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**OFFICE OF THE STATE ENGINEER
DIVISION OF WATER RIGHTS
STATE OF UTAH**

In the Matter of:		
Change Application No. A35402		
(Water Right Nos. 89-74, 89-1285, and 89-1315)		SUPPLEMENTARY
And:		TESTIMONY
Change Application No. a35874		
(Water Right No. 09-462)		
		March 1, 2010

Uranium Watch herein submits testimony to supplement the Protest and Hearing Requests filed by Living Rivers and Uranium Watch on May 26, 2009 (Change Application No. A35402), and October 14, 2009 (Change Application No. a35874). The Presiding Officer at the January 12, 2010, hearings held the record open until March 1, 2010 for the submittal of additional testimony by the parties.

1. Response to oral and written testimony presented by the Applicants KCWCD, SJCWCD, and Blue Castle Holdings, Inc., and at the January 12 hearings.

1.1. BCH Presentation

The Change Applications were submitted to the State Engineer, Division of Water Rights (DWR) by the Kane County Water Conservancy District (KCWCD) and San Juan County Water Conservancy District (SJCWCD), or Applicants. The Applicants' testimony also included a presentation by Aaron Tilton, Chief Executive Officer of Blue

Castle Holdings Inc. (BCH), formerly known as Transition Power Development LLC (TPD). BCH presented slides discussing the company and the proposed nuclear reactor.

The BCH slide presentation (page 5) states:

Blue Castle executed a purchase agreement on the site Feb. 09, currently in escrow.

The proposed site is on land a few miles west of the City of Green River that belongs to the Utah State and Institutional Trust Lands Administration (SITLA). Emery County has leased the site lots pursuant to Development Agreement Number 813, dated November 17, 2008.¹ The lots can be leased or sold by Emery County, pursuant to the Development Agreement. Section 6.4 contains a provision for Option Contracts to be entered into by Emery County and third parties for the purchase of lots in the industrial park by Emery County on behalf of a third party. Section 6.4 requires that SITLA consent to any Option Contract entered into by Emery County and a third party.

There is no evidence that BCH has executed a purchase agreement with Emery County for the proposed site for the nuclear reactor. TPD (now BCH) sent a Notice of Intent to Emery County on October 13, 2008. *See* Exhibit A. On October 13, EnergyPath Corporation, parent company of TPD, submitted a letter canceling the April 8, 2008, Option to Purchase that they had with Emery County. *See* Exhibit B. According to a recent communication with John Andrews, counsel for SITLA, SITLA has not approved an Option Contract between Emery County and BCH. *See* Exhibit C. This is verified by an e-mail message from Mike McCandless, which states, “Emery County and

¹ Protest and Hearing Request, Living Rivers and Uranium Watch, Attachment A, May 26, 2009.

SITLA have not executed any agreement with Blue Castle or any other purchaser at this time.” *See* Exhibit D.

Apparently, BCH has established an “escrow” account with a non-profit organization, Castleland Resource Conservation and Development, and possibly another entity to facilitate the transfer of payment for the proposed site should BCH purchase the site. The amount of money BCH has placed in escrow is not on the record.

Therefore, BCH’s statement that they “executed a purchase agreement on the site Feb. 09” is false and misleading claim, with no basis in fact. Elsewhere, news releases posted on the BCH website (www.bluecastleproject.com), refer to TPD as "owner of the proposed Blue Castle nuclear plant site near the city of Green River, Utah," and BCH as “owner of the Blue Castle Project, a nuclear plant site in Utah.” *See* Exhibits E and F. These statements, too, are false and misleading claims, and should be of concern.

In sum, BCH, the entity that has leased the subject water rights from the KCWCD and SJWCD does not own, nor do they have executed a purchase agreement for the site the Applicants propose for the use of the subject water rights.

1.2. Contacts with the Nuclear Regulatory Commission

The BCH January 12 hearing slides (page 30) and Dr. Nils Diaz statements during the January 12 hearings referred to BCH’s contacts with the Nuclear Regulatory Commission (NRC). The slide states:

Subsequent to the [January 30, 2008] NOI, Blue Castle has had correspondence and meetings with Mr. David B. Mathews and Staff, Division of New Reactor Licensing, Office of New Reactors, US NRC, and informed them of the Blue Castle Project progress and projected application submission in the 2011 NRC budget cycle.

The State Engineer is probably not aware of the NRC's policies² with respect to meetings between prospective licensees or licensees and NRC staff. The NRC staff is required to notice meetings on the NRC's public meeting schedule³ and place the notice and agenda on the NRC's Electronic Reading Room,⁴ Agencywide Documents Access and Management System (ADAMS).⁵ For most meetings, members of the public can attend in person or via conference call, and various levels of public participation have been established.⁶ The NRC also creates a meeting summary and makes it publicly available on ADAMS. Any correspondence between the NRC and licensees or prospective licensees is also made publicly available on ADAMS, pursuant to NRC regulation. A meeting between TPD or BCH and NRC staff could not have taken place without the meeting notice and meeting summary being made publicly available. Uranium Watch regularly checks the NRC public meeting schedule and ADAMS for TPD/BCH related notices or documents.

The facts regarding BCH's claim that they had meetings and corresponded with the NRC Staff after the submittal of the 2008 NOI:

According to David B. Mathews⁷, he called TPD to inquire about their plans to submit an ESP and/or a Combined License (COL) Application to the NRC. The NRC was making plans for future budgets and wanted to know when TPD intended to submit their application(s), since the NRC staff had not heard from TPD since they submitted

² <http://www.nrc.gov/public-involve/public-meetings/meeting-faq.html>

³ <http://www.nrc.gov/public-involve/public-meetings/index.cfm>

⁴ <http://www.nrc.gov/reading-rm.html>

⁵ <http://www.nrc.gov/reading-rm/adams.html>

⁶ <http://www.nrc.gov/public-involve/public-meetings/notes.html>

⁷ Personal communication with Sarah M. Fields in a phone conversation with David B. Mathews subsequent to the January 12 hearing.

their NOI back in January 2008. Mr. Mathews asked BCH to submit a letter indicating when they expected to submit their application(s). This conversation between Mr. Mathews and BCH was not an NRC “meeting.” Mr. Mathews said that there have been no TPD or BCH “meetings” with Mr. Mathews or other NRC staff. This can be verified by contacting Mr. Mathews.⁸

Prior to the January 12 hearing, there was no correspondence between BCH (or TPD) and the NRC, except for the 2008 NOI. Subsequent to the January 12 hearing, BCH submitted a January 27, 2010, letter to the NRC updating their January 2008 NOI and letting the NRC know that they intended to submit an ESP or COL application by September 2011. *See Exhibit F.*

No records have been placed on ADAMS that document the meetings and correspondence that BCH claims to have occurred. In sum, the statements made by BCH representatives in the slide presentation and during oral testimony during the January 12 hearings regarding meetings and correspondence with the NRC staff were not true.

1.3 Preliminary Site Evaluation

At the January 12 hearings, BCH discussed the Preliminary Site Evaluation and submitted the results of a Preliminary Site Consultation conducted by McCallum-Turner, Inc., dated November 20, 2009. McCallum-Turner evaluated the site for flooding potential, water availability, nearby hazardous land uses, and geology/seismology. The evaluation was based on data that is readily available to the public and not on site characterization work that was conducted by McCallum-Turner or another party.

⁸ 301-415-1199 or 800-368-5642, ext. 1199.

McCallum-Turner concluded, "None of the issues evaluated in this study indicated that there are fatal flaws that would preclude development of such plants." They also stated:

However, as detailed in the attached report, additional detailed site specific data required to fully evaluate these issues, and there can be no final judgment on site suitability until studies that explicitly address NRC criteria have been completed.

The report lists a number of additional site investigations that must be undertaken for any definitive determination regarding site suitability can be made. BCH could have, but did not, develop detailed site-specific information and data that explicitly addressed NRC nuclear reactor siting criteria in order to determine whether or not the site was appropriate.

The NRC's site suitability criteria and the kinds of information about the site that are required in any NRC license application will be discussed below at 3.1 (page 14). It is clear, that BCH chose not to investigate or address many aspects of the site that would influence a site-suitability, or feasibility, determination. For example, no studies were done regarding the very important local meteorological characteristics of the site.

1.4. Financial Feasibility of the Project

The slide presentations regarding the financial planning for the project were very general. BCH did not submit any substantive information (backed up by documentation) about BCH's current financial situation. BCH is not a publicly traded company, so there are no Security and Exchange Commission reports available to the public. It is unclear the exact relationship between TPD and BCH. In their September 28, 2009, news release (Exhibit E), BCH states, "Blue Castle Holdings is a Utah based corporation." In the BCH January 2010 letter to the NRC, they state that BCH is a subsidiary of TPD. *See Exhibit G.*

A search of the businesses registered with the Utah Division of Corporations (UDC)⁹ for "Blue Castle Holdings" does not bring up any results. Transition Power Development is listed as a business registered with the UDC. Apparently, BCH is not registered with the UDC as a Utah corporation.

The January 12 slide presentation (pages 33-39) provides information about financial development stages for different types of entities. BCH did not provide any documentation to substantiate any of the figures in the presentation.

These slides contain a few sidebar statements, including, "Federal law allows for the minimization of financial risk by limiting construction expenses." The citation for the law and the exact wording of the law were not provided. Uranium Watch is unaware of any federal law that limits the costs of construction of a nuclear reactor. Another sidebar states, "Utilities do not raise, incur nor use construction capital until license is granted." There is nothing in the Applications to substantiate that statement or to explain how it is relevant to the Change Applications under consideration. A third statement, "Rate recovery is general policy before significant licensing capital is committed," is also not explained or substantiated. There is no information about relevance of this statement to the subject Change Applications or the specific rate recovery regulations for the specific states that would or could be the recipients of the electrical power that the Blue Castle Project might generate.

⁹ <https://secure.utah.gov/bes/action>

The Blue Castle Project is not a proposal that can be evaluated in terms of any regulatory agency's "general policy."

No specific information (with substantiating documentation) regarding the entity or entities that will actually carry out the pre-licensing, licensing, construction, and operation of the Blue Castle Project has been placed on the record. Potential owners, investors, utilities (except for Page Electric Utility), ratepayers, and reactor operators have not been identified. The reactor design(s), costs, financing methods, financial resources, and other very important aspects of the proposed project are completely unknown. Right now, the proposed Blue Castle Project is purely speculative.

The January 12 slide presentation and testimony do not suffice when it comes to demonstrating that the proposed project is financially feasible or that some future entity or entities will have the where-with-all to carry out the proposed project. Such a demonstration by the State Engineer is required under UCA 73-3-8(1)(a)(iii) and (iv).

1.5. Feasibility of the Project

The BCH presentation was full of unsubstantiated statements and irrelevant information. For example, the slide presentation states (page 14), "50% of the Blue Castle Project power is expected to be used in Utah." There is nothing to support this statement on the record of this proceeding.

BCH could not even get the time frame for NRC Early Site Permits (ESPs) right. The slides (page 26) state that ESPs are valid for 10 years, renewable for 20 years. According to the NRC, ESPs are valid from 10 to 20 years and renewable for another 10

to 20 years.¹⁰ This is significant information, because it means that the water rights might not be put to beneficial use for over 40 years, should the State Engineer approve the Change Applications. This is a long time for water rights to be appropriated and not put to beneficial use. An ESP would allow BCH to hold onto the water rights for speculative purposes. As BCH has stated, their business mission it to select, acquire, enhance, and license plant sites. *See* Exhibit E. BCH intent is to sell the licensed plant site to another entity or entities that may or may not put the water to beneficial use at some unknown time in the future.

The slides (page 15) show a map of proposed transmission paths. However, BCH has not contacted Pacific Corps (Rocky Mountain Power) to speak with them about the proposed project or to commence a feasibility study associated with the transmission of electricity to and from¹¹ the proposed Blue Castle Project.¹² The fact that BCH has not commenced one of the most basic feasibility studies sheds light on their minimalist, cost-saving approach to this project.

If BCH has initiated the feasibility studies required by the companies that potentially would provide electrical for the construction and operation of the facility and transmit electrical power from the nuclear generating station at Green River to potential electrical customers in Utah or elsewhere, then the documentation regarding the initiation of the studies and any results should be placed on the record of this proceeding.

¹⁰ <http://www.nrc.gov/reactors/new-reactors/esp.html>

¹¹ At this time, there is not sufficient electrical energy available in Green River to construct the proposed nuclear reactor or to provide it with the required off-site source of electrical power.

¹² Personal communication between Sarah M. Fields and PacifiCorp staff.

1.6. Water for Reactor – Normal Operational Conditions

The information about the amount of water that would be needed for the Blue Castle was presented in the slides (page 49). Again, there were no supporting documentation or references.

For ESP applications, the NRC permits the applicant to refer to a plant parameter envelope (PPE), which is a set of postulated design parameters that bound the characteristics of one or more reactor designs that might be built at a selected site. There are many factors affecting the amount of water that would be required for a continued supply of normal cooling water for power generation, including water temperature, intake water level, air temperature, humidity, plant design, and operational conditions. The Applicants could have presented technical information and calculations that addressed these factors with specificity and particularity.

There are a number of operational factors and circumstances that would require a greater supply of water that might be available, based on the amount of water in the Green River and the demands of other users and commitments. BCH should have submitted much more detailed information that would provide more certainty regarding exactly how much water would be needed for different reactor designs under different on-site and off-site conditions for normal plant operations. However, they chose not to spend the money to do so.

1.7. Water for Reactor – Ultimate Heat Sink

The testimony presented by the Applicants and BCH did not address an important water-related requirement for nuclear power stations, the Ultimate Heat Sink (UHS). NRC Regulatory Guide 1.27, Ultimate Heat Sink for Nuclear Power Plants, explains the

function of the UHS, which must provide a 30-day supply of water for a reactor in case of an accident. *See* Attachment H. Regulatory Guide 1.27 states, in part:

Sufficient conservatism should be provided to ensure that a 30-day supply of water is available and that the design basis temperatures of safety-related equipment are not exceeded.

There should be a high level of assurance that the water sources of the sink will be available when needed. For natural sources, historical experience indicates that river blockage or diversion may be possible, as well as changes in ocean or lake levels as a result of severe natural events. For manmade portions, particularly structures above ground, failures are not uncommon. Because of these factors, consideration should be given to the sink comprising at least two water sources, each capable of performing the sink safety functions, unless it can be demonstrated that there is an extremely low probability of losing capability of a single source.

The ultimate heat sink should be capable of providing sufficient cooling for at least 30 days (a) to permit simultaneous safe shutdown and cool down of all nuclear reactor units that it serves and to maintain them in a safe shutdown condition, and (b) in the event of an accident in one unit, to limit the effects of that accident safely, to permit simultaneous and safe shutdown of the remaining units, and to maintain them in a safe shutdown condition. Procedures for ensuring a continued capability after 30 days should be available.

The Applicants and BCH failed to provide any testimony about the need for a 30-day supply of water for the proposed facility. There was no information about how the 30-day supply of water would be provided, the probable need for a second water source, the maximum amount of water that would be required to fulfill that 30-day supply, or the various factors (such as water availability, temperature, humidity, natural events, etc.) that would impact the requirements and capability of the sink.

At some power plants lakes, reservoirs, or ponds serve as the primary and/or secondary UHS source. The reservoir contemplated in the Change Applications is for the purpose of supplying water for the normal plant operations. According to information

provided in the Change Applications, it was not designed for the purpose of supplying water to fulfill the UHS requirements.

Therefore, there is no documentation on the record that would demonstrate that the reservoir contemplated in the Change Applications would satisfy the NRC's' requirements for water storage at the site under expected reactor design parameters and relevant on-site and off-site conditions. BCH could have provided this kind of technical information, but did not. There is a good possibility that the reservoir contemplated by the Change Applications does not have sufficient holding capacity to satisfy all the water supply requirements for the proposed reactor. Applicants and BCH did not submit any information that would substantiate the assertion that the proposed reservoir would meet all of the water holding needs of the proposed facility.

In sum, the Change Applications lacked important data and information relevant to the water and reservoir requirements for the proposed use of the subject water rights.

2. Incompleteness of Application

Utah Code 73-3-2 sets out the requirements for applications to appropriate water. As required by Section 73-3-3(5)(a), these criteria also apply to change applications. The Change Applications under consideration did not meet some of these requirements. The application requirements that were not met by the Applications are 73-3-2(1)(b)(vi, vii, and vii) and (2)(b)(iii), which read:

Section 73-3-2(1)(b) The application shall be upon a form to be furnished by the state engineer and shall set forth:

(vi) the place on the stream or source where the water is to be diverted and the nature of the diverting works;

(vii) the dimensions, grade, shape, and nature of the proposed diverting channel; and

(viii) other facts that clearly define the full purpose of the proposed appropriation.

(2) (b) In addition to the information required in Subsection (1)(b), if the proposed use is for developing power, the application shall show:

(iii) the purposes for which and the places where [the power] is to be used.

The Change Applications and January 12 testimony did contain any information about 1) the nature of the diverting works at the Green River; 2) the dimensions, grade, shape, and nature of the proposed diverting channel or pipelines; 3) facts that clearly define the full purpose of the proposed appropriation; and 4) the purposes for which and the places where [the power] is to be used.

The Change Applications should have provided information about the diverting works, pumps, and the pipelines. These structures are significant safety related features of any nuclear reactor, requiring approved security measures. The nature of those security measures was also not included in the Change Applications. The Change Applications should have stated exactly how the water would be used at the proposed reactor and provided all of the technical requirements for a water source for a range of reactor designs and environmental conditions at Green River. The Application should have included a discussion of how the water from the proposed source would meet the regulatory requirements for the operation of the reactor and as an UHS. The proposed use of the water is for the generation of power, therefore, the Applications should have included data and information about the purposes for which the power would be used and the places where the power would be used, as required by Section 73-2-2(2)(b)(iii).

In sum, the Applications did not meet the most minimal statutory requirements for an application for the appropriation of water for the generation of power.

3. Utah Code Requirements for State Engineer Approval

The proposed project is one of the most technically, environmentally, and financially complex and challenging projects. The laws and regulations are complex and involve a large number of state and federal agencies. The project would cost several billion dollars and is potentially a various hazardous enterprise. There are no nuclear reactors in Utah, and the State has had no experience in their licensing, construction, or operation. The State has never participated in a National Environmental Policy Act (NEPA) process for an Early Site Permit or a Combined Construction and Operating License for a proposed reactor.

This proposed project demands extra scrutiny by the decision-making agencies that are representing the public interest. The Change Applications demand extra scrutiny by the State Engineer, as someone who represents the interests of the citizens of Utah.

3.1. Physical Feasibility

The Applicants provided minimal information regarding the feasibility of the proposed project. The Applicants failed to provide information that would be addressed by the NRC when contemplating the suitability of the site for the proposed nuclear power station.

The NRC's criteria for site suitability and ESP applications are found at 10 C.F.R. Part 100, Subpart B,¹³ 10 C.F.R. Part 52, Subpart A,¹⁴ 10 C.F.R. §52.33.¹⁵ The NRC has

¹³ <http://www.nrc.gov/reading-rm/doc-collections/cfr/part100/>

¹⁴ <http://www.nrc.gov/reading-rm/doc-collections/cfr/part052/>

¹⁵ <http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-0033.html>

developed a regulatory guidance, General Site Suitability Criteria for Nuclear Power Stations, Regulatory Guide 4.7.¹⁶ There are applicable NRC Standard Review Plans: 1) Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants (NUREG-0800)¹⁷ (Specifically, Chapter 2),¹⁸ and 2) Standard Review Plan for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan for New Site/Plant Applications (NUREG-1555, Initial ESRP).¹⁹ Review Standard RS-002, "Guidance for Processing Applications for Early Site Permits," provides information about the criteria that will use for an ESP review.²⁰

A Combined License (COL) Application would require significantly more information to be submitted and demands a more extensive NRC review.

3.1.1. Site Suitability Factors

There are three primary issues that BCH must be addressed in the ESP application to determine site suitability — site safety, environmental impacts, and emergency planning. The Applicants or BCH did not evaluate most of the factors that the NRC must consider in the hearing testimony. These factors include, but are not limited to:

¹⁶ <http://www.nrc.gov/reading-rm/doc-collections/reg-guides/environmental-siting/rg/>

¹⁷ <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/>

¹⁸ <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/ch2/>

¹⁹ <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1555/initial/index.html>

²⁰

<http://adamswebsearch2.nrc.gov/idmws/ViewDocByAccession.asp?AccessionNumber=ML040700094>

- The seismic, hydrologic, and geologic, and meteorological characteristics of the proposed site that are necessary for safety analysis or that may have an impact upon plant design.
- Factors important to hydrological radionuclide transport.
- The anticipated maximum levels of radiological and thermal effluents each facility will produce.
- Transportation routes and possibility of accidents associated with those routes.
- Population density and use characteristics of the site environs, including the exclusion area, the population distribution, and site-related characteristics must be evaluated to determine whether individual as well as societal risk of potential plant accidents is low.
- Emergency response plans.
- Site security, including security of the intake structures, pumps, and pipelines/

The Applicants failed to provide basic information responsive to the NRC's requirements for a site suitability determination. The Change Applications do not provide sufficient information to conclude that there is a reasonable assurance that the site is suitable for the proposed project and that the project is physically feasible.

3.2. Economic Feasibility

Under Utah Code 73-3-8(1)(iii) the State Engineer must determine whether the proposed plan is economically feasible. If an application does not meet the requirements of this section, it shall be rejected.

At the January 12 hearings, neither the Applicants nor BCH presented any documentation regarding the financial feasibility of the proposed project. The economic realities associated with a newly formed, inexperienced company putting together a feasible plan for nuclear power development in Utah were provided. The Applicants, BCH, and the DWR have not established any criteria for determining whether a proposed

project is economically feasible and addressed those criteria. BCH talked about their financial situation and expectations, but lacked supporting documentation. The risks, challenges, and complexities are not identified or discussed.

Uranium Watch submits several articles and reports that discuss some of the economic realities of nuclear reactor development. Some of the authors urge government support because the economics of nuclear power development by private companies is so uncertain. These are being submitted so that the State Engineer will have a better idea of the many economic feasibility issues that were never addressed by the Applicants and BCH.

"New Nuclear — The Economics Say No" discusses the nuclear industry in the United Kingdom (U.K.), but the refers to and is relevant to nuclear development the United States. *See* Exhibit I. The report identifies five big risks—Planning, Constriction, Power Price, Operational, and Decommissioning—and discusses the impacts of each of these factors, based on current and historical circumstances in the U.K., the U.S., and other countries.

"Nuclear Power Plant Construction Costs" discusses the soaring costs of nuclear power plant construction, the uncertainties associated with cost estimates, uncertainties associated with new designs that have not been constructed or operated anywhere, the reasons for increases in cost estimates, expected continuation of cost increases, and need for federal subsidies for an industry that cannot support itself without taxpayer subsidies and loans. *See* Exhibit J.

Another issue related to the economic feasibility of any nuclear power plant is the type of engineering, procurement, and construction (EPC) agreement, discussed in "Turnkey Nuclear Plant EPC Agreements: The Case for Price Certainty." *See* Exhibit K.

"U.S. Nuclear Power: Credit Implications," discusses other aspects of the economic feasibility of a nuclear reactor over the life of the facility. *See* Exhibit L.

"Nuclear Power Plant Electricity: A Simple Costing Model" discusses the actual costs of a nuclear reactor per amount of electricity that is generated and the costs to the consumer. *See* Exhibit M. The costs for electricity from nuclear power that will be borne by the consumer do not match the costs projected by BCH. This is an important question that should be investigated by the State Engineer.

An article in the San Antonio Express-News, "Nuclear expansion could cost \$18.2 billion," discusses the recent increase in the cost estimates for the nuclear project in Texas. *See* Exhibit N. The cost increases have caused City of San Antonio to question whether they will participate in the project. This is an example of some of the complications that can arise due to underestimation of costs and the joint participation in the nuclear plants ownership and development.

In addition to these reports and articles, there are numerous reports from within and without the industry that document the risks and challenges associated with the economic feasibility of a new nuclear reactor. These risks and challenges were not addressed in the Change Applications or at the January 12 hearing proceeding.

The Applicants and BCH failed to provide any documentation that would provide reasonable assurance that the proposed nuclear power station is economically feasible.

Therefore, the State Engineer must reject the Change Applications.

3.3. Financial Ability

Under Utah Code 73-3-8(1)(iv) the State Engineer must determine whether the applicant has the financial ability to complete the proposed works. If an application does not meet the requirements of this section, it shall be rejected.

Neither the Applicants nor BCH provided any information regarding the financial circumstances of any party that might complete the proposed work. The Applicants themselves will not complete the proposed works. The Applicants have leased the water to another party, but that party, by its own admission, will not be the entity that would complete the proposed works and put the water to beneficial use. The identity of the entity that would, or even might, complete the proposed works and put the water to beneficial use is a complete unknown.

As discussed above at Section 3.2, the licensing, financing, and construction process for nuclear reactor is very complex and risky. There is nothing on the record of this proceeding that would provide a reasonable assurance that there is an entity that will have the financial ability to complete the proposed project. Therefore, the Change Applications must be rejected.

3.3. Putting the Water to Beneficial Use

KCWCD has signed a lease with TPD, for the "development, construction, testing and operation of as many as four power generation facilities in or adjacent to Emery County, Utah." SJCWCD has signed a lease with TPD for "the construction and operation of a power generation facility." Under the terms of the lease agreements, the Lessee can assign the agreements to a third party or sublease the water, upon approval by the Lessor.

Based on the information provided in the Applications, in public statements, and at the January 12 hearing, BCH will not be the party that will put the subject water rights to beneficial use. There is no information on the record that identifies the party or parties that will put the subject water rights to beneficial use.

At this time, no entity has the land ownership rights necessary to make use the subject water rights, pursuant to the Change Applications. BCH has made clear that their intention is to accumulate resources, including water rights, in order to sell those resources to another party or parties that may put the water rights to beneficial use at some unknown time in the future, possibly not for decades. At this time the party that would actually put the subject water rights to use for the generation of electricity from a nuclear power station is completely unknown. The claim that there will be an entity sometime in the future that will have the water and land ownership rights, the financial resources, and local, state, and federal authorizations to be able to put the subject water to beneficial use is purely speculative.

Without a known entity that has ownership rights to the site for the proposed project and without a known entity that would actually put the water to beneficial use, the State Engineer cannot approve the subject Change Applications.

3.4. Municipal Use

The water will supposedly be used for a municipal use. At this time, it is not known if any of the power generated by the proposed project will be used in the State of Utah. It is possible that the amount of Utah-generated power that is needed for the construction and operation of the nuclear power plant will not be offset by power coming to Utah from the proposed nuclear station.

The State Engineer must determine whether the use of water for power generation is a municipal use of water in the State of Utah, if that power is not used within, or primarily within, the State of Utah.

3.5. Public Benefit

Under Utah Code 73-3-8(1)(iii) the State Engineer must determine whether the proposed plan would be detrimental to the public welfare.

3.5.1. Costs and Risks to Utah Citizens

The Applicant and BCH's testimony at January 12 hearings did not present a full picture of the risks, costs, and benefits of the proposed project to the citizens of Utah. During the hearing there was an assumption that there were only benefits to Utah and the Green River area. Risks and costs include:

- Costs to Utah taxpayers due to tax breaks to the owners of the proposed reactor.
- Costs and risks to Utah electrical ratepayers before the reactor becomes operational.
- Costs to Utah ratepayers of electricity and compared to electricity from other sources and energy saving.
- Costs to Utah government and private emergency providers for emergency planning and maintaining emergency preparedness.
- Costs for the provision of educational, social, health, and other municipal services to the greatly increased population of Green River and the area.
- Costs and risks of emergency response in case of an accident.
- Costs and risks to public health, safety, and the environment related to an unplanned release of radionuclides from an accident, from minimal releases to catastrophic accidents.
- Costs related to a decrease in regional recreational activities associated with the withdrawal of water from the Green River and the operation of the reactor.

- Costs risks related to the impacts of the radioactive and non-radioactive emissions on agricultural products of Green River.

BCH and the Applicants did not provide any substantive information about who exactly would benefit from the provision of electricity, be it Utah or out-of-state electrical users. Even if 50% of the electricity is used in Utah, all of the risks and social, health, and environmental costs will be borne by the citizens of Utah. As both ratepayers and taxpayers, the citizens of Utah will bear costs and risks.

Utah residents will be adversely impacted by the release of radionuclide and other emissions (whether planned or accidental releases) that can interfere with agricultural production and commercial recreation and impact public health. Ratepayers outside Utah will not be exposed to these risks.

A study by the Institute for Energy and the Environment, Vermont Law School, found that taxpayers and ratepayers would bear a heavy burden if they were forced to subsidize the construction of a new generation of nuclear reactors. The Issue Brief for "All Risk, No Reward For Taxpayers And Ratepayers: The Economics Of Subsidizing The 'Nuclear Renaissance' With Loan Guarantees And Construction Work In Progress"²¹ identifies the likely risks to ratepayers and taxpayers. *See* Exhibit O. The author concludes that taxpayers and ratepayers should be protected from assuming the costs and risks of nuclear power development.

²¹ Mark Cooper, "All Risk, No Reward For Taxpayers And Ratepayers: The Economics Of Subsidizing The 'Nuclear Renaissance' With Loan Guarantees And Construction Work In Progress," Vermont Law School. November 2009.
http://www.vermontlaw.edu/Documents/11_03_09_Cooper%20All%20Risk%20Full%20Report.pdf

At this time there is no site for the long-term disposal of high-level nuclear waste. According to U.S. Energy Secretary Steven Chu, Yucca Mountain is off the table. *See* Exhibit P. Chu stated that spent nuclear fuel can be stored on-site for at least another 50 years. This means that the proposed reactor site would also be a spent fuel storage site, and the Applicants and BCH would not have to deal with the solution to the long-term safe storage of the reactor fuel. The risks associated with the storage and disposal of the highly radioactive waste from the proposed project will be transferred to future generations of Utah citizens. Certainly, the long-term storage of high-level nuclear waste in Green River is not to the benefit of the public.

The citizens of Utah must bear a major portion of the risks associated with nuclear development in Utah but will not receive the major portion of the benefits. Therefore, the proposed project is not beneficial to the public welfare.

3.5.2. Health Risks

A nuclear power plant in Green River would adversely impact the health of the citizens of Green River from normal plant operation. The health risks from accidents could be devastating, with the death or life-long health consequences for humans and animals in the area. The Applicants and BCH have not evaluated these consequences and risks.

Below is a discussion of recent studies that have looked at some of the health consequences of nuclear reactor operation. The consequences are usually to the most vulnerable and to those who have no say in the decision making process: infants and children.

According to an article by Joseph Mongano, in the *International Journal of Health Services*:

When a nuclear reactor commences operations, it adds over 100 man-made radioactive isotopes to the local environment through routine and accidental releases. Each kills cells or damages cell membranes and DNA strands in various organs of the body. Airborne releases of radioactive gases and particulates enter the body through breathing and the food chain. . . . While all humans are at risk after radiation exposure, the age cohort most likely to be immediately affected by exposure to radioactivity is the fetus and the infant, whose under-developed immune system may be less capable of repairing damage to the rapidly-dividing cells.

Mr. Mongano's article, "Excess Infant Mortality after Nuclear Plant Startup in Rural Mississippi," found that in the first two years of the Grand Gulf reactor startup resulted in significant increases in local rates of fetal deaths (+57.8%) and infant deaths (+35.3%), which rose especially rapidly for babies less than one day old (+96.6%)." *See* Exhibit Q. He found that the changes were consistent with the large declines in local infant death rates observed near closed nuclear reactors in the first two full years after shutdown. He concluded that this was not due to random chance, but to the susceptibility of the youngest to damage from ionizing radiation.

Joseph Mango and Janette D. Sherman examined data for childhood leukemia in the vicinity of nuclear reactors in the U.S. *See* Exhibit R. Their article, "Childhood Leukaemia Near Nuclear Installations," found that carcinogenic effects of radiation exposure are most severe amount infants and young children. The article also found that the death rates from child leukemia near U.S. nuclear plants rises greatest near oldest plants, declines near closed plants. *See* Exhibit S.

In Germany, an official study from the German government identified a cluster of childhood leukemia near a nuclear power plant that indicated the risk of getting cancer is increasing for children growing up in the neighborhood of a nuclear reactor. *See* Exhibit

T. The full study is available from the International Journal of Cancer.²² The report "Epidemiological study on childhood cancer in the vicinity of nuclear power plants," is available in German.²³ Elevated levels of radionuclides were found in rainwater, air, and household dust. The scientists found that children living within 3.1 miles (5km) of a nuclear power station were over twice - 2.19 times – as likely to be diagnosed with leukemia as those living outside that zone. *See Exhibit U.*

Dr. Ian Fairlie, Consultant of Radiation in the Environment in England, has compiled information from other studies on the incidences of leukemia near nuclear reactors.²⁴ (Uranium Watch references this presentation as part of this testimony.) His presentation clearly shows a correlation between childhood cancers and nuclear reactor operation. Often this evidence is dismissed because the assumption is that the amount of radiation is too low to produce these impacts. Others are rethinking those assumptions, as evidence for childhood health impacts accumulate.

Current risk estimates for radiation exposure are based on studies of the Japanese survivors of the U.S. atomic bombs. These studies do not address the impacts of exposures to low levels of radiation over time to infants, children, pregnant women, and adults of differing ages and characteristics. Many scientific studies are starting to show that there are health affects from very low doses of radiation and risks that have never been adequately identified and assessed. It took many years and many deaths before the

²² Int. J. Cancer: 1220, 721-726 (2008) | <http://www3.interscience.wiley.com/journal/29331/home>

²³ Epidemiological study on childhood cancer in the vicinity of nuclear power plants (KiKK)
http://www.bfs.de/en/bfs/druck/Ufoplan/4334_KIKK.html

²⁴ www.nuclearawarenessgroup.org.uk/.../Ian%20Fairlie%20NAG%20Presentation%20Feb%202010.pdf

scientific community and government regulators accepted that there the large risks associated with radon exposure in uranium mines and mills and there were significant health risks from the smoking of tobacco. How many premature deaths and how many years will it take to decide that nuclear reactors are an unacceptable health risk?

Radionuclides from the normal operation of a nuclear reactor in Green River will enter the air; fall to the ground in the Green River area, particularly when there is rain, snow, fog, and inversions; adhere to dust and be blown around, entering homes and other structures; enter drinking and irrigation water; adhere to and be taken up by plants that are consumed by humans and domestic and wild animals; enter the Green River; and adversely impact the Green River area for years and generations to come. Clearly, this will be detrimental to the public welfare of the citizens in the area of Green River and of Utah. Clearly, there are health and safety risks that have not been identified, assessed, and determined to be acceptable by the citizens of the Green River area. Therefore, the proposed project will be detrimental to the public welfare.

4. Conclusion

The Change Applications incomplete did not include relevant supporting documentation. The Applications did not meet the requirements in Utah Code 73-3-2 for the content of change applications. The insufficiencies in the Applications were not corrected by any testimony presented on January 12.

BCH has made false claims and conflicting statements regarding a purchase agreement for the site and BCH's ownership of the site for the proposed Blue Castle Project.

The party or parties that will actually put the subject water rights to the beneficial use contemplated in the Change Applications have not been identified.

There is no information on the record that provides reasonable assurance that the proposed use is physically and economically feasible.

The Applicants have not demonstrated that there is a party or parties that intend to carry out the proposed works and have the financial ability to do so.

There are social, health, safety, and environmental costs and risks of the propose project that are unacceptable.

There is a strong possibility that proposed use of the subject water rights would compromise the health and safety of the citizens of the Green River area, particularly infants and children. Therefore, the proposed use is not beneficial to the public, and the State Engineer is obligated to reject the Change Applications.

Thank you for the opportunity to supplement the record of these proceedings with additional information and documentation

Respectively submitted,

Sarah M. Fields
Program Director
Uranium Watch

EXHIBITS

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