

The US National Academy of Sciences report on Uranium Mining in Virginia: Background, Recommendations and Aftermath

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This presentation will cover:

- My background
- Context of NAS report
- Why the NAS report was requested, what it covered and what it excluded
- Social, economic and environmental issues
- Summary of the main recommendations and conclusions
- Summary of main events and decisions regarding uranium mining in Virginia since the report was published.



Background

- Environmental scientist and lawyer (US)
 - ✓ Admitted to practice before the courts of NY and DC, Southern District of NY, US Supreme Court
 - ✓ Doctoral and master's degrees in environmental health sciences
 - ✓ Broad experience and expertise in radiation sciences and policy
- Committee chair, US NAS committee on uranium mining in Virginia (2010 – 2012)



Context of the NAS report

- Study requested by Virginia House of Delegates, Coal and Energy Commission, with support from US senators and Governor (see report, Appendix A).
- Funding provided to NAS by Virginia Polytechnic Institute and State University (Virginia Tech), which obtained funding from Virginia Uranium, Inc.
- US NAS selected a committee of 14 experts
 - ✓ Volunteers – no compensation for time devoted to project (but transportation and room and board are reimbursed)
 - ✓ Selection based on expertise needed to address report statement of task
 - ✓ Public asked to comment on experts
 - ✓ Balance in perspectives and relevant points of view



Committee meetings and engagement

- Meetings
 - ✓ 11 months, 7 meetings, 19+ days
 - ✓ All meetings (except 1) had open sessions
 - ✓ 44 experts provided testimony
 - ✓ Extensive committee deliberations at and between meetings
- Public Engagement (pre-release)
 - ✓ 2 Town Hall sessions to take testimony from public
 - ✓ Approximately 150 people spoke at each meeting
- Public Engagement (post-release)
 - ✓ Briefing before the Virginia House of Delegates Coal and Energy Commission
 - ✓ 5 Public hearings throughout the Commonwealth



Why was the NAS report requested?

- Substantial deposit of uranium identified in 1978; after deliberations, state-wide moratorium on uranium mining adopted in 1982.
- Study request letters outline major reasons for report:
 - ✓ Energy independence and economic opportunities
 - ✓ Large deposit in south central Virginia (unique to eastern US)
 - ✓ Environmental and health impacts of mining and processing
- To provide independent, expert, consensus advice to help members of the Virginia legislature, the governor, and other policy makers make decisions about whether its moratorium on uranium mining should be lifted



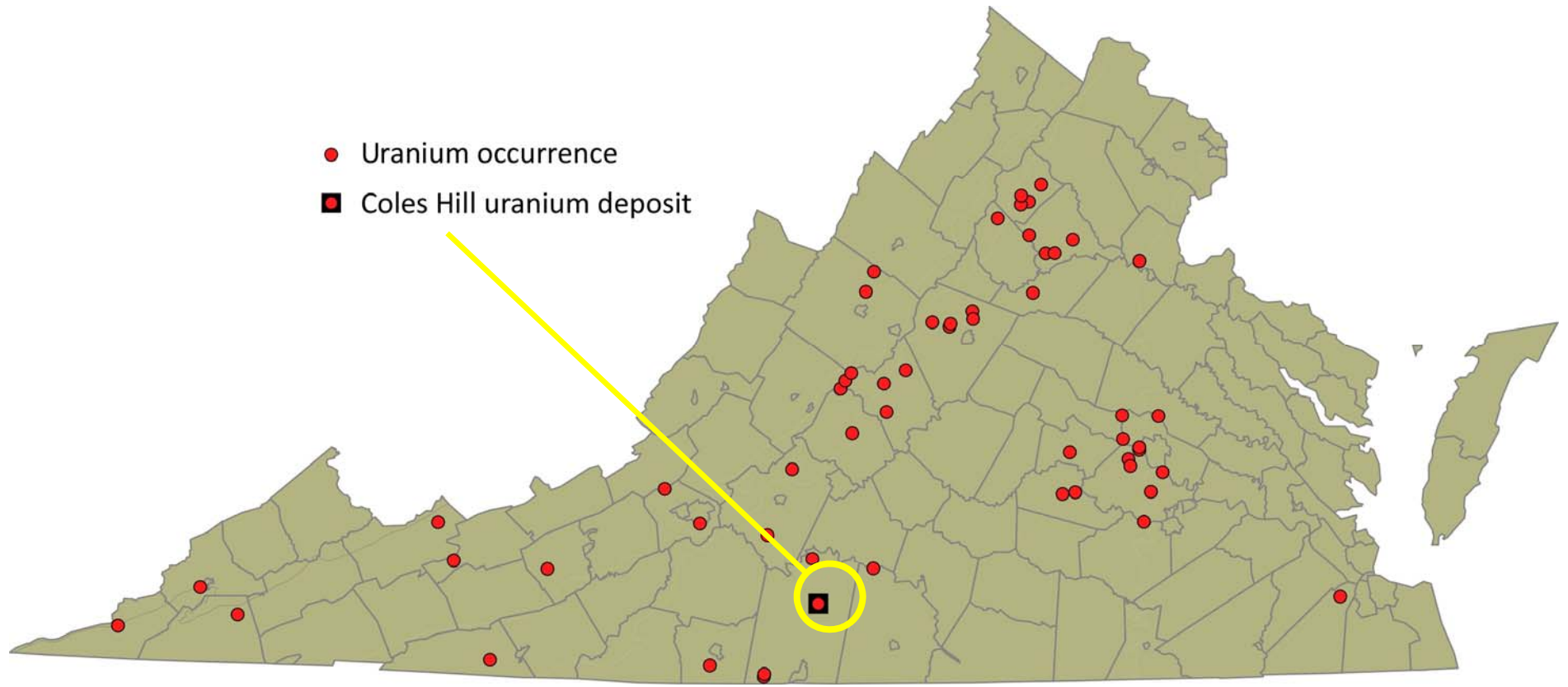
What was covered and what was excluded



NAS report statement of task

- Full statement of task and committee members at www.nationalacademies.org (search “uranium virginia”) or in report
- Key points:
 - ✓ examine scientific, technical, environmental, human health and safety, and regulatory aspects of uranium mining, milling and processing as [they relate to the Commonwealth of Virginia](#)
 - ✓ for the purpose of [assisting the Commonwealth](#) to determine [whether uranium mining, milling and processing can be undertaken in a manner that safeguards the environment, natural and historic resources, agricultural lands, and the health and well-being of its citizens](#).
 - ✓ Identify best practices for uranium mining and processing
- Excluded from statement of task
 - Site specific assessments (cover entire state)
 - [Conclusion regarding whether uranium mining should/should not be undertaken in Virginia](#)





Economic, social and environmental and health issues



Social considerations

- Virginia's cultural and natural heritage
- State demographics
- Virginia is subject to extreme natural events
 - ✓ Precipitation
 - ✓ Earthquakes



Economic considerations

- Focus on worldwide uranium market
- Uranium prices
- The extent of existing known identified resources and impact on market



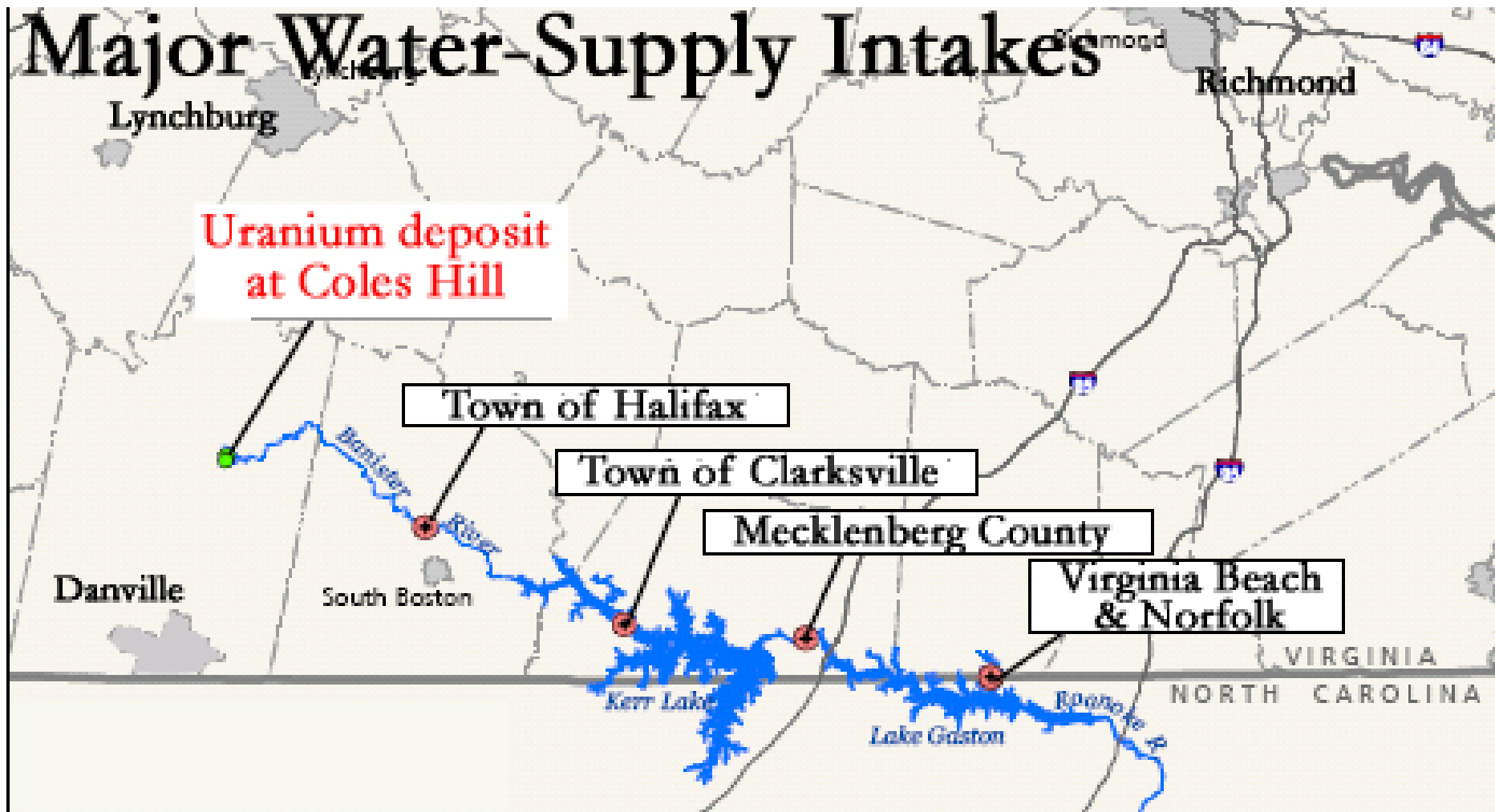
Environmental health considerations

- Health risk for workers
 - ✓ Non-radiation risks are similar to construction and mining
 - ✓ Work-related physical trauma (including electrical injury)
 - ✓ Protracted radon exposure is largest radiological risk
 - ✓ Silica dust and diesel exhaust exposure create/exacerbate lung cancer risk
- Off-site health risks to communities
 - ✓ Tailings risks – radiation and chemical exposure



Environmental and ecological considerations

- Impact on water
 - ✓ Surface water quantity and quality
 - ✓ Ground water quantity and quality
- Tailings disposal sites
 - ✓ Potential sources of contamination for thousands of years
 - ✓ Long term risks are poorly defined
- Extreme natural events and failures in management could create significant potential risks
 - ✓ Hurricanes, earthquakes, intense rainfall, drought
 - ✓ Poorly designed facilities and waste management errors
- Applying best practices, near to moderate term effects should be substantially reduced
- There is limited data to confirm long-term effectiveness of best practices



Main conclusions



- If the Commonwealth of Virginia rescinds the existing moratorium on uranium mining, there are steep hurdles to be surmounted before mining and/or processing could be established within a regulatory environment that is appropriately protective of the health and safety of workers, the public, and the environment.
- There is only limited experience with modern underground and open pit uranium mining and processing practices in the wider United States, and no such experience in Virginia.
- At the same time, there exist internationally accepted best practices, founded on principles of openness, transparency, and public involvement in oversight and decision-making, that could provide a starting point for the Commonwealth of Virginia were it to decide that the moratorium should be lifted.
- After extensive scientific and technical briefings, substantial public input, reviewing numerous documents, and extensive deliberations, the committee is convinced that the adoption and rigorous implementation of such practices would be necessary if uranium mining, processing, and reclamation were to be undertaken in the Commonwealth of Virginia.



Events since report publication

- **11 December 2011** – NAS report released; Coal and Energy Commission briefed on report
- **19 January 2012** -- Based on report, Governor McDonnell forms Uranium Working Group (made up of state regulators) to “provide a scientific policy analysis to help the General Assembly determine the regulatory framework that would be required if the moratorium on uranium mining in the Commonwealth were lifted.”
- **March – May 2012** – NAS Committee carries out report briefings throughout Virginia
- **30 November 2012** – Uranium Working group issues report that sets out a framework for a regulatory program for uranium mining and processing
- **December 2012** – Virginia legislator announces that he will propose bill to lift the moratorium
- **January 2013** – Virginia legislator withdraws bill due to lack of support
- **5 November 2013** – Newly elected Virginia Governor McAuliffe announces that he does not support lifting the uranium mining moratorium
- **late November 2013** – Virginia Energy Resources (parent company of Virginia Uranium, Inc.) states that it will not attempt to gain legislation in the 2014 Virginia General Assembly that would lift the uranium mining moratorium



Questions?

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