Concerns were raised about potential effects on the water quality in the Rio Grande, particularly at the two public water supply intakes:

Buckman Direct Diversion (BDD)

and the

Albuquerque Bernalillo County Water Utility Authority
San Juan-Chama Drinking Water Project
Collaborative stormwater monitoring effort between San Ildefonso Pueblo, City of Santa Fe Buckman Direct Diversion (BDD) and New Mexico Environment Department (DOE Oversight Bureau)

- Thirteen runoff events sampled, multiple samples collected per event
- July – 2 events
- August – 7 events
- September – 4 events
• Otowi bridge and upstream from Alameda bridge
  – 1 sampler programmed to collect on a 500 CFS increase in flow over one hour
• Buckman Direct Diversion – 5 samplers
  • 3 samplers programmed to collect with 1 – 1 ½ hour delay based on telemetry indicating flow from lower Los Alamos Canyon (intended to detect LANL contributions)
  • 2 samplers programmed to collect on a 500 CFS increase in flow over one hour (intended to reflect regional conditions)
Slight increase in SSC in upper Rio Grande compared to pre-fire. All events at Rio Grande above Alameda (2009 – 2010) in response to flows from North Diversion Channel. In 2011, only one event was in response to post-fire flood from Peralta Canyon and it produced only 1600 mg/L in Rio Grande above Alameda. As is expected, TSS results at BDD are lower than SSC results.
Slight increase in total PCB in water compared to pre-fire.
Total PCB in Suspended Sediment in Upper Rio Grande Stormwater

2009 - 2011

Level of PCBs in suspended sediment in the upper Rio Grande increased by about 4 to 5 times.

There were higher levels of PCB in suspended sediments post-fire compared to 2009 -2010 events but this resulted in only a slight increase in total PCB levels (previous slide) because SSC levels were not significantly elevated in 2011.
Both sets of data show a bimodal distribution with an increase in lower chlorinated congeners in the 2011 post-fire samples. No indication of industrial sources (no shift to higher chlorinated congeners).
Homologue distribution in tributaries to Rio Grande show a bimodal distribution with elevated levels of lower chlorinated congeners. Suggests Las Conchas fire stormwater runoff is responsible for the shift toward lower-chlorinated homologues in middle Rio Grande stormwater.
Filtered gross alpha in stormwater very similar to unfiltered baseflow. Most likely due to low levels of suspended sediment in both. Slight increase in post-fire gross alpha compared to 2009 – 2010 due to relatively slight increase in SSC levels.
Strong correlation between SSC and gross alpha. If single outlier in 2011 data is removed $R^2$ is then 0.9036 and similar to what was seen in 2009 – 2011.
In the upper Rio Grande, ten of the 55 results (18%) from 9/7/10 – 9/7/11 were greater than the 1.5 pCi/L Public Water Supply criterion though the 12 month average concentration was 0.63 pCi/L.
Plutonium 239/240 in Suspended Sediments in Upper Rio Grande Stormwater

- Post-fire levels of Pu-239/240 in suspended sediments are about 10 times higher at the Rio Grande above Alameda location and 2.6 times greater in the upper Rio Grande locations.

- The levels of PU-239 in suspended sediments appear more similar to that found in ash samples from the Cerro Grande fire than typical legacy Pu-239 concentrations seen in Los Alamos and Pueblo Canyons.

- Any contribution of legacy contaminants appears to be overwhelmed by the levels found in the ash component of the stormwater.
Nine of the 56 results (16%) from 9/29/10 – 9/29/11 were greater than the 3.5 pCi/L Public Water Supply criterion though the 12 month average concentration was 1.86 pCi/L.
Six of eighteen measurements for cyanide were detections and ranged from 16 ug/L to 40 ug/L. Three of the six detections were above the Acute Aquatic Life criterion.
Filtered stormwater aluminum values are obtained from using a 0.45 micron filter and may not be directly comparable to the Acute Aquatic Life Criterion (does not include some colloidal forms of aluminum which should be accounted for)
Only filtered copper is compared to the aquatic life criteria. Stormwater is compared only to Acute Aquatic Life criterion.
Filtered Zinc Mean 3.76
Filtered Zinc Median 2.75
Zinc DL – 2.1 – 3.3 ug/L

Only filtered zinc is compared to the Aquatic Life criterion. Stormwater is compared only to Acute Aquatic Life criterion.
Summary

- Suspended sediment levels were slightly increased compared to pre-fire levels.
- Sediment bound constituents (e.g., gross alpha, PCB) also showed slight increases in concentrations.
- PCB homologue distributions in Rio Grande demonstrate influence from burned area runoff, not industrial sources.
- Eighteen percent of the Pu-239/249 and sixteen percent of the total Sr-90 levels exceed the Public Water Supply criteria but twelve month average levels were 42% and 53% of criteria respectively.
- Pu-239 levels in suspended sediment are above Rio Grande Reservoir Sediment background level but similar to what was seen in Cerro Grande ash. No apparent evidence of legacy inputs.
- Levels of dissolved metals were generally lower than Chronic Aquatic Life criteria though total recoverable cyanide exceeded the Acute Aquatic Life criterion in 3 of 18 measurements.
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Unfiltered Cs-137 -- four of fifty-six results were detections. One outlier of 269 pCi/L is suspect and is being investigated by the analytical laboratory.

The average (including 269 pCi/L outlier) is 4.8 pCi/L and is below the Public Water Supply criterion of 6.4 pCi/L.