Technical Review: Susquehanna River Basin Commission Docket Numbers: Three Mile Island Nuclear Station, Unit 1 - Well A - 2021-054; Three Mile Island Nuclear Station, Unit 1 - Well B - 2021-055; and, Three Mile Island Nuclear Station, Unit 1 - Well C - 2021-056.

January 3, 2022

Manager, Project Review
Susquehanna River Basin Commission
4423 North Front Street
Harrisburg, PA 17110-1788

Dear Project Manager:

Eric Joseph Epstein ("Epstein" or "Mr. Epstein") and TMI-Alert ("TMIA" or "TMI-Alert") jointly referred to as the Petitioners, are presenting background information and detailed concerns regarding the above-captioned application. Specific technical concerns and questions relating to Susquehanna River Basin Commission ("SRBC") Pending Nos. 2021-054, 2021-055, & 2021-056) are identified as issues in II. Three Mile Island Nuclear Station, Unit-1, Post-Shutdown Decommissioning Activities and Water Use; III. Three Mile Island Unit-2, Post-Defueling Monitored Storage; and, IV. Concerns and Issues with the SRBC Application are broken out per the SRBC Application Protocol.

Respectfully Submitted,

Eric Epstein, Chairman
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cc: Service List

I. Introduction.

Three Mile Island Unit-1 ("TMI-1)) was owned and operated by the former Exelon Corporation ("Exelon"). Inexplicably, all the water resources at Three Mile Island ("TMI"), including water used by Three Mile Island Unit-2 ("TMI-2"), which is owned by a separately licensee, TMI-2 Solutions, LLC., is under contract to Exelon Corporation. The new Exelon, or "Hold Co" and "Spin Co", has been reorganized, and has no name, address, or organizational structure during the review of this Application. (1) The former Exelon submitted a TMI Unit 1 Application, which as specified in Commission Regulation 18 CFR §806.31(e), allows continued operation of the groundwater wells under Susquehanna River Basin Commission ("SRBC") Docket No. 20110610 beyond the November 26, 2021 expiration date. Both entities, the former Exelon and TMI-2 Solutions, LLC, are divisible and refereed to as the "Applicant."

Exelon, the former-owner of TMI Unit-1, filed Applications for renewal of groundwater withdrawals from three wells for ongoing water demands to continue operations at the facility. The applications request approval to withdraw groundwater at a consecutive 30-day average of up to 0.099 million gallons per day ("mgd") from Well A, up to 0.099 mgd from Well B, up to 0.099 mgd from Well C, and up to 0.099 mgd from Wells A, B, and C combined. The Applications extend to TMI-2

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1 Mr. Epstein and TMI-Alert are parties to the proceeding Docket Nos. STN 50-456, STN 50-457, 72-73, STN50-454, STN 50-455, 72-68, 50-317, 50-318, 72-8, 50-461, 72-1046, 50-10, 50-237, 50-249, 72-37, 50-333, 72-12, 50-373, 50-374, 72-70, 50-352, 50-353, 72-65, 50-220, 50-410, 72-1036, 50-171, 50-277, 50-278, 72-29, 50-254, 50-265, 72-53, 50-244, 72-67, 50-272, 50-311, 72-48, 50-289, 72-77, 50-295, 50-304, and 72-1037-LT.

TMI-2 Solutions, a separately owned and operated limited liability corporation, that is in possession of the the TMI-2 Possession Only License ("POL").

Enclosed please find Eric Epstein ("Epstein" or Mr. Epstein") and Three Mile Island's Alert, Inc.'s ("TMIA" ot "TMI-Alert") (jointly the Petitioners") review of the Applications for water use. The Susquehanna River Basin Commission (2) stated on October 27, 2021: "The applications are currently undergoing administrative and technical review. (3) Recognizing the change in operations, (4) Commission staff will review the water withdrawal and consumptive use demands, from all sources, based on the Facility's reasonable and foreseeable need to adequately address ongoing decommissioning activities (including TMI-2). There is no information related to the review of the pending applications currently available for public dissemination."

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2 SRBC docket numbers: Three Mile Island Nuclear Station, Unit 1 - Well A - 2021-054; Three Mile Island Nuclear Station, Unit 1 - Well B - 2021-055; and, Three Mile Island Nuclear Station, Unit 1 - Well C - 2021-056.

3 The Applicants incorrectly referred to the project Sponsor as "Three Mile Island Island Nuclear Station Unit located in "Middleton." "Exelon" is identified as the owner under Table 4.2." However, "Middleton" is a city located in Massachusetts or Wisconsin, and TMI is located in Londonderry Township. The company in possession of the license was Exelon which has Spun ito an unidentified Hold Co and Spin Co with no current address, name or organization. The NRC's preliminary approval was granted on November 17, 2021.

4 Re: Exelon Generation Company, LLC - Approval of Indirect Transfer of Licenses and Draft Conforming License Amendments, (November 17, 2021).

Three Mile Island is "abnormal" and "unique" (5) which impacts the demand for water. Water use was substantial during the TMI-2 defueling phase which created a legal precedent. (6) The defueling process generated 2.3 million gallons of radioactive water that was evaporated.

There are significant costs to remove dissolved and suspended impurities for purposes of radiological protection and water clarity. These systems will likely include modifications of more conventional systems

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4 Draft Amendments: ML21277A193

ADAMS Accession Nos. Order: ML21277A192.
https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21277A192
https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21277A193

Safety Evaluation (Non-Proprietary): ML21277A248.
https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21277A248

5 "The basement of the reactor building has been uninhabitable since the accident. Under a 1982 agreement with the Nuclear Regulatory Commission and the Department of Energy. GPU Nuclear was able to ship 'abnormal' radioactive waste, that is waste not suitable for commercial disposal, from TMI-2 to the DOE for storage, research and ultimate disposal." (Three Mile Island Nuclear Station, Unit 2, No. DPR-73 Docket Nos. 50-320, February 1, 2005).

6 In June 1980, the Susquehanna Valley Alliance filed a Complaint and Injunction with the Middle District Court in Harrisburg, Pennsylvania against the Nuclear Regulatory Commission and Metropolitan Edison. The Injunction sought to prevent the owner and operator of Three Mile Island from dumping 700,000 gallons of radioactive water into the Susquehanna River. The Injunction was granted, and the NRC was found to be in violation of the National Environmental Policy Act.

during defueling, decontamination, and decommissioning including, but not limited to the ion exchange resins, Submerged Demineralizer Systems, and processing and disposal of water and water filters and treatment media. (Please refer to Exhibit, A, and discussion under IV. Concerns and Issues with the SRBC Application).

Three Mile Island's "abnormal" and "unique status", (7) dual ownership, fluid timetables, "minimum funding levels," and uncertainty of decommissioning modes, can not be ignored when computing site-specific, water use needs at TMI-1 or TMI-2.

Three Mile Island is identified as "unique" by the Nuclear Regulatory Commission and the Commonwealth of Pennsylvania's Department of Environmental Protection ("DEP"). DEP Secretary, Patrick McDonnell reiterated TMI-2's "unique status" in a letter to Kristine L. Svinicki, former Chairman of the U.S. Nuclear Regulatory Commission from April 6, 2020. "Given my stated concerns, I hope you and your fellow Commissioners will thoughtfully consider the unique aspects of the severely damaged TMI Unit-2 nuclear reactor..."

The Applicants have attempted to dilute and "normalize" the core melt accident at Three Mile Island. TMI-2 Solutions told the NRC during a presentation they wanted to normalize TMI-2 (Slide, 15). "We don't want it to look like apples to oranges. We want to keep it consistent. License foot

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7 TMI-2's "uniqueness" was reaffirmed by TMI-2 in its Application before the Nuclear Regulatory Commission, Attachment 1, p. 12 and Attachment 1 on p. 209, and the "Amended Post Shutdown Decommissioning Activities Report, on p. 16 and in the Affidavit of Russell G. Workman.

print is identical [to TMI-1.]" TMI-Solutions proposed reframing the meltdown to look, "Like any other plant at the end of its life" after Phase 1. (8)

The delay in cleaning up TMI-2 had to do with the fact that the licensee did not have the resources or ability to generate revenue. In fact much of the discussion in the Program Environmental Impact Statement ("PEIS") evolves around the issue of limited resources. In 1988, the NRC stated, "Although the duration of the storage period was not specified by the license, the NRC evaluated delayed cleanup assuming a storage period of 20 years." (PEIS, Supplement 3, April, 1988.) The NRC's 20 year guestimate was made 33 years ago.

The Petitioners have a legitimate concern that another delay will take place. Chronic underfunding and perennial delays are the signature of the TMI-2 cleanup. The most confusing aspect of the Application is the fact that the Applicant's License Transfer Application ("LTA"), and Amended PSDAR explicitly anticipate an indefinite period for SAFSTOR — during DECON - if TMI-2 becomes resource challenged. However, water needs should be based on the DECON model since SAFSTOR is a euphemism for dormant and means the opposite of "accelerated." The paradox is that the longer the cleanup is delayed, the more money is accumulated in the trust funds.

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8 "Environmental Regulatory Approach to TMI-2 Decommissioning," GPU Nuclear and TMI-2 Solutions, Slide 15, February 20, 2020.

The TMI-2 Application states, “Although TMI-2 Solutions will pursue an accelerated Decommissioning schedule after acquiring TMI-2, as demonstrated in Enclosure 7, the NDT [Nuclear Decommissioning Trust] will still provide sufficient funding for decommissioning, accounting for fund growth up through 2037. Moreover, the Purchase Agreement does not prevent TMI-2 Solutions from deferring active Decommissioning work, if necessary, to preserve or grow NDT funds.” (9) TMI-2 Solutions is advertising that it reserves the right to stop the cleanup midstream, and bank Susquehanna River Basin Commission groundwater assets.

Patrick McDonnell, Secretary of the Department of Environmental Protection wrote Kristine L. Svinicki, Chairman U.S. Nuclear Regulatory Commission on April 13, 2020, and stated “…the obvious risk of a funding shortfall and the attendant significant health, safety, environmental, financial and economic risks to the Commonwealth and its citizens raise serious questions about the realization of that benefit…GPU Nuclear Corporation and the NRC currently have $800 million in its financial assurance fund for decommissioning TMI Unit-2. However, estimates have shown it will cost $1.2 billion to decommission TMI Unit-2.

The Memorandum of Understanding between Exelon and First Energy was predicated on the assumption that both plants would be decommissioned at the same time to reduce costs and streamline resources. However, Exelon has asked the NRC to place TMI-1 in SAFSTOR while TMI-2 Solutions is requesting to move TMI-2 from PDMS /SAFSTOR to DECON until TMI-2 runs out of money.

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9 Application to the Nuclear Regulatory Commission, , Attachment 1 and Page 11 of 15 under “Funds.”

The SRBC can not determine the amount of water needed to clean up either unit until Exelon and TMI-2 Solutions decide how and when they will decommission their nuclear reactors.

II. Three Mile Island Nuclear Station, Unit 1 Post-Shutdown Decommissioning Activities and Water Use.

The Generic Environmental Impact Statement ("GEIS') from the relicensing proceeding was grandfathered at Three Mile Island Unit-1, and remains the guiding environmental document. The GEIS guestimates that quantities of water required during decommissioning are minimal compared to those used when a plant is operating. The GEIS mentions construction dust abatement and decontamination (flushing systems or pressure-washing components) as typical decommissioning water uses. NRC asserted in Section 4.3.2 of the GEIS that "potential impacts of decommissioning on water use at all plants is neither detectable or destabilizing."

TMI-1 obtains surface water from the center channel of the Susquehanna River for circulating water and service water cooling, and discharges to the same channel downstream from the intake structure. Onsite groundwater wells supply water for domestic water consumption, cooling water makeup, and other industrial uses.

Exelon expects to reduce Susquehanna River water and groundwater withdrawals substantially following plant shutdown, yet the current *de minimis* need for water use at TMI-2 will increase significantly. Upon plant shutdown, the discharge of waste heat via the cooling towers or to the

Susquehanna River will end, which will eliminate most evaporative losses resulting from station operation. Water consumption will be further reduced when it is no longer necessary to provide secondary cooling for the spent fuel pool. The spent fuel pool will be used until all the spent fuel is moved into dry cask storage.

TMI-1 's industrial groundwater use is associated with evaporation from the plant's industrial cooler water system and makeup to the spent fuel pool. Industrial groundwater use will be phased out early in the SAFSTOR dormancy period. No timeline has been provided.

Exelon expects water use during TMl-1 decommissioning to be much lower than water use during operational years, which is consistent with the statements made in the GEIS. Exelon posits that there is nothing about TMl-1's design, location, configuration, operating history, or decommissioning plans that would alter or contradict this generic conclusion. Exelon concludes that decommissioning water use impacts for TMI-1 are bounded by the analysis in the GEIS.

According to Exelon, preparations for dormancy at TMI-1 under 2.1.1 require a negligible amount of water. “The facility is left intact (during the dormancy period), with most structures maintained in a stable condition; some outbuildings not related to power production will be removed.” (10)

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10 U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 Three Mile Island Nuclear Station, Unit 1 Renewed Facility Operating License No. DPR 50 NRC Docket No. 50 289. April 5, 2019, p. 10.

The process of placing the plant in safe-storage will include, but is not limited to, the following activities that require water: management of the spent fuel pool and reconfiguring fuel pool support systems, processing and disposal of water and water filter and treatment media (resins) not required to support dormancy operation.

"Groundwater at the station is prevented from migrating beneath the river to the mainland by the opposing flow of groundwater from higher land to either side of the river. If any localized alteration in the groundwater chemistry associated with the use of crushed concrete as clean fill were to occur, it would not impact offsite groundwater quality."

Issue, #1: How much water will be required at Three Mile Island Unit 1, who will analyze and monitor water chemistry, where will effluent discharge monitors be located, who and how often will water temperatures be monitored during discharges into the Susquehanna River, and what is the net monthly water loss?

The transition from decommissioning preparation to destructive decommissioning will require additional water. "Following the preparations for decommissioning, physical decommissioning activities will take place. This includes the removal and disposal of contaminated and activated components and structures, leading to the termination of the 10 CFR Part 50 operating license. Although much of the radioactivity will decrease during the dormancy period due to decay of 60 Co and other short- lived radionuclides, the internal components of the reactor vessel will still exhibit radiation dose rates that will likely require remote sectioning under water due to the presence of long-lived radionuclides such as 94 Nb, 59 Ni, and 63 Ni." (2.1.4., Decommissioning Operations: Decontamination and Dismantlement).

TMI-1 will reduce radiation levels until residual levels indicate that the structures and equipment can be released for unrestricted access and conventional demolition, i.e., “Greenfield.” “This activity facilitates surface decontamination and subsequent verification surveys required prior to obtaining release for demolition. Surface soil, sub-surface media and groundwater will meet the unrestricted use criteria in 10 CFR 20.1402. Underground piping (or similar items) and associated soil will be removed as necessary to meet license termination criteria.” (11)

Issue, #2: How much water will be required to reduce radiation levels until residual levels indicate that the structures and equipment can be released for unrestricted access? Who will analyze and monitor water chemistry, where will effluent discharge monitors be located, who and how often will water temperatures be monitored during discharges into the Susquehanna River, and what is the net water loss?

The groundwater protection program currently exists at TMl-1 in accordance with the Nuclear Energy Institute (“NEI)” protocols. This is an industry guidance guardrail, not a government a standard. There is no regular well sampling, and tritium plume pathways are left undetected and unmonitored.

Exelon argued that this program is directed by procedures and will continue during decommissioning. Exelon will also continue to maintain the existing radiological decommissioning records program required by 10 CFR 50.75(g). The program is not directed by procedures that factor aggressive decontamination and decommissioning activities.

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11 Three Mile Island Nuclear Station, Unit 1 Post-Shutdown Decommissioning Activities Report p. 14.

According to Exelon, neither the monitoring results of the groundwater protection program nor events noted in 10 CFR 50.75(g) reports indicate the presence of long-lived radionuclides in concentrations sufficient to preclude unrestricted release under 10 CFR 20.1402, "Radiological criteria for unrestricted use." These are cursory programs with spot checks and unchanged monitored locations. (2.2.6, Groundwater Protection and Radiological Decommissioning Records Program). However, significant amounts of tritium has leaked and spilled under Three Mile Island dating back to 1982. (12)

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• Early 1982: Three thousand (3,000) gallons of radioactive tritium leaked into the groundwater from the borated water storage tank. The leak occurred because work was done without an engineering review. (Congressional Investigation, April 26, 1983).

January 9 and 19, 1999 : Elevated tritium levels and potential leaks from the waste evaporator condensate storage tank for the months of January, February and March, 1998 were reported. (Nuclear Regulatory Commission, Inspection Report 50-289/99-01).

• June 27, 2006: TMI dug up and fixed leaks from the condensate storage tank. The leak followed telephone conduit and flooding. Exelon sampled the water and found tritium. They pumped all the water out of the man ways and dumped it to their industrial waste treatment system which eventually goes to the river. TMI was unaware of the storage tank leak, how much, or for how long. (Nuclear Regulatory Commission)

• November 2006: Radioactively contaminated water leaked into the ground from a broken deicing line on the condensate storage tank. (Nuclear Regulatory Commission),

• July 25, 2012: Chemistry technicians at TMI said they found a slightly elevated level of tritium in one monitoring well on the site near the plant. (Exelon Corporation).

Issue, #3: Please produce the report and supporting materials referenced on p. 17, and determine how the operational plan will detect more intense radioactivity.

Issue, #4: Exelon must define, qualify, and quantify the terms “trivial” and “water use", and explain how levels will be reduced “substantially.” Do “reduce” and “substantial” have values?

Issue, #5: How much water will be required in aggregate at TMI-1, who will analyze and monitor water chemistry, where will effluent discharge monitors be located, who and how often will water temperatures be monitored during discharges into the Susquehanna River, and what is the net water loss?

Overall water quality will be impacted by site -specific decommissioning activities, and not generic markers used by Exelon. Ground water and surface water quality will be impacted by fuel removal, large component removal, decontamination and dismantlement, and structure dismantlement. With respect to groundwater, the GEIS noted that demolishing concrete structures and storing rubble on site could result in changes (higher alkalinity) in local water chemistry, but the non-radiological effects of such changes on water quality would be non-detectable offsite at all nuclear power plants.” (5.1.3, p. 23). These internal structures will be embrtittled and irradiated.

Exleon’s analyses submitted to the NRC were generic, and not site-specific. This is the danger when you try to turn a radioactive lemon into a radioactive orange. In Section 4.3.3 of the GEIS, the NRC concluded “generically that for all facilities, decommissioning impacts to surface and

groundwater quality would be small. According to Exelon, there is nothing about TMl-1's design, location, configuration, operating history, or decommissioning plans that would alter or contradict this generic conclusion and Exelon would comply with regulatory and permit requirements to protect surface water and groundwater resources, Exelon has determined that impacts of decommissioning on water quality bounded by the analysis in the GEIS." (5.1.3. pp. 23-24).

The Petitioners point out that every aspect of the Three Mile Island is unique, and the decontamination and decommissioning for Three Mile Island, like the defueling of TMI-2 is fraught with danger and uncertainty, and is a novel and unique undertaking. Three Mile Island is not a generic - "apples to apples" plant taken off the shelf at the nuclear Wal Mart.

The nuclear generation stations at Three Mile Island used a flawed and unique design. Babcock & Wilcox Pressurized Water Reactors are no longer used, the company does not exist, and after the meltdown, TMI sued the plaint's designer for "gross negligence." Three Mile Island is l located in a unique ecosystem. The Lower Susquehanna River empties into the Chesapeake Bay. TMI's unique configuration and vulnerable. It is one of the last nuclear plants that exclusively uses wet spent fuel storage. In addition, vast portions of TMI-2's basement is uninhabitable. TMI's "abnormal" and "unique" operating history included a loss of coolant accident, core meltdown, and the Unit-2 containment building has been soaked in radiation for 42 years. Exelon and its unidentified successor, as well as TMI-2 Solutions, should not be accorded the "benefit of the doubt", and accorded a magical nuclear wand to speculate, to extrapolate backwards, and to give generic clearance to cleaning up Three Mile Island.

Issue, #6: Please request site-specific calculations based on actual activities, not an average, mean or median to calculate water use.

Issue, #7: How much aggregate water will be required for the decontamination and decommissioning of Three Mile Island, who will analyze and monitor water chemistry, where will effluent discharge monitors be located, who and how often will water temperatures be monitored during discharges into the Susquehanna River, and what is the net water loss?

III. Three Mile Island Unit-2: Post Defueling Monitored Storage.

On March 28, 1979, Three Mile Island Unit-2 experienced a loss of coolant accident ("LOCA"). The steam generator boiled dry, resulting in the reduction of primary-to- secondary heat exchange. This caused an increase in the primary coolant temperature, creating a surge into the pressurizer, and an increase in system pressure. The pilot operated relief valve ("PORV") opened to relieve the pressure, but failed to close when the pressure decreased. The reactor coolant pumps were turned off and a core heat-up began as the water level decreased to uncover the top of the core. The melting temperature of the zircaloy fuel cladding was exceeded, resulting in relocation of the molten zircaloy and some liquefied fuel to the lower core regions, solidifying near the coolant interface. The majority of the molten material flowed down through the region of the southeastern assemblies and into the core bypass region.

On November 6, 1984, research conducted by the Department of Energy on reactor damage during the accident, indicated temperatures may have reached in excess of 4,800 degrees. In October 1985, removal of damaged fuel from TMI-2 began. Further spread of the debris also occurred as part of the post-accident water processing cleanup activities. The current long- term management condition is termed Post-Defueling Monitored Storage. ("PDMS")

"Substantial contaminated areas still exist under the PDMS, as well as trace quantities of spent nuclear fuel ("SNF"). Several cubicles in the auxiliary and fuel handling buildings remain locked, and the basement of the reactor building has been uninhabitable since the accident...A summary of the quantity and suspected location of the remaining fuel debris is provided in Tables 1.1 through 1.3. (13)

The facts on the ground concerning the "abnormal" and "unique condition" of TMI-2 are indisputable, and established in the initial PEIS in 1981. The Applicant dismisses, ignores, and plays down: 1) TMI-2 is treacherous terrain dominated by numerous radioactive hot spots; 2) The Applicants are "bound," dependent on past studies without the benefit of an in-depth, site survey; 3) The lack of contemporary, dedicated site-studies can not be supplanted by recycled TLG decommissioning estimates; and, 4) TMI-2 Solutions, like all that came before, will encounter unforeseen conditions that could overwhelm, impede, and delay the cleanup.

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13 TLG Services,Inc., Three Mile Island Unit 2, Document F07-1476-002, "Decommissioning Cost Analysis," Section 1, p. 3.

The PEIS in October 1984 identified the value of onsite surveys, and the miscalculation in dose estimates that have plagued the cleanup from its earliest stages.

> All options for the TMI-2 cleanup evaluated in this supplement involve occupational radiation dose higher than predicted more than three years ago [1981] in the PEIS. The basis for these revised estimates is increased knowledge of the condition inside the reactor building and of the effectiveness of decontamination and does reduction efforts. (14)

Flash forward thirty-seven years, and the Applicant has to be reminded of the uncertainty involved with cleaning up TMI-2. The DEP describes the obvious: TMI-2 is a "unique" and challenging site unlike any comparable plant decommissioned in America.

There are significant areas in the plant with unknown radiological conditions related to the TMI Unit-2 accident. External gamma radiation measurements are dated or involve limited observation times and remote equipment due to high-radiation levels. Secretary, Patrick McDonnell advised Kristine L. Svinicki, former Chairman of the U.S. Nuclear Regulatory Commission:

> Despite the numerous entries into the containment building to remove damaged nuclear fuel in the 1980s, there are significant areas in the plant with unknown radiological conditions related to the TMI Unit 2 accident. Specifically, external gamma radiation measures may have been made with limited stay times or remote survey instruments, however, the current detailed surface contamination levels of Cs-137, Sr-90 or H-3 (tritium) are not known.

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14 Secretary, Patrick McDonnell's letter to Kristine L. Svinicki, former Chairman of the U.S. Nuclear Regulatory Commission, April 6, 2020.

As part of the application, the Applicant should make known to the Susquehanna River Basin Commission any contamination that was covered by clean concrete or sealant during this recovery period. This concern also relates to any radioactive contamination (15) that has migrated into the concrete volume or other surface material. (16)

Moreover, the "apples to apples" argument the Applicant makes comparing TMI to normal operating plants is at the core of their revisionist argument. None of the projects that the Applicant offered are similar to TMI-2. Three Mile Island is not Big Rock, Ft. Calhoun, or Zion. This is the site of the nation's worst commercial nuclear accident. This community has endured the impacts of offsite radiation releases for forty-two years, despite the industry and NRC's assertion that a TMI-type accident was "non-credible."

The Applicant continues to create an "apples to apples approach" and fails to recognize the unique status of TMI-2. The Applicant, a limited liability corporation, does not acknowledge that de-fueling was accompanied by funding provided by rate payers and taxpayers (who have no ownership or voting rights) since there was no decommissioning fund at the time of the TMI-2 Loss of Coolant Accident.

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15 U.S. NRC, NUREG-0683, Supplement 1, Final Report. PEIS, Final Supplement Dealing with Occupational Radiation Dose, October, 1984, p.1, Table, 2.10.

16 PEIS, "2.6., Analysis of Current Cleanup Plan and Alternatives," October, 1984, p. 2.32.

As such, the only precedents established to date are perennial underfunding estimates of the cleanup of TMI-2. and chronic postponements based on the licensee's best guestimates. TMI-2 Solutions is the latest actor to appear on the cleanup stage looking to profit at the expense of rate payers. The four financial, back-up instruments proffered by the Applicant are unaudited, unavailable, and undetermined, and are actually phased out as the decommissioning activities progress. (17)

Numerous site-specific issues are layered on top of the already general and vague water use proposal to decommission Three Mile Island Unit -2:

Issue, #8: How much aggregate water will be required to cleanup, decontaminate, and decommission TMI-2, who will analyze and monitor water chemistry, where will effluent discharge monitors be located, who an how often will water temperatures be monitored during discharges into the Susquehanna River, and what is the net water loss?

Issue, #9: How much water will be required for TMI-2 reduce radiation levels until "residual levels" indicate that the structures and equipment can be released for unrestricted access and conventional demolition?

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17 "Until the completion of Phase 1, the first four instruments will provide up to $100 million of additional financial assurance to support. After completion of Phase 1, certain of these instruments will remain in effect, to provide additional financial assurance for TMI-2, decommissioning through the completion of Phase 2. ("Application for Order Approving License Transfer and Conforming License Amendments, GPU NUclear, Inc. and TMI-2 Solutions, LLC, November 12, 2019).

Issue, #10: How much water will be required to cleanup "significant radiation" areas at TMI-2 , who will analyze and monitor water chemistry, where will effluent discharge monitors be located, who and how often will water temperatures be monitored during discharges into the Susquehanna River, and what is the net water loss? (18)

Re: Groundwater Detection Program.

Issue, #11: Please produce the equipment and report used to determine how the operational plan will detect more intense, site-specific radioactivity.

Re: Groundwater Detection Program and Site-Specific Data.

Issues, #12: How much water will be required, who will analyze and monitor water chemistry, where will effluent discharge monitors be located, and who an how often will water temperatures be monitored during discharges into the Susquehanna River, and what is the net water loss?

Re: Site-Specific data.

Issue, #13: Please request site-specific calculations based on actual activities, and not an average, mean or median to calculate water use.

Re: Generic Clearance

Issues, #14: How will TMI-2 Solutions return the site to Greenfield?

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18 Significant radioactive contamination exists throughout the TMI-2 reactor building. This contamination is due to fission products (90 Sr and 137 Cs in particular) released from the failed fuel. The radiation levels are not expected to decrease significantly from current levels due to the long half lives of these elements.

Re: Generic Clearance.

Issue, #15: How much aggregate water, and for how long, will be required for the decontamination and decommissioning of TMI-2, who will analyze and monitor water chemistry, where will effluent discharge monitors be located, and who an how often will water temperatures be monitored during discharges into the Susquehanna River, and what is the net water loss? (19)

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19 The initial and only National Pollutant Discharge Elimination System ("NPDES") permit issued in 1977 was explicitly referred to as an "interim agreement. Based on publicly available submissions, TMI-2 did not submit Clean Water Act, Section 401 Certification documents.

This document was not submitted as part of the Application from EnergySolutions and GPU Nuclear, Order Approving and Conforming License Amendments, Three Mile Island Unit, NRC Docket, 50-320, November 12, 2019. Those documents were also addressed and shared with the DEP. The TMI-2 license transfer application purportedly covered environmental compliance under "Environmental Laws" and "Environmental Matters under 4.9." In addition,under Schedule 4.19.1, there was no discussion of the Clean Water Act, Section 401.

IV. Concerns and Issues with the SRBC Application.
Three Mile Island Nuclear Station, Unit 1: Wells A, B and C
2021-055 - Invoice, #: 172925 - Groundwater Withdrawal.

The statements below were made by the Susquehanna River Basin Commission:

• "The consumptive use and surface withdrawal approvals from SRBC have not changed yet as a result of the non-operating status. Commission staff is working with TMI operators to determine future operating parameters, and will modify the permits as appropriate."

• "Exelon TMI - Unit 1 submitted an application by May 26, 2021, which as specified in Commission Regulation 18 CFR §806.31(e), allows continued operation of the groundwater wells under SRBC Docket No. 20110610 beyond the November 26, 2021 expiration date, during review of its application."

• "Exelon filed applications for renewal of groundwater withdrawals from three wells for ongoing water demands to continue operations at the facility. The applications request approval to withdraw groundwater at a consecutive 30-day average of up to 0.099 million gallons per day (mgd) from Well A, up to 0.099 mgd from Well B, up to 0.099 from Well C, and up to 0.099 mgd from Wells A, B, and C combined."

• The applications are currently undergoing administrative and technical review. Recognizing the change in operations, Commission staff will review the water withdrawal and consumptive use demands, from all sources, based on the Facility's reasonable and foreseeable need to adequately address ongoing decommissioning activities (including TMI-2). There is no information related to the review of the pending applications currently available for public dissemination.

1.1 Project Sponsor:

Issue, #16: Review the name and organization submitting the Application. Hold Co and Spin Co are placeholders for the former Exelon Corporation. This corporate family has no corporate affiliation with TMI-2 Solutions, LLC.

Issue, #17: Please modify the Application to include the aggregate amount of water needed to decontaminate and decommission Unit-2.

1.3 Existing and Projected Facility Water Us:

Issue, #18: Please request information regarding "exiting facility water use" to reflect sites specific conditions at both units, which should substantiate the difference between current and "projected facility use" by "mode", DECON or SAFSTOR .

Issue, #19: There has no definitive quantity of water provided by the former Exelon or TMI-2 Energy Solutions to any regulatory agency associated with the decommissioning of either TMI-1 or TMI-2. Please define the role of U.S. Army Corps of Engineers related to water use at Three Mile Island.

Issue, #20: The U.S. Army Corps of Engineers, Baltimore District, is home to the North Atlantic Division's Radiological Health Physics Regional Center of Expertise. Does the SRBC have an LOU or MOU with this branch of the Corps, and is the Corps the lead agency on this Application?

Issue, #21: Does this Application ask the Sponsor to anticipate and plan for climate change modifications, evaporation, and factor drought protocols and restrictions, flood prevention or seasonal fluctuations per the Susquehanna River Basin's Drought Coordination Plan, Hydrogeologic Evaluation Policy, Water Resource Program, and Updated Comprehensive Plan?

1.4 Existing and Projected Facility Water Use:

Issue, #22: Please request site-specific and updated studies to establish the current need for water and "exiting facility water use" in preparation for decommissioning TMI-1 and TMI-2 .

Issue, #23: There are significant costs to remove dissolved and suspended impurities for purposes of radiological protection and water clarity. These systems will likely include modifications of more conventional systems used during defueling, decontamination, and decommissioning, including, but not limited to, the ion exchange resins, Submerged Demineralizer Systems ("SDS"), and processing and disposal of water and water filters and treatment media.

Please breakout the water use needs for and water monitoring for sludge, resins , and Submerged Demineralizer Systems, as well as the disposal and processing of water and water filters and treatment media at TMI-1 and TMI-2.

1.5 Reasonable Foreseeable Need:

Issue, #24: Please request the impact on of High Burnup ("HBU") fuel storage at TMI-1 on projected water use needs. (20)

2.4.2 Discharge Permits:

Are there any permits associated with the discharge of water from this withdrawal?

Issue, #25: The initial and only National Pollutant Discharge Elimination System ("NPDES") permit issued in 1977 was explicitly referred to as an "interim agreement." Based on publicly available submissions, TMI-2 did not submit Clean Water Act, Section 401 Certification documents.

This NPDES document was not submitted as part of the Application from EnergySolutions and GPU Nuclear, Order Approving and Conforming License Amendments, Three Mile Island Unit, NRC Docket, 50-320, November 12, 2019. Those documents were also addressed and shared

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20 "The NRC and the nuclear industry lack the predictive capabilities to address these problems. Erring on the side of caution might mean leaving high burnup fuel in pool storage for 25 years to allow cladding temperatures to drop enough to reduce risks of cladding failure before the fuel is transferred to dry storage. Meanwhile, reactors are maxing out their wet storage with more than 70% of the nation's 77,000 metric tons of spent fuel in reactor pools, of which roughly a fourth is high burnup. So far, about 8% of high burnup is sprinkled amidst lower burnup fuel in dry casks at reactor sites. By 2048 -- DOE's date for opening a geologic disposal site -- the amount of spent fuel could double, with high burnup account ing for as much as 60% of the inventory. ("Nuclear Intelligence Weekly," Vol. 10, No. 28 July 15, 2016).

with the DEP. The TMI-2 license transfer application purportedly covered environmental compliance under “Environmental Laws” and “Environmental Matters under 4.9.” In addition,under Schedule 4.19.1, there was no discussion of the Clean Water Act, Section 401.

This Application is incomplete, and does not address, nor do any of the previous filings with the DEP, the NRC or the SRBC, the “disposal” and disposition of radioactive water from Three Mile Island. The current Application reads like a silent page out of TMI’s Petition from 1980 in the original case that was struck down by the federal court.

> While the [previous] Operators propose to treat only the intermediate level radioactive [**4] water by means of the Epicor II system [no such provision is outlined in the current Application] , that water is alleged to contain "high- level radioactive waste" within the meaning of [*235] section 301(f) of the Federal Water Pollution Control Act [(FWPCA), which prohibits discharge of such waste into the navigable waters of the United States. Moreover, the complaint alleges, neither the Operators nor the NRC have any overall plan to deal with the entire contaminated water problem, or any feasible plan for disposal of the highly radioactive resin residue which Epicor II will produce. Finally, it is alleged that because the containment building and the auxiliary building are presently secure there is no immediate necessity for putting the Epicor II system into operation. (21)

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21 Susquehanna Valley Alliance, Appellants v. Three Mile Island Nuclear Reactor, General Public Utilities, Metropolitan Edison Company, Jersey Central Power and Light Co., Pennsylvania Electric Co, Nuclear Regulatory Commission. Appellees. No. 79-2446 United Sates Court of Appeals , Third Circuit, *619 F.2d 231; 1980 U.S. App. LEXIS 19581; 15 ERC (BNA) 1394; 10 ELR 20235*, November 13, 1979.

In June 1980, the Susquehanna Valley Alliance filed a Complaint and Injunction with the Middle District Court in Harrisburg, Pennsylvania against the Nuclear Regulatory Commission and Metropolitan Edison. The Injunction sought to prevent the owner and operator of Three Mile Island from dumping 700,000 gallons of radioactive water into the Susquehanna River. The Injunction was granted, and the NRC was found to be in violation of the National Environmental Policy Act. The Application is currently incomplete, and without a plan to dispose of radioactive water which is identical to the 1980 case when the Court noted "neither the Operators nor the NRC have any overall plan to deal with the entire contaminated water problem…"

Issue, #26: The Applicant has not provided a Clean Water Act ("CWA") Section 401 Water Quality Certification ("WQC") from the Pennsylvania Department of Environmental Protection or U. S. Army Corps of Engineers), or a documented waiver or other documentation from the Certifying Authority that Section 401 Certification does not apply to the subsequent Application for license transfer and water renewal requests at Three Mile Island

2.5 Facility Use:

2.5.4 Is the proposed withdrawal part of a groundwater remediation project?

4.0 Groundwater Availability Analysis.

Commission regulations require that a groundwater application include an analysis of groundwater availability during a 1-in-10-year drought recurrence interval. Therefore, recharge rates based on 1-in-10-year drought recharge statistics or 60 percent of the average annual recharge rate (which approximates a 1-in-10-year annual drought) must be used in the analysis. The Phase I and Phase II Groundwater Availability Analysis sections (tables below) are designed to meet the Commission's standards for evaluating groundwater availability during 1-in-10-year drought. The Commission will consider the isolated and cumulative effects of the existing and proposed withdrawals within a watershed, and may consider conditioning the approval to ensure sustainability and protect the water resources based on this standard. The delineation of the contributing groundwater basin, selection of applied recharge rates, and calculations should be based on the site-specific hydrogeologic setting, the best available recharge rate information, and professional judgment. There may be practical limitations on the accuracy of the recharge estimates based on the delineated aerial extent of mapped geologic formations within the topographic drainage basin. Furthermore, the source well's proximity to laterally continuous fractures and faults that extend beyond the topographic basin may increase the recharge potential to the well.

Please refer to the discussion on pp. 8, 10-13, and 19.

During the 2002 drought, water shortages on the Lower Susquehanna reached critical levels, yet nuclear units were exempted from water conservation efforts. Exelon's was scheduled release water from storage in Lake Cowanesque during drought conditions as directed by the SRBC to make up or compensate for decontamination and decommissioning.

Issue, #27: Are the nuclear exemptions still in place?

5.1 Hydrogeologic Report:

Please refer to the discussion on pp. 8, 10-13, and 19.

For convenience, the original groundwater availability analysis provided in the aquifer testing plan is included below. The Hydrogeologist should update the original groundwater availability analysis based on new information gathered during completion of the aquifer test. If necessary, Commission staff is available to provide guidance on recharge rates and other groundwater availability related issues.

Issue, #28: Please request site-specific and updated Aquifer and Historic Tests.

Issue, #29: Please base water need projections on the destructive phase of decommissioning at TMI-1 and TMI-2.

5.1.1 Groundwater Monitoring Points:

Please refer to the discussion on pp. 8, 10-13, and 19.

Issue, #30: Please request site-specific and updated Groundwater Monitoring Points" Testing and professional studies.

5.1.2 Surface Water Monitoring Points.

Issue, #31: Please request site-specific and updated studies.

5.2.1 Environmental Resource Information:
Provide the following information for existing surface water features within the area of influence.

Issue, #32: Please request site-specific and updated studies.

5.2.2- Environmental Impact Information.

Are there any known or anticipated impacts to surface water associated with the pumping from the source well at the proposed withdrawal rate?

Issue, #33: Please request site-specific and updated studies.

Issue: #34: Will the sponsor contribute to funding or operations of York Haven Project or recreation facilities at the Historic Canal Lock, East Shore Boat Launch, Goosehorn Island Picnic Area, Shelley Island Recreation Area, Goodling Island Picnic Area, Beshore Island Recreation Area, Battery Island Recreation Area, Cly Shore recreational lot sites, York Haven Power Plant Recreation Area, and a Canoe Portage trail. These facilities are owned and operated by York Haven Power.