the benchmarks for metals are based on a calculated value from the hardness of the water. The equation used to determine the hardness of the water is very complicated and convoluted and seems unnecessary since hardness can change throughout a storm event. For simplicity an average hardness should be picked and a benchmark should be set for all dischargers. If the benchmark is exceeded then, if appropriate, the discharger can make the justification that the hardness was not set appropriately. This would simplify the process and facilitate more accurate monitoring and benchmark reporting.

39. Many Sectors - Effluent Limits are Too High- While the benchmarks have mostly been improved from the MSGP 2000 the effluent limits have not. This is especially a problem in smaller water quality limited streams, of which we have many here in New Mexico. Since the MSGP 2006 does not account for the size or quality of the receiving water the limits need to be protective of all streams – small or large. To do this many of the limits need to be lower. For example, in Sector C the Total Phosphorus effluent of 105 mg/L is very high and not protective enough of smaller receiving streams. In sector K the BOD limit of 220 mg/L is very high. Raw sewage can have a BOD that high! The BOD monthly average in Sector K is also unreasonably high. In Sector L the BOD limit of 140 mg/L is also too high as is the ammonia limit of 10 mg/L, which is high enough to hurt smaller waterways.

Because of the numerous reasons explained above, Amigos Bravos opposes the issuance of the proposed MSGP 2006. We urge you to address our comments before issuing a final permit.

Thank you for your consideration of our comments and concerns. We look forward to hearing from you about these issues.

Sincerely,

Rachel Conn
Clean Water Circuit Rider
Amigos Bravos

AMIGOS BRAVOS COMMENTS ON
LOS ALAMOS COUNTY NPDES PERMIT - BAYO CANYON

Friends of the Wild Rivers
P.O. Box 238, Taos, NM 87571
Telephone: 505.758.3474
Fax: 505.758.7345

March 24, 2006

Sent Via Electronic Mail

Ms. Diane Smith
U.S. Environmental Protection Agency (EPA)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

RE: Los Alamos County NPDES Permit No. NM0020141

Dear Ms. Smith:

Amigos Bravos, Friends of the Wild Rivers submit the following comments on the proposed NPDES Permit No. NM0020141 for Los Alamos County Public Utilities Department – Bayo Canyon- in Los Alamos County, NM.

As a statewide river conservation organization based in Taos and Albuquerque, Amigos Bravos, Friends of the Wild Rivers, works to protect the ecological and cultural richness of the Rio Grande and other rivers in New Mexico. Amigos Bravos is committed to identification and the use of state and federal regulatory processes to stop ground and surface pollution migrating from LANL facilities into our state's water resources. Amigos Bravos has specifically been working to protect and restore water quality and quantity in White Rock Canyon. Amigos Bravos believes that NPDES discharge permits provide the public with a unique opportunity to work with the EPA, State, and the discharging facility, to develop the best possible protection for surface water downstream from the facility. By preventing additional pollution from being released, and by requiring clean up of historic releases, the public's right to clean water will be protected.

Our comments have been organized into the following topic areas:

Chronic Life Criteria:
The permit is written to protect acute aquatic life criteria but not the more sensitive chronic aquatic life criteria. The permit should be protective of both:

• We believe that the numeric standards detailed in 20.6.4.98 NMAC may apply rather than those detailed in 20.6.4.128 NMAC. There have been land transfers and sales in the area over the past couple of years and it is unclear to us which standards apply. Regardless, the New Mexico State Water Quality Standards are not consistent. Standards are biased in favor of LANL as they have the only intermittent waters in the state that do not have numeric chronic aquatic life

criteria (Sections 20.6.4.98 and 20.6.4.128 NMAC).

• There is ample evidence that shows that more protective effluent requirements are needed to protect the aquatic life in Los Alamos County Canyons. There is the Pill Clam, which is one of the only remaining native mountain clams left. The United States Fish and Wildlife Service (USFWS) has done studies that show, that to survive, the pill clam needs at least numeric chronic life criteria applied. According to USFWS, the Pill Clam is especially sensitive to high ammonia levels. There are also Spade-Foot Toads found in Los Alamos canyons. They are very adapted to the intermittent and ephemeral nature of the water bodies found in the area as they bury themselves in the mud and dirt of the canyon bottoms and only emerge when there is flow. The Spade-Foot Toad's (actually a frog) tadpoles have been shown to die if copper levels go over the numeric chronic life criteria. Because the permit does not protect the aquatic life found in the receiving stream, it is not written in compliance with the State of New Mexico's Surface Water Quality Standards. Narrative criteria found in NM's Water Quality Standards states that "Surface waters of the state shall be free of water contaminants ... in quantities that damage or impair the normal growth, function or reproduction of aquatic life.." and "..surface waters of the state shall be free of toxic pollutants…that affect the propagation of fish or that are toxic to humans…. fish or other aquatic life." (20.6.4.13.A. and 20.6.4.13.F NMAC). This narrative criteria should be used to establish more stringent effluent limits to protect aquatic life in Bayo Canyon.

BOD, Ammonia, PCB, and TSS, Limits:

• The limit for BOD5 should be based on water quality based effluent limit, not based on technology based effluent limits. The fact sheet indicates that effluent limits are set by calculating both technology based effluent limits and water quality based effluent limits and then setting the effluent limit by the one that is more stringent. Yet, it is unlikely that a small stream with low or no background flow can assimilate a weekly average of 514 lbs/day BOD with concentrations of 30 mg/L monthly average and 45 mg/L weekly average (and a presumed daily max of over 60 mg/L) and not violate the DO criteria. Has there been a DO model done for New Mexico stream in general or Los Alamos streams specifically? We believe that more protective BOD5 limits should be set according to limits found protective in other states such as those listed below.

Similar permits for low or zero dilution flow streams in other states have monthly averages of:

BOD limits in the range of 6 to 15 mg/L
Ammonia of 0.4 to 5 mg/L.

• There should be Ammonia limits added to the permit. As detailed above, native aquatic life such as the pill clam, which is found in area drainages, cannot survive in systems with levels of ammonia above the chronic life numeric standard for ammonia.

• PCB effluent limits should be added to the permit. The DOE Oversight Bureau has found concentrations of PCBs over 800 ng/L in stormwater samples right below the Bayo Treatment Plant 1. Another stormwater sample taken further downstream showed PCB concentrations at 2,493 ng/L. 2 This is over 170 times more than the state standard for wildlife habitat and almost 4,000 times more than the state standard that is protective of human health. Because of these and other results the State of New Mexico is considering listing many of the canyons in Los Alamos as impaired for PCBs. The permit should require PCB effluent limits that are protective of New Mexico surface water quality standards.

• According to the fact sheet TSS Effluent limits are based on recorded limits from the discharge– which seems contradictory to requiring a permit – why require a permit if you are going to base their effluent limits on what they

are discharging instead of on protecting the receiving water body? If the stream TSS is considered to be 24 mg/l (which was the recorded TSS of the effluent) then why are the TSS limits set at 30 mg/l for the 30 day average and 45 mg/l for the 7 day average. It does not seem that these limits would be protective of a 24mg/l TSS stream.

Thank you for the consideration of these comments. Unless the concerns indicated above are addressed we are opposed to the issuance of the proposed permit.

Sincerely,

Rachel Conn,
Amigos Bravos, Friends of the Wild River

1 Sample was taken by the New Mexico DOE Oversight Bureau on 9/8/2000.
2 Sample was taken by the New Mexico DOE Oversight Bureau on 9/6/2003

REFERENCES

ATSDR, 1995a. *Tritium in Residential Groundwater Wells*, 02/14/95

ATSDR, 1995b. *Nitrates in Groundwater*, 4/4/95

CCNS, 2004, *New Mexico's Right to Know: The Potential for Groundwater Contaminants from Los Alamos National Laboratory to Reach the Rio Grande*, July 2004

DOE/NNSA, *Ten-Year Comprehensive Site Plan for LANL FY06 – FY15,* LA-CP-05-0992.

EPA NPDES Permit No. NM0028355 Fact Sheet

LANL 1947. Memo from Eric R. Jette to George Williams on the subject of Disposal of Contaminated Sewage. November 4 1948

LANL, 1995. Task/Site work plan for Operable Unit 1049. Los Alamos Canyon and Pueblo Canyon. Los Alamos National Laboratory Report LA-UR-95-2053. Los Alamos, NM

LANL, 1996. *A History of Radioactive Liquid Waste Management at Los Alamos*, Report LA-UR-96-1283

LANL, 1999. Draft Watershed Management Plan. Los Alamos National Laboratory, Los Alamos, New Mexico. February 9, 1999

LANL, 2004. *Environmental Surveillance at Los Alamos during 2003*, LA-14612-ENV, September 2004

LANL, 2005. *Environmental Surveillance at Los Alamos during 2004*, LA-14239-ENV. September 2005

LANL, 2006a. LANL online water quality database, http://wqdworld.lanl.gov

LANL, 2006b. *Interim Measures Work Plan for Chromium Contamination in Groundwater,* LA-UR-06-1961. ER2006-0214. March 2006.

Lusk, J.D., R.K. Russell, D. Chapman, and A. Allert, 2002. *A Water Quality Assessment of Four Intermittent Streams in Los Alamos County, New Mexico*. USFWS and USGS joint study

New Mexico Environment Department, 2005, Letter to LANL regarding Interim Measures Work Plan Requirement, Groundwater Contaminants Detected in the Regional Aquifer at R-28, Los Alamos National Laboratory, EPA ID #NM0890010515, HWB-LANL-GW-MISC, dated December 29, 2005.

New Mexico Environment Department DOE Oversight Bureau, 2004. "Polychlorinated Biphenyls in Water in the Upper/Middle Rio Grande Watershed 2000-2003".

New Mexico Environment Department DOE Oversight Bureau "Plutonium in LA Canyon **"

New Mexico Environment Department DOE Oversight Bureau "Post Cerro Grande Fire Channel Morphology in Lower Pueblo Canyon, Reach P-4 West: and Storm Water Transport of Plutonium 239/240 in Suspended Sediments October 2004".

New Mexico Water Quality Control Commission, 2004. 2004-2006 State of New Mexico Integrated Clean Water Act 303(d) / 305(b) Report. December 2004.

New Mexico Water Quality Control Commission, 2005. State of New Mexico Standards for Interstate and Intrastate Surface Waters, as amended through May 23, 2005 Water Quality Control Commission, Santa Fe, NM. http://www.nmcpr.state.nm.us/nmac/parts/title20/20.006.0004.pdf

River Network, *The Clean Water Act Owner's Manual, 2nd Ed.*, Portland, Oregon:River Network.