



Town Hall on Water Quality

August 26, 2008

***Note: This version has been slightly
revised from the version presented at the
Town Hall***



Town Hall Panelists:

- **Rick Carpenter, BDD Project Manager**
- **Norm Gaume, PE, Consultant to BDD Board & Staff**
- **Robert Gallegos, Environmental Specialist,
Public Utilities Dept., City of Santa Fe**
- **Kerry J. Howe, PhD, PE, BCEE,
Associate Professor, University of New Mexico**



Why we're here

- Public voiced concern over water quality, specifically potential radionuclide contamination
- BDD Board directed staff to hold Town Hall
- Why now? FEIS was upheld by U.S. Forest Service & U.S. Dept. of the Interior



BDD Will Serve Santa Fe Region

Total permitted capacity:

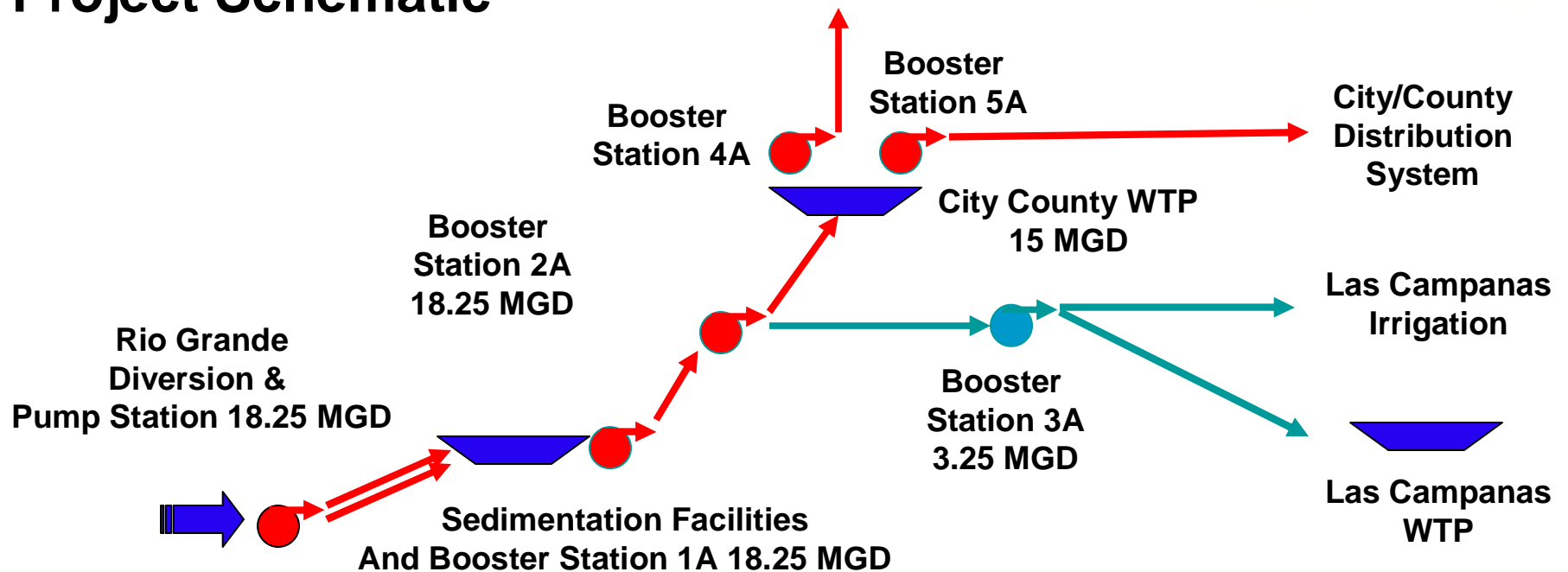
- **8,730 acre feet/year (AFY)
(average 7.8 million gallons/day;
18.3 million gallons/day peak)**

Allocations:

- **City – 5,230 AFY**
- **County – 1,700 AFY**
- **Las Campanas – 1,800 AFY**



Buckman Direct Diversion Project Schematic





Why We Need the BDD Now

- 1. Pumping too much water from regional groundwater wells, potentially damaging underground aquifer**
- 2. Groundwater pumping at current levels is unsustainable**
- 3. Santa Fe River reservoirs can only supply about half of region's needs in best of years**





Why We Need the BDD Now (continued)

- 4. We do not have enough drinking water right now**
- 5. Supply could be dramatically reduced by circumstances beyond our control (prolonged drought or fire in the watershed)**





BDD Major Components

- **Surface diversion structure**
- **Sediment removal facility and sand return**
- **Pipelines, 5 pump stations, surge facilities**





BDD Major Components (continued)

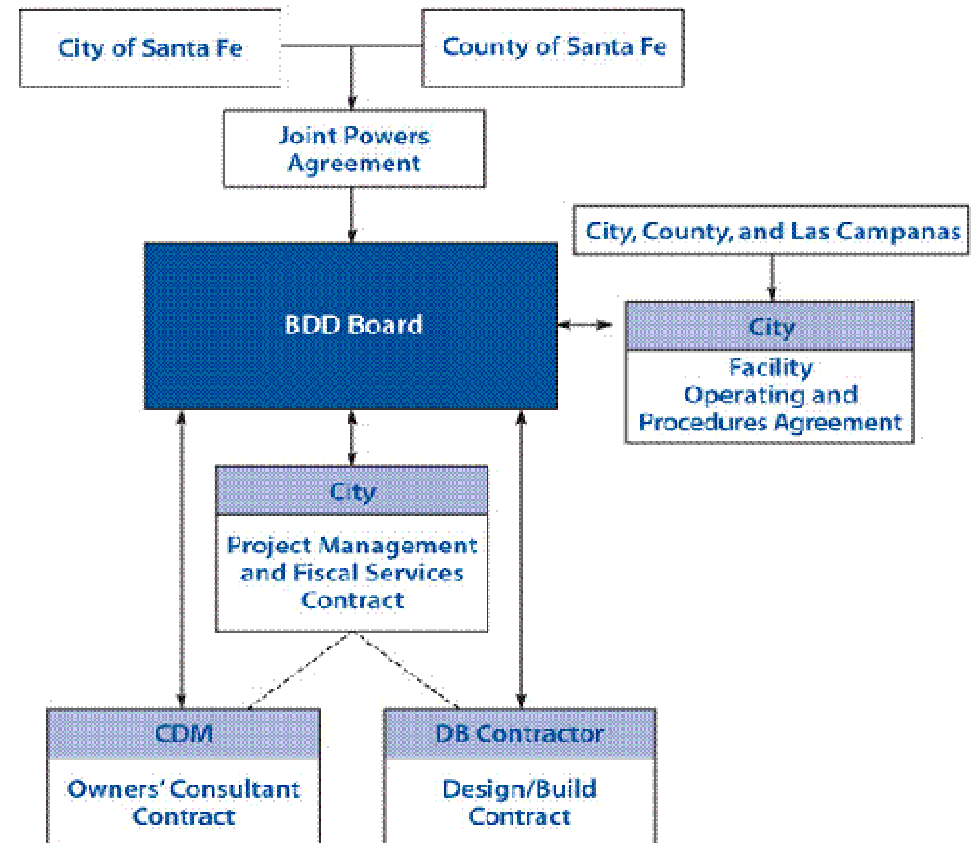
- 11 miles of raw water pipeline, more than 1,100 feet of lift
- 15 million gallon per day WTP (city/county only)
- 26 miles of new “finished” water pipeline





How is BDD Governed?

- 2005 Joint Powers Agreement (JPA)
- FOPA – Facility Operations & Procedure Agreement
- PMFSA – Project Management & Fiscal Services Agreement







BDD Project History

- 1997 – Rio Grande Diversion Study
- 2001 – Initial Screening of Alternatives
- 2002 – Memorandum of Understanding for Preparation of Environmental Impact Statement
- 2004 – USFS & BLM Issue Draft Environmental Impact Statement for Public Review and Comment
- 2004 – CDM Selected Through Competitive Procurement Process as Owners' Consulting Engineer
- 2006 – Office of the State Engineer Issued Permit for BDD Diversion of San-Juan Chama Water
- 2006 – US Fish & Wildlife Service Requested Biological Assessment
- 2006 - CDM Completed Draft Preliminary Design Plan



BDD Project History – Continued

- 2007 – US Fish and Wildlife Service Issued Biological Opinion and Approves Fish and Wildlife Coordination Act Report
- 2007 – Preliminary Design Plan Finalized
- 2007 – Final Environmental Impact Statement Issued
- 2007 – Request for Proposals Issued for Design-Build Contract
- 2007 – NMED Certified Corps of Engineers Permit for Dredge and Fill
- 2008 – Design-Build Contract Executed (Finalized)
- 2008 – Final Environmental Impact Statement Record of Decision Issued
- 2008 – Bureau of Land Management Issued Right-of-Way Permit to BDD Project
- 2008 – Appeals to Final Environmental Impact Statement Filed with US Forest Service Regional Office & US Department of the Interior
- 2008 – Appeals Denied; Record of Decision and Final Environmental Impact Statement Upheld



BDD Project Costs (in millions of dollars)

Phase A – Conceptual Design	1.55
Phase B-E – Preliminary design, procurement, etc.	7.78
Legal/Administrative	3.60
Easements and Rights-of-Way	0.55
Design-Build Constructional & Engineering	181.92
PNM Operation & Engineering	3.90
Insurance	5.00
Taxes & Miscellaneous	11.2
TOTAL	215.5



BDD Grants

- **\$2 million State in 2003**
- **\$3.4 million State in 2004**
- **\$1.8 million State in 2005**
- **\$2 million State in 2006**
- **\$4 million State in 2007 – pending**
- **\$250,000 Federal 2008 – pending**

\$13.45 million to date



BDD Loans & Funding Plan

Loans

- **\$15 million State 2004 (2% over 20 years)**

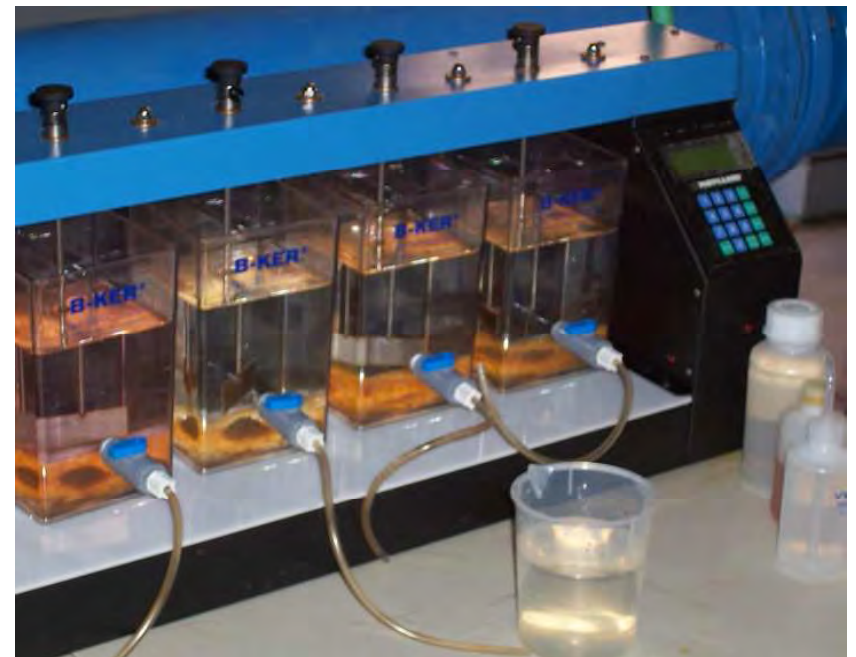
Funding

- **General Obligation and Revenue bonding**
- **Gross Receipts Taxes**
- **Water rate increases/re-structuring**



How We Selected Water Treatment Process

- Preliminary testing in 2004
- Pilot testing in 2005
- Tours of other treatment plants
- Workshops





Method Selected

Membrane Filtration System with Ozone and Granular Activated Carbon (GAC) Contactors

- Reliable
- Produces high-quality water
- Fewer operational concerns
- Best available technology for removing organics, PPCPs and other contaminants





Returning Sediment to River

- NPDES Permit Required
- Larger, sand size particles only
- Less wear-and-tear on equipment
- Less environmental impact – fewer trucks, less material to landfill





How Do We Know Drinking Water Is Safe?

- Safe Drinking Water Act – sets national standards
- Enforced by US EPA
- NMED administers and enforces quality standards here
- BDD is subject to provisions of the Act





Current Standards

- **Drinking water quality testing for more than 95 contaminants**
- **9 microbial**
- **8 disinfection by-products and residuals**
- **18 inorganics**
- **53 organics**
- **7 radiochemical contaminants**



How Water is Monitored

- Testing for 95 contaminants required
- Sampling frequency varies based on parameter
- Testing can be increased if needed
- Analyses must be performed at certified laboratories
- Notification of public
- Quality Report



City of Santa Fe Water Division
P.O. Box 909, Santa Fe, NM 87504

Customer Service (505) 955-4333
Administration (505) 955-4202

2007 Water Quality Report

The City of Santa Fe's Sangre De Cristo Water Division (SDCW) is pleased to provide the 2007 Water Quality Report. A safe and dependable water supply is vital to our community and is the primary mission of SDCW. The report is provided annually and contains information on calendar year 2007 water quality. In 2007, SDCW drinking water met all U.S. Environmental Protection Agency (EPA) and state drinking water quality limits. The report contains additional details about where your water comes from, what it contains, and how it compares to standards set by federal and state regulatory agencies.

Sources of Supply

The SDCW is served by three distinct sources of supply. The 17,000 acre Santa Fe Watershed provides surface runoff to the Santa Fe River where it is stored in the McClure and Nichols Reservoir prior to treatment. Surface water is treated through a conventional treatment process at the Canyon Road Water Treatment Plant. The City Well Field is mostly located in close proximity to the Santa Fe River and consists of 8 active wells located within the City limits of Santa Fe. The Buckman Well Field consists of 13 active wells located near the Rio Grande, approximately 15 miles northwest of Santa Fe. All three sources are treated with chlorine which is used for disinfection and pathogenic microorganism reduction. Fluoride is added to the water supply to benefit the community as recommended by public health professionals.

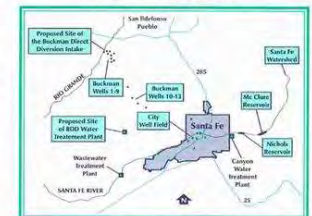
Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline at 800-426-4791.

En Español

Este reporte contiene información importante sobre la calidad del agua en Santa Fe. Si tiene alguna pregunta o duda sobre este reporte puede hablarle a Gary Martinez al teléfono 505-955-4201.

Map of Water Sources



Source Water Assessment and its Availability

The New Mexico Environment Department (NMED) completed a Source Water Assessment for the City of Santa Fe. This assessment includes a determination of source water protection areas and an inventory of pollution sources within the areas of concern. NMED concluded: "The Susceptibility Analysis of the City of Santa Fe water Utility reveals that the utility is well maintained and operated, and the sources of drinking water are generally protected from potential sources of contamination based on an evaluation of the available information. The susceptibility rank of the entire water system is 'moderately low'." A copy of the Assessment is available by contacting NMED at 505-476-8631.

The Santa Fe City Council built upon the recommendations in the Source Water Assessment and in 2005 adopted the "Safe Drinking Water and Source Water Protection" and the "Stormwater Illicit Discharge Control" ordinances which provide additional controls and protections for the City's ground and surface water supplies. In addition, the City established a Stormwater Program with the goal of reducing pollutant discharged to the Santa Fe River. A hotline has been set up (955-5644) to report illegal dumping in storm drains, streets and arroyos.



Future Standards

- **The SDWA directs EPA to identify and list contaminants that may be present in drinking water and require regulation**
- **EPA listings are prioritized for research and data collection**
- **The City participates and contributes to data collection efforts**



Consideration of LANL-Related Water Quality Issues during EIS

- **Consideration of historical data**
- **Review of contemporary studies**



EIS Phases considering LANL-origin contaminants & water quality

- 1. 2002 – EIS scoping**
- 2. 2003-2004 – Environmental impact analysis of alternatives and release of draft EIS**
- 3. 2005-2007 – Response to comments in draft EIS & preparation of final EIS**
- 4. 2007 – Response to comments of U.S. Fish and Wildlife Service regarding draft EIS & Corps of Engineers dredge & fill permit application**



EIS Phases considering LANL-origin contaminants & water quality (continued)

- 5. 2007 – Preparation of Record of Decision, including response to comments on Final EIS**
- 6. 2008 – Appeals of Record of Decision to Forest Service Regional Office and Department of the Interior**



Conclusions

- Both LANL and those filing appeal referred EIS preparers to NM Environment Department's Dept. of Energy Oversight Bureau
- EIS preparers obtained substantial NMED reports and data
 - Contamination exists but at very low levels, well below regulated standards
 - Contamination in the vicinity of the BDD diversion site poses no health threat via the BDD
 - Must meet all safe drinking water standards



Action Steps

BDD Board sent letter to LANL in 2007 asking LANL to:

- 1. Stop migration of LANL contaminants to the Rio Grande & groundwater**
- 2. Properly monitor transport of legacy contaminants in surface water and groundwater**
- 3. Measure LANL legacy contaminants in abandoned river channel upstream from BDD site**
- 4. Provide early warning system for flows from Las Alamos Canyon**
- 5. Monitor mass of contaminants**
- 6. Provide funding for BDD Board to hire independent peer reviewer**



Independent Risk Analysis Following the Cerro Grande Fire

- **Risk Assessment Corporation was retained by NMED**
- **Included evaluation of hypothetical person living on the bank of the Rio Grande at mouth of Water Canyon**
 - **Drank some water directly from the Rio Grande**
 - **Ate fish caught from the Rio Grande**
 - **Grew crops in Rio Grande sediments**
 - **Lived on those sediments, ingested dirt/breathed dust**



Quote from Study:

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

- RAC said analysis was 10 to 1000 times too harsh***
- Even so, safety okay per EPA acceptable limits***



LANL Contamination that reached the Rio Grande

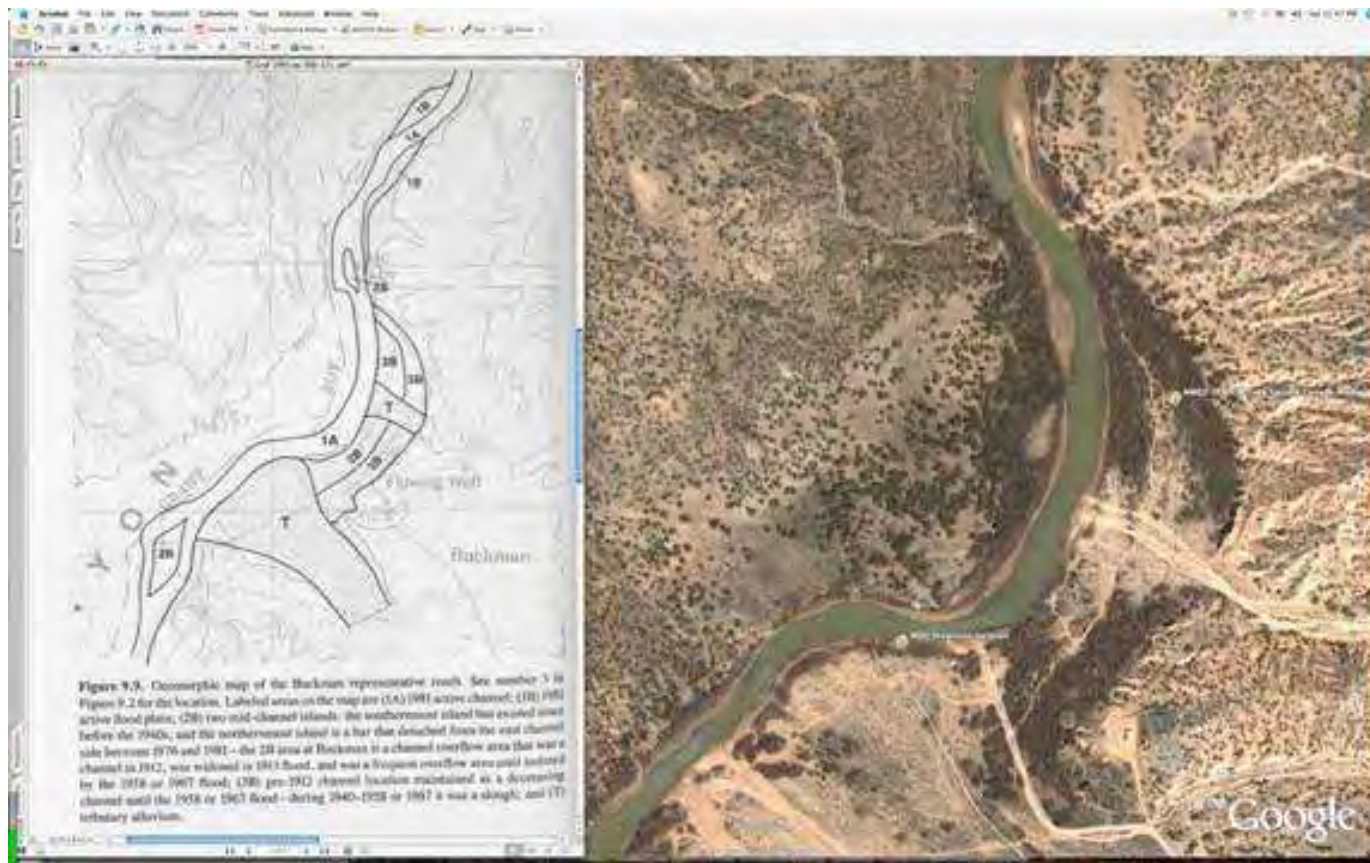
- **1994 Book published 1994 by William Graf, titled *Plutonium and the Rio Grande, Environmental Change and Contamination in the Nuclear Age***
- **2007 Report published by NMED DOE Oversight Bureau, “Distribution of Radionuclides in Northern Rio Grande Fluvial Deposits near Los Alamos National Laboratories”**

Both the book and the report addressed the abandoned channel of the Rio Grande near the BDD Diversion site.



Figure C-3. Rio Grande at Buckman, 1947







Record Of Decision

- **Forest Service required BDD get support from LANL and NMED to determine if sediments in areas to be disturbed by BDD contained contaminants in excess of applicable exposure standards**





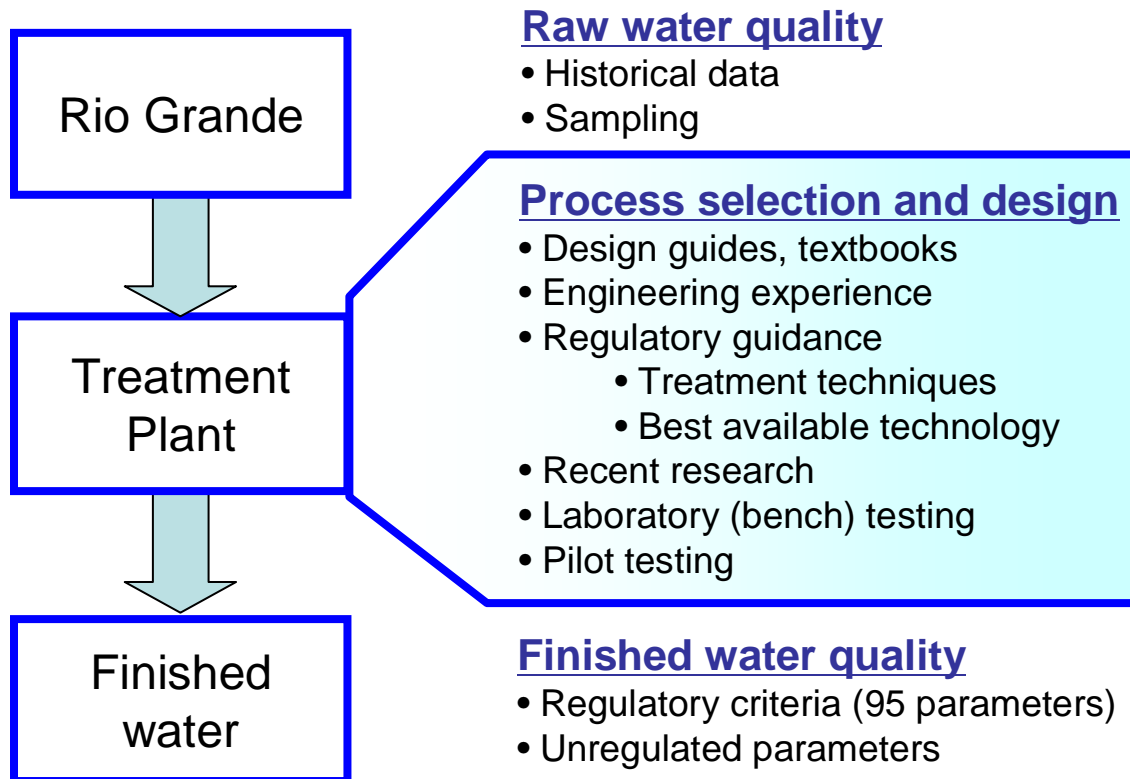
Core Sampling

- Core sampling defined boundaries of contamination
- BDD construction and operation will not disturb contamination
- Southern extent of abandoned river channel 500 feet upstream of construction area
- Construction area has contamination that is less than or is not distinguishable from normal background





Water Treatment Design Process



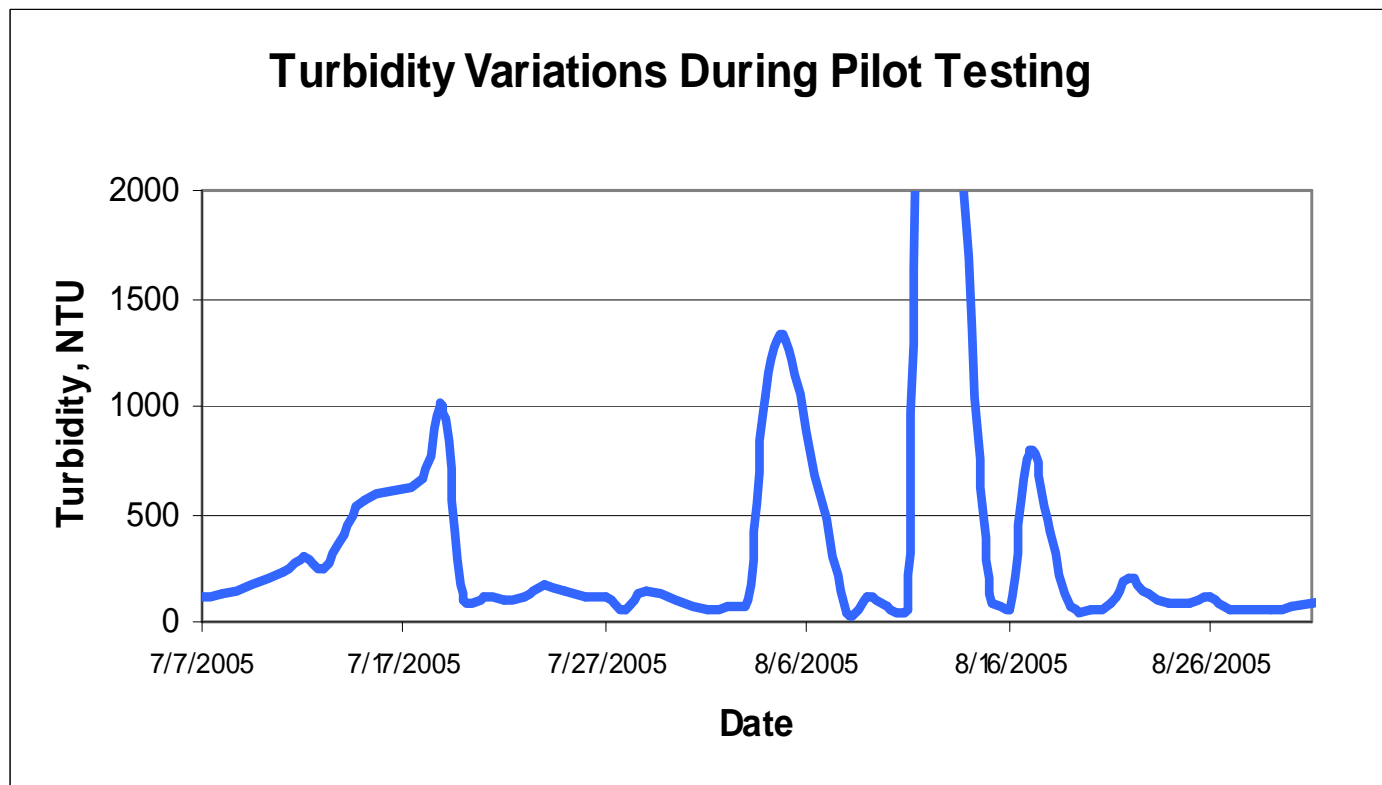


Pilot Testing



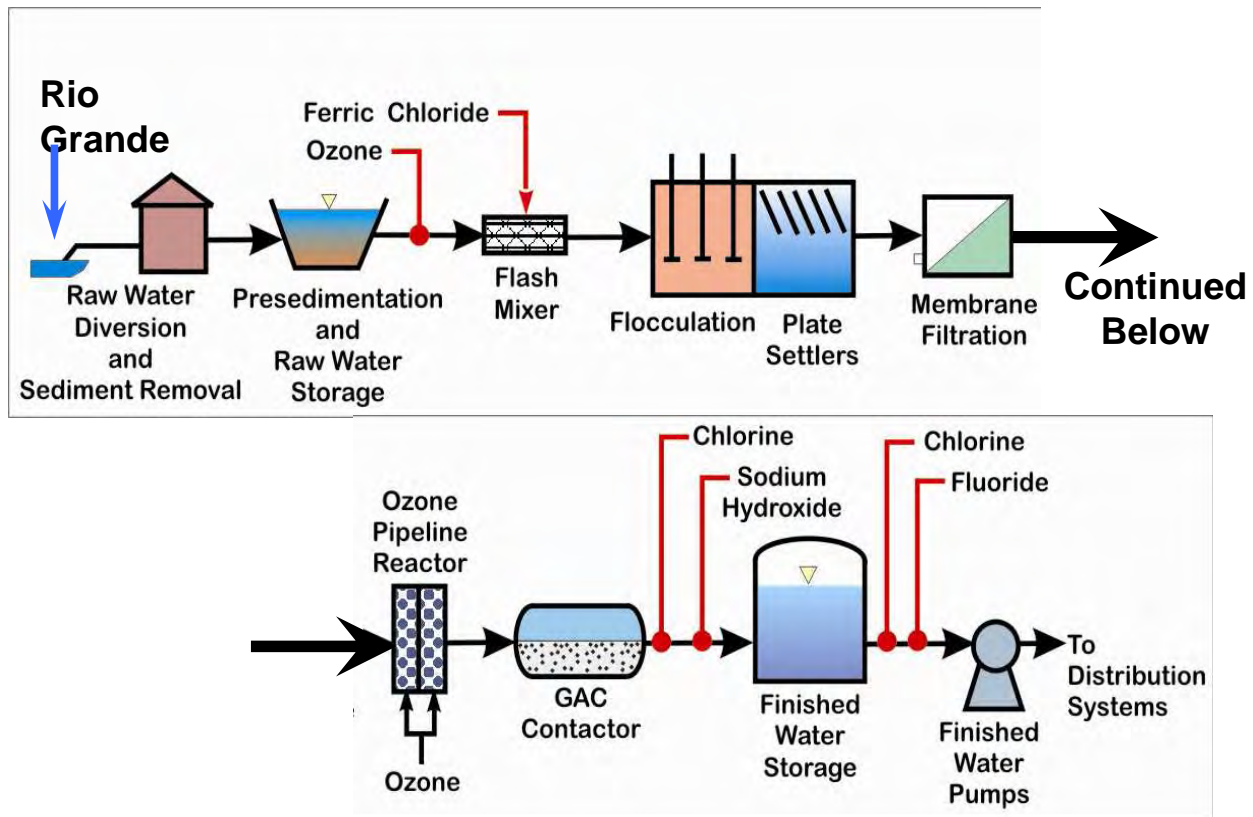


Sediment In The River



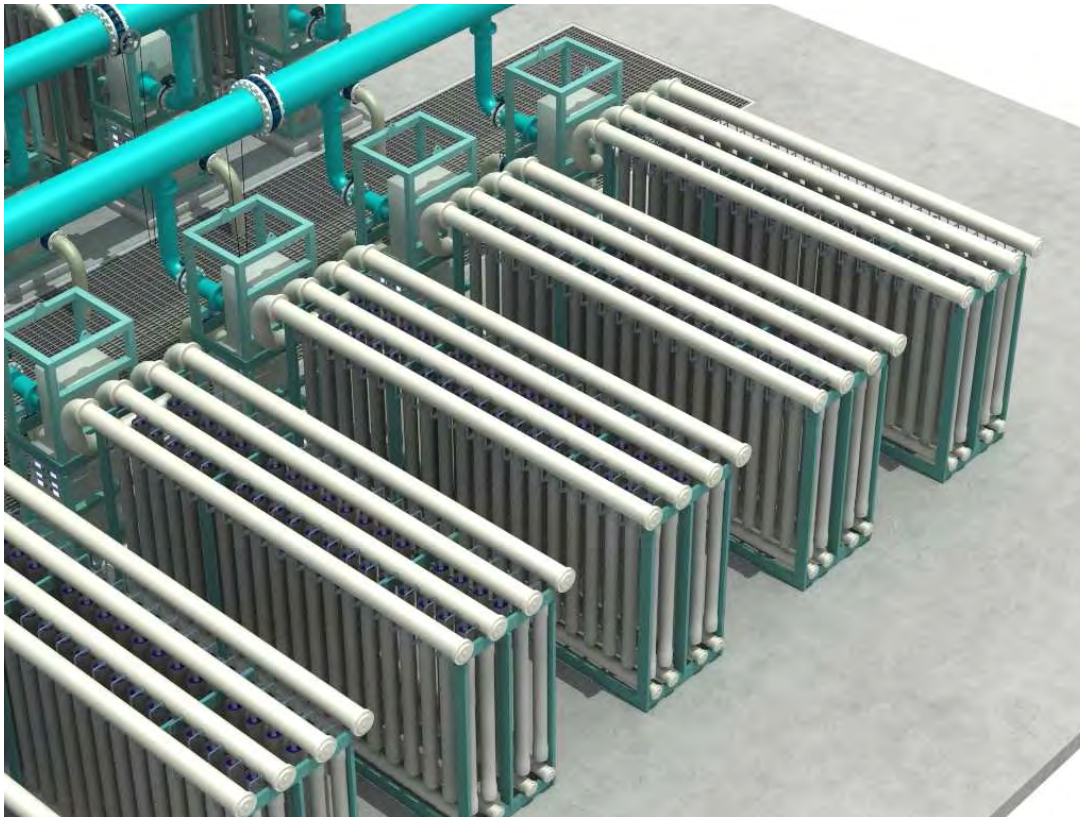


Plant Process Train



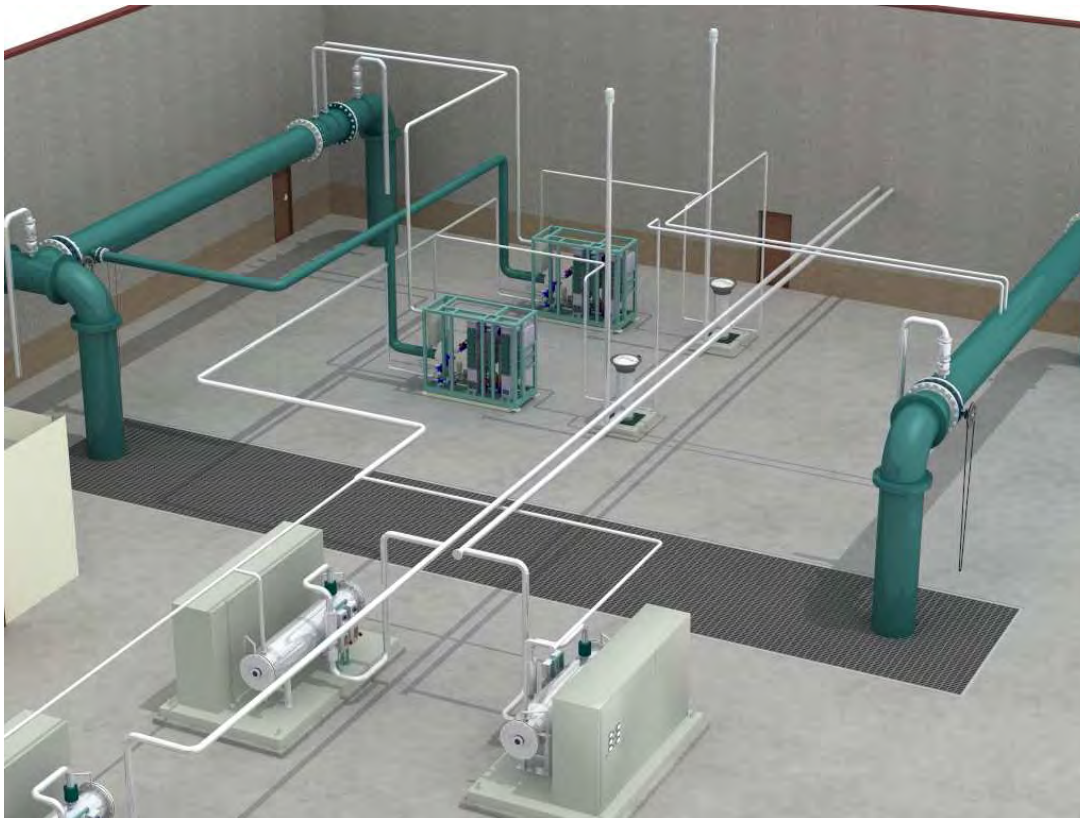


Membrane Filtration



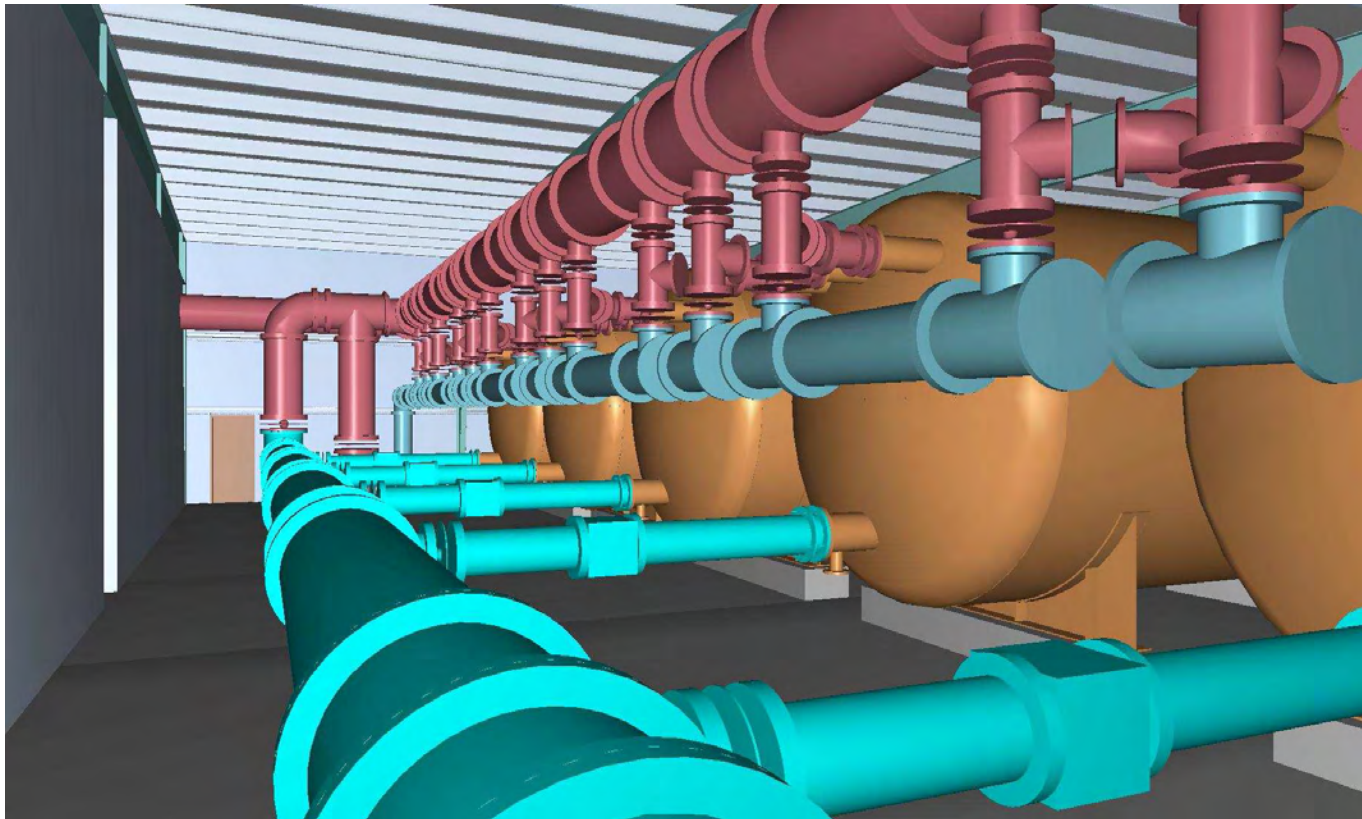


Ozone Disinfection/Oxidation





Granular Activated Carbon



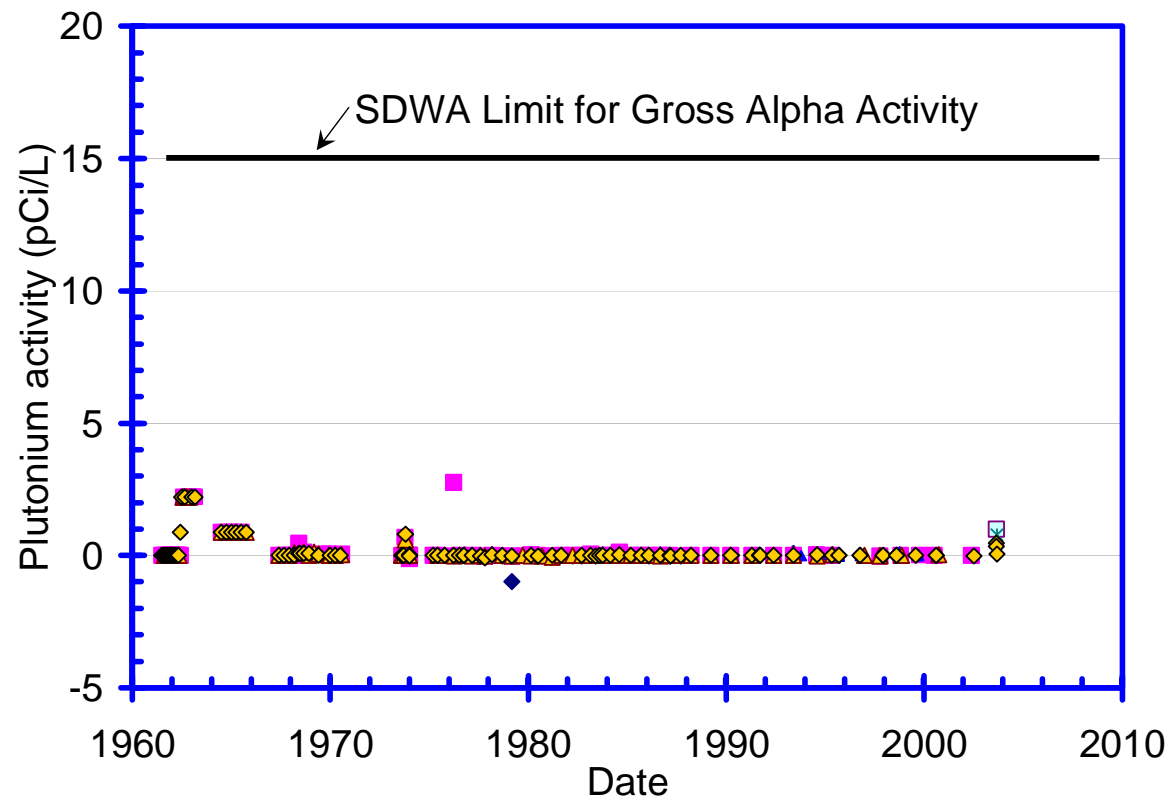


Radionuclide Regulations

Parameter	MCL
• Uranium	30 $\mu\text{g/L}$
• Radium 226/228	5 pCi/L
• Gross alpha activity <ul style="list-style-type: none">– Excludes uranium and radon– Includes plutonium, americium, others	15 pCi/L
• Gross beta and photon emitters <ul style="list-style-type: none">– Includes 126 different isotopes	4 mrem/yr

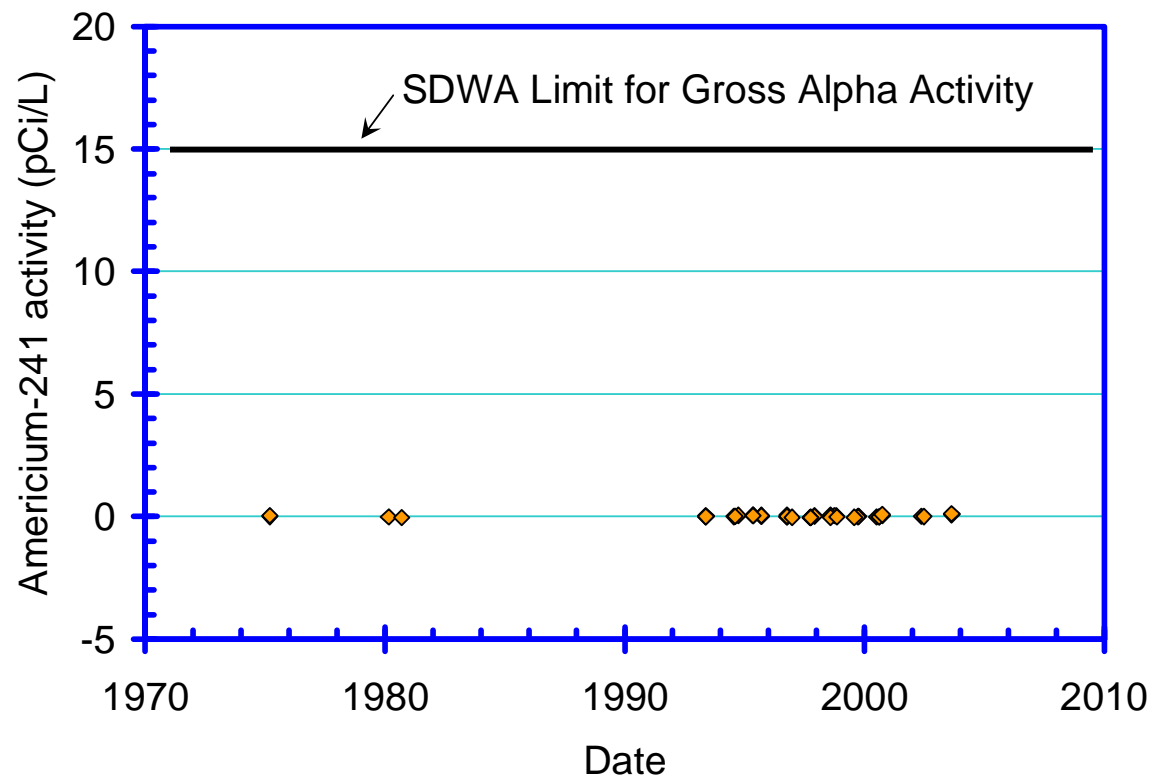


Plutonium In The Rio Grande





Americium In The Rio Grande



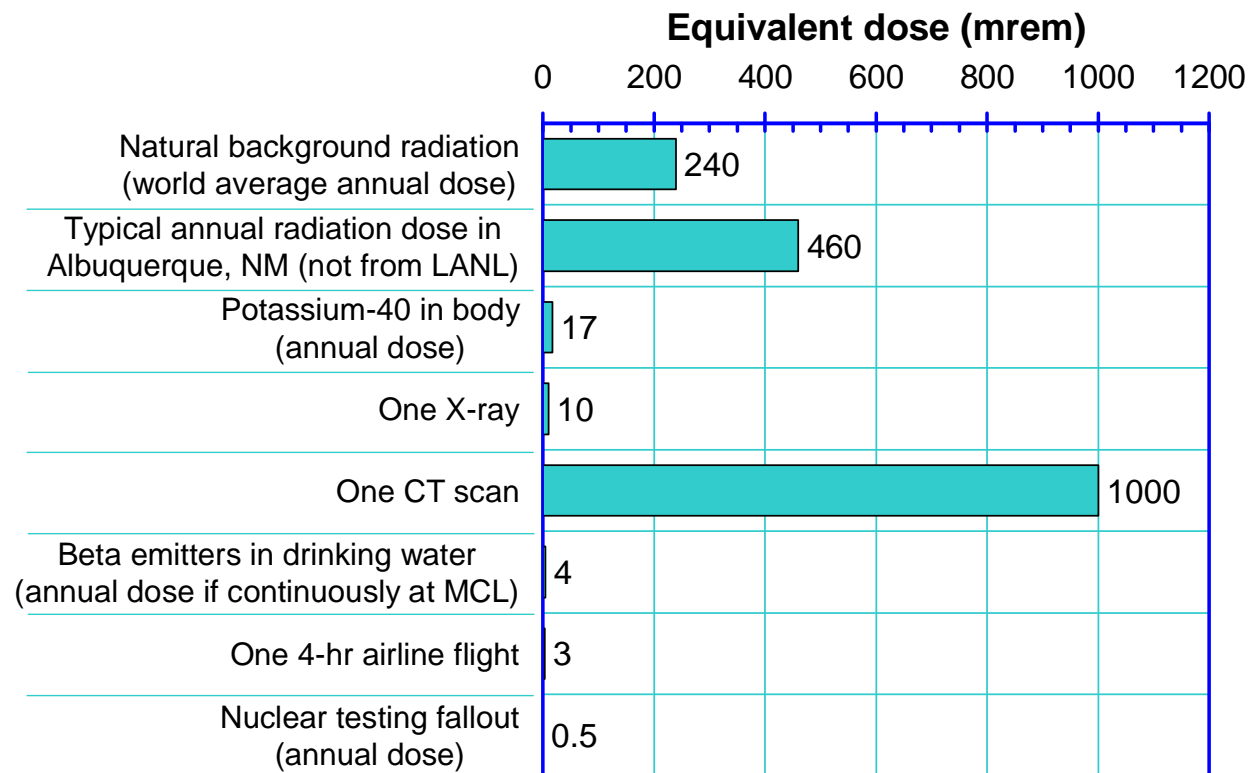


Multibarrier Protection For Santa Fe Water

- Concentrations in the river are almost always below regulated levels.
 - Exceptions can be traced to storm events with high turbidity in the river.
- Inflow to treatment facility can be stopped during storm events.
- Treatment process is capable of removing the contaminants if they were in the water (plant also contains multiple barriers).



Radiation Is Everywhere





Thank You!

For more information:

www.bddproject.org

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