

ILLINOIS POLLUTION CONTROL BOARD
January 23, 2025

IN THE MATTER OF:)
)
PROPOSED AMENDMENTS TO) R22-18
GROUNDWATER QUALITY) (Rulemaking – Public Water Supplies)
35 ILL. ADM. CODE 620)

Proposed Rule. Second Notice.

OPINION AND ORDER OF THE BOARD (by B.F. Currie and M. Gibson)

On October 17, 2024, the Board issued a proposed second notice opinion and order that described substantive changes made since the issuance of first notice on March 7, 2024. In the proposed second notice, the Board posed questions and requested comment on changes to the rule text before proceeding to second notice. The Board received comments from the proponent, Illinois Environmental Protection Agency (IEPA or Agency), as well as many participants which included stakeholders and regulated entities.

Today, the Board issues its second notice opinion and order in compliance with the Illinois Administrative Procedure Act (5 ILCS 100/5-40(c) (2022)) and directs its Clerk to submit the proposal to the Joint Committee on Administrative Rules and to open a sub-docket to further explore any potential costs associated with landfills. In this opinion, the Board provides an abbreviated procedural background on this rulemaking. The Board then discusses participants' comments, including responses to questions posed in the proposed second notice and makes substantive changes to the proposed rules. The proposed rules appear in Addendum A to this opinion with additions underlined and deletions struck through.

PROCEDURAL BACKGROUND

The Board held three public hearings on the proposed rules on March 9, June 21, and December 7 of 2022 (Tr.1, Tr.2, Tr.3). On March 7, 2024, the Board issued its first notice amendments in an addendum (First-Not. Add.), accompanied by an opinion and order (First-Not. Op.). See Proposed Amendments to Groundwater Quality 35 Ill. Adm. Code 620, R22-18 (Mar. 7, 2024). First notice was published in the *Illinois Register* on March 29, 2024 (48 Ill. Reg. 4608 (Mar. 29, 2024)). Proposed second notice was issued on October 17, 2024 (Prop. Second-Not.) and the Board received comments from the following participants:

- International Molybdenum Association (IMOA) (PC 72).
- National Waste & Recycling Association (NWRA) (PC 75).
- Illinois Association of Wastewater Agencies (IAWA) (PC 76).
- Dynegy Midwest Generation, LLC; Electric Energy Inc.; Illinois Power Generating Company; Illinois Power Resources Generating, LLC; and Kincaid Generation, LLC (collectively, Dynegy) (PC 77).
- IEPA (PC 78).

- Kim Schultz, Executive Director of the Joint Committee on Administrative Rules (JCAR) (PC 79).

ISSUES RAISED BY PARTICIPANTS

Economic Reasonableness

Several participants have again raised the issue of whether the Board has adequately analyzed the economic impacts the proposed PFAS standards will have on landfills and remediation rules such as the Site Remediation Program. Below, the Board sets forth its statutory authority to adopt these standards, the Supreme Court’s interpretation of that statutory authority, the General Assembly’s directive to protect the groundwater in the State, the human health factors at issue with these proposed standards, and the specific “immediate impact” concerns raised by the participants. Finally, the Board assesses the specific costs raised by the participants.

Statutory Authority

The Board is required by statute to “take into account” the economic reasonableness and technical feasibility of proposed regulations. To be specific, Section 27(a) of the Environmental Protection Act (Act) says, in part, as follows:

In promulgating regulations under this Act, the Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution. 415 ILCS 5/27(a) (2022).

Section 27(b) of the Act requires, in part:

In adopting any such new rule, the Board shall, in its written opinion, make a determination, based on the evidence in the public hearing record, including but not limited to the economic impact study, as to whether the proposed rule has any adverse economic impact on the people of the State of Illinois. 415 ILCS 5/27(b) (2022).

On January 6, 2022, the Board requested that the Department of Commerce and Economic Opportunity (DCEO) perform an economic impact study on the proposed amendments to Part 620. DCEO neither responded to the Board’s request nor performed an economic impact study.

Illinois Supreme Court

The Illinois Supreme Court interpreted Section 27(a) of the Act in Granite City Div. of Nat’l Steel Co. v. Illinois Pollution Control Board, 155 Ill. 2d 149 (1993), finding that the Board “need not conclude that compliance with a proposed regulation is ‘technically feasible and

economically reasonable' before it can adopt such regulation.” *Id.* at 182. In addition, the Supreme Court observed that, “under certain circumstances, the Board can promulgate standards which it has found to be technically infeasible. If the Board, in its discretion and based on its technical expertise, determines that a proposed regulation is necessary to carry out the purpose of the Act, it may adopt technology-forcing standards which are beyond the reach of existing technology.” *Id.* at 182-183, *citing Monsanto Co. v. Pollution Control Bd.*, 67 Ill. 2d 276, 292-93 (1977). Finally, the Supreme Court held that:

section 27(a) does not impose specific evidentiary requirements on the Board, thereby limiting its authority to promulgate only regulations that it has determined to be technically feasible and economically reasonable. Rather, section 27(a) requires only that the Board consider or take into account the factors set forth therein. The Board must then use its technical expertise and judgement in balancing any hardship that the regulations may cause to dischargers against its statutorily mandated purpose and function of protecting our environmental and public health. *Id.* at 183.

The Board has adhered to the Supreme Court’s ruling in Granite City in this, and past, groundwater rulemakings.

Illinois Groundwater Protection Act

The Board has looked to the Illinois Groundwater Protection Act for its statutory directive in regularly updating its groundwater quality standards (GWQS). Under the Groundwater Protection Act, the Board “shall, in addition to the factors set forth in Title VII of the Environmental Protection Act, consider . . . existing methods of detecting and quantifying contaminants with reasonable analytical certainty.” 415 ILCS 55/8(b) (2022). The Groundwater Protection Act informs the Board and IEPA of the unique importance of groundwater to the people of the State of Illinois. “The State recognizes the essential and pervasive role of groundwater in the social and economic well-being of the people of Illinois, and its vital importance to the general health, safety, and welfare.” 415 ILCS 55/2(b) (2022).

The General Assembly also acknowledges the necessity of maintaining groundwater as a resource for all residents of the State, “a large portion of Illinois’ citizens rely on groundwater for personal consumption, and industries use a significant amount of groundwater.” 415 ILCS 55/2(i) (2022). Further, the General Assembly notes that groundwater contamination is currently occurring, and this contamination, “will adversely impact the health and welfare of its citizens and adversely impact the economic viability of the State.” 415 ILCS 55/2(ii) and (iii) (2022). Finally, the General Assembly ties the protection of groundwater to future economic benefit of the residents of the State, “protection of groundwater is a necessity for future economic development in this State.” 415 ILCS 55/2(iv) (2022).

The General Assembly is clear in (1) describing groundwater as a vital resource to citizens of the State as well as the economy of the State and (2) directing IEPA and the Board to regularly consider existing methods of detecting and quantifying contaminants so that groundwater quality standards can be updated.

Protection of Human Health and the Environment

The term “PFAS” refers to a large group of chemicals that are generally referred to as per- and polyfluoroalkyl substances. These chemicals are commonly called “forever chemicals” because their carbon-fluorine bonds are very strong and as a whole, the chemicals do not easily degrade. PFAS are bio-accumulative which means that they can concentrate in tissues of living organisms, including humans.

The Board has found at first notice that adding groundwater quality standards for the six PFAS chemicals was important to the protection of human health and the environment. IEPA has proposed Class I and Class II groundwater quality standards for PFOA, PFOS, PFNA, PFBS, PFHxS, and HFPO-DA (also known as GenX). Among the six, PFBS, PFHxS, PFOS and PFOA, have been detected in the finished water of public water supplies across Illinois. Ex. 2 at 15. GenX has been detected in groundwater during sampling conducted under the statewide PFAS sampling initiative. *Id.* at 16. All six PFAS chemicals at issue in this rulemaking have been detected in the State’s public water supplies that rely on community water supply wells to serve large populations. In addition, thousands of Illinoisans depend on groundwater from private potable wells, which usually do not have access to treatment technologies.

Further, the proposed PFAS standards are based on USEPA’s drinking water maximum contaminant levels (MCLs) or health-based water concentrations (HBWC) intended to protect human health from adverse effects of exposure from PFAS. These adverse health effects include effects on the liver (*e.g.*, liver cell death), growth and development (*e.g.*, low birth weight), hormone levels, kidney, the immune system (reduced response to vaccines), lipid levels (*e.g.*, high cholesterol), the nervous system, and reproduction, as well as increased risk of certain types of cancer. 89 FR 32537. Additionally, USEPA found that PFAS exposure has disproportionate health effects on children, including developmental effects to fetuses during pregnancy or to breast-fed infants, cardiovascular effects, immune effects, endocrine effects, and reproductive effects. *Id.*

The Board first adopted groundwater quality standards in 1991. *See, Groundwater Quality Standards 35 Ill. Adm. Code 620, R89-14(B)* (Nov. 7, 1991) (GWQS, R89-14(B)). In that rulemaking, the Board adopted numerical standards for 60 constituents. The Illinois Groundwater Protection Act mandated that the Illinois Department of Natural Resources conduct an economic impact study to evaluate those new standards. 415 ILCS 55/8(d) (2022). In that rulemaking, the Board found that “it was not appropriate to attribute to today’s regulations the costs of corrective actions that are not prompted by today’s regulations.” GWQS,R89-14(B), slip op. at 25. The economic impact study found the benefits of adopting groundwater quality standards included:

These benefits can be expressed as decreased health care expenses, lower health insurance premiums, reduction in pain and suffering, and a better quality of life for Illinois citizens. Reductions in excess cancer risks ... [and a]lthough not examined quantitatively, a corresponding decrease in non-carcinogenic health risks also can be anticipated as a result of the proposed regulations.

A second major benefit of the proposed regulations is preservation of groundwater as a resource for future generations. By preventing contamination where possible through preventive management practices and by addressing existing contamination through groundwater remediation, the value of the resource is preserved and the availability of groundwater for future use is greatly enhanced.

Other non-quantifiable benefits include avoided decreases in property values proximal to sites of groundwater contamination, avoided restrictions in siting for private and community potable wells, and avoided negative impact on wildlife and ecology of areas served by groundwater base flow. Additionally, the aesthetic value of the state's groundwater reserves will be enhanced by the proposed regulations. *Id.* at 24.

In that rulemaking, the Board found additional benefits to adopting the standards which included, “reduced expenses to obtain alternate water supplies necessary to replace contaminated current supplies, and reduced expenses for treatment of water at well heads to render it potable or suitable for industrial use. *Id.* at 26.

Since the Board promulgated Part 620 in 1991, it has received and adopted periodic updates to its numerical standards, consistent with current scientific methodologies and developments. *See Proposed Amendments to Groundwater Quality Standards, 35 Ill. Adm. Code 620, R08-18; Proposed MTBE and Compliance Determination Amendments to Groundwater Quality Standards: 35 Ill. Adm. Code 620, R01-14; Groundwater Protection: Amendments to Groundwater Quality Standards (35 Ill. Adm. Code 620), R93-27.*

The Board continues to find that the protection of human health and the environment to be the main motivation to periodically updating Part 620 to include new constituents and new scientific methodologies. The Board finds, under Section 27(b) of the Act, that the benefit of protecting human health and the groundwater as a vital resource will be achieved by establishing groundwater quality standards for these six PFAS chemicals in addition to the other proposed amendments to Part 620.

“Immediate Impact”

On December 6, 2024, the Board received a letter from the Kim Schultz, the Executive Director of JCAR. PC 79. The letter relays concerns from NWRA regarding the “immediate impact” the proposed rules might have on industry participants. *Id.* at 2. The Board, below, evaluates and addresses NWRA's and IAWA's concerns about “immediate impact”.

NWRA and IAWA claim that IEPA and the Board have not considered the economic reasonableness of the proposed amendments. *See generally* PC 75, PC 76. NWRA argues that “both the Agency and the Board fail to recognize or address the impact the revised Groundwater Quality Standards will have on other Board regulatory programs, especially programs that are required to monitor and meet Part 620 Groundwater Quality Standards, such as the Board's landfill regulations.” PC 75 at 2. NWRA contends that once the Board adopts the proposed GWQS, the standards will be immediately included into facility permits when such permits are up for renewal without any future rulemakings. *Id.* NWRA relies on the testimony of IEPA's

Greg Dunn to support its assertion that regulatory programs such as the landfill rules will have to meet the GWQS immediately upon adoption by the Board. *Id.* at 3 *citing* Tr.2 at 27.

According to NWRA, there will be no opportunity to consider the economic reasonableness of applying the proposed GWQS in regulatory programs that use Part 620 standards. PC 75 at 2. NWRA also maintains that it is a “fallacy” to rely on prior groundwater rulemaking that “faced little controversy” as they were adding standards that had been “widely accepted by the USEPA and in the Board’s TACO and site remediation programs.” PC 53 at 4.

Similarly, IAWA argues that, “[i]n the landfill regulations, and in other groundwater-related rules, there are currently references to Board-adopted groundwater standards, which – if and when the PFAS standards are adopted by this Board – will require compliance with those standards.” PC 76 at 5. Accordingly, Entities subject to the landfill rules and the Site Remediation Program will “face potential compliance costs as soon as the final standards are adopted.” *Id.* at 6. IAWA argues that, apart from the Site Remediation Program, IEPA has not made clear that it will propose rulemakings to address the new PFAS standards in any other programs. *Id.* at 5.

IAWA identifies two rules that it claims will have an immediate effect if the Board adopts the proposed PFAS standards. The first is Section 811.320(a)(1)(B) of the solid waste landfill rules. According to IAWA, under that rule, “groundwater quality must be maintained to meet either background levels or Board-established standards.” *Id.* at 5-6. “Thus, PFAS groundwater standards would be enforceable under that regulation as soon as they are adopted by the Board.” *Id.* at 6; *see also id.* (“The same is true of existing landfills – 35 IAC 814.302 provides that the requirements specified in 35 IAC 811 apply to those facilities as well.”). The second rule is Section 740.530(d) of the Site Remediation Program. IAWA claims this rule implies that in all cases where a groundwater management zone is not in effect, the standards in Part 620 will be applicable.

In addressing this “immediate impact” argument, IEPA agrees with the Board’s conclusion “that economic impact will be considered in program-specific rulemakings.” PC 78 at 19. IEPA notes that the Board’s Tiered Approach to Corrective Action Objectives (TACO) rules under Part 742, the Leaking Underground Storage Tank rules at Part 734, and the Site Remediation Program rules at Part 740 have not yet been amended to add PFAS as contaminants of concern or establish remediation objectives. *Id.* at 19.

Potential PFAS Compliance Costs Without Further Rulemaking

According to NWRA, IAWA, and the PFAS Regulatory Commission, once the Part 620 PFAS groundwater quality standards take effect, regulated entities, particularly landfills, will incur compliance costs under existing rules, regardless of whether any subsequent rulemaking by the Board takes place. *See generally* PC 51, PC 61, PC 75 (NWRA); PC 68, PC 76 (IAWA); PC 55, PC 67 (PFAS Reg. Coalition). These commenters assert that IEPA has not provided evidence to the Board on the reasonableness of these compliance costs. *Id.*

As explained below, the Board finds that, even without future Board rulemaking, it is conceivable that compliance costs for monitoring and remediation could be incurred at landfills and other facilities due to the Part 620 PFAS amendments. The Board describes apparent scenarios in which these costs might be imposed under existing regulatory programs, including Part 811 on non-hazardous solid waste landfills, which cross-reference Part 620's constituents and standards. However, for the existing remediation programs that expressly rely on the current version of TACO, such as the Site Remediation Program and the RCRA hazardous waste corrective action program, the Board's does not foresee that adopting the Part 620 PFAS amendments would significantly impact compliance costs under those programs.

Part 811 New Landfills

Broadly speaking, the Board's waste disposal rules at Part 811 (35 Ill. Adm. Code 811) apply to "new" non-hazardous solid waste landfills, including "new" municipal solid waste landfill (MSWLFs). *See* 35 Ill. Adm. Code 811.101; *see also* 35 Ill. Adm. Code 810.103 (definitions applicable to 35 Ill. Adm. Code 811 through 817). Below, the Board describes two scenarios in which landfill owners and operators subject to Part 811 could incur compliance costs after the Part 620 PFAS standards take effect, even without any subsequent amendments to Part 811. The first scenario would involve a proposed or expanding landfill. The second scenario would involve an MSWLF undertaking assessment monitoring.

Proposed or Expanding Landfill. Generally, the owner or operator of a proposed or expanding landfill must perform a hydrogeologic site investigation and include its results in a permit application to IEPA. *See* 35 Ill. Adm. Code 811.315, 812.314, 813.202. A hydrogeologic site investigation includes the requirement "to establish background concentrations, in accordance with Section 811.320(d), for . . . [a]ny constituent for which there is a standard at 35 Ill. Adm. Code 620 established by the Board *and* which is expected to appear in the leachate." 35 Ill. Adm. Code 811.315(e)(1)(G)(i) (emphasis added). Once the Board adopts the amendments in this rulemaking, the PFAS chemicals will have Part 620 standards. And, on this record, PFAS are generally expected to appear in landfill leachate. PC 53 at 10-11.

Accordingly, monitoring the groundwater for PFAS concentrations would most likely be required during a hydrogeologic site investigation, with the monitoring results used to establish a PFAS background concentrations under Section 811.320(d). *See* 35 Ill. Adm. Code 811.315(d)(2)(D), (e)(1)(G)(i); *see also* 35 Ill. Adm. Code 811.320(d)(1) ("The initial monitoring to determine background concentrations must commence during the hydrogeological assessment required by Section 811.315."). In turn, as detailed below, the PFAS background concentrations may become the Part 811 PFAS groundwater quality standards for the landfill at and beyond the zone of attenuation.¹ *See* 35 Ill. Adm. Code 811.320(a)(1)(A), (d).

¹ "The zone of attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste." *See* 35 Ill. Adm. Code 811.320(c).

MSWLF Undertaking Assessment Monitoring. If a landfill performing “detection monitoring” confirms a monitored increase in one or more constituents, “assessment monitoring” would be required. *See* 35 Ill. Adm. 811.319(a)(4). When performing assessment monitoring, the owner or operator of a MSWLF unit must monitor for “constituents from 35 Ill. Adm. Code 620.410” (*i.e.*, Class I constituents). *See* 35 Ill. Adm. 811.319(b)(5)(A); *see also* 35 Ill. Adm. 811.319(b)(1). Because the PFAS chemicals would have Class I standards upon Board adoption, the assessment monitoring would be required to include monitoring for PFAS. And regardless of whether PFAS are detected during the initial period of assessment monitoring, subsequent assessment monitoring would be required for PFAS. *See* 35 Ill. Adm. Code 811.319(b)(5)(D) (semi-annually if detected; otherwise, annually).

Further, the owner or operator of the MSWLF unit “must establish background concentrations for any constituents detected [including Class I constituents] under subsection (b)(5)(A) [*i.e.*, during assessment monitoring] in accordance with Section 811.320([d]²).” 35 Ill. Adm. Code 811.319(b)(5)(C). Therefore, if PFAS were detected during assessment monitoring, the owner or operator would be required to establish PFAS background concentrations. *See id.* As noted above, the PFAS background concentrations established under Section 811.320(d) may become the Part 811 PFAS groundwater quality standards for the landfill. *See* 35 Ill. Adm. Code 811.320(a)(1)(A), (d).

Part 811 Groundwater Quality Standards and Remedial Action. Part 811’s groundwater quality standards are specified as follows in Section 811.320:

- a) Applicable Groundwater Quality Standards
 - 1) Groundwater quality must be maintained at each constituent’s background concentration, at or beyond the zone of attenuation. The applicable groundwater quality standard established for any constituent must be:
 - A) The background concentration; or
 - B) The Board established standard adjusted by the Board in accordance with the justification procedure of subsection (b).

² The rule text at Section 811.319(b)(5)(C) erroneously refers to subsection “(e)” of Section 811.320 but Section 811.320(e) concerns the statistical analysis of groundwater monitoring data. *See* 35 Ill. Adm. Code 811.320(e). Section 811.319(b)(5)(C) should refer to subsection “(d)” of Section 811.320, which concerns the establishment of background concentrations. *See* 35 Ill. Adm. Code 811.320(d).

- 3) For the purposes of this Part:
- A) “Background concentration” means that concentration of a constituent that is established as the background in accordance with subsection (d); and
 - B) “Board established standard” is the concentration of a constituent adopted by the Board as a groundwater quality standard adopted by the Board under Section 14.4 of the Act or Section 8 of the Illinois Groundwater Protection Act [415 ILCS 55]. 35 Ill. Adm. Code 811.320(a)(1), (a)(3).

Accordingly, groundwater quality outside the zone of attenuation must be “maintained at each constituent’s background concentration.” 35 Ill. Adm. Code 811.320(a)(1). And the Part 811 groundwater quality standard for each constituent is either its “background concentration” or its “Board established standard [*i.e.*, Part 620] adjusted by the Board in accordance with the justification procedure.” 35 Ill. Adm. Code 811.320(a)(1)(A), (a)(1)(B).

The “background concentration” for Part 811 is that number derived under subsection (d) of Section 811.320. Above, the Board discussed two scenarios—(1) hydrogeologic site investigation and (2) assessment monitoring—during which establishing PFAS background concentrations under subsection (d) of Section 811.320 may be required. The “justification procedure” relied on by IAWA (PC 76 at 5-6) is an adjusted standard petition process before the Board—under subsection (b) of Section 811.320—that could result in the Board adjusting a PFAS Part 620 groundwater quality standard. *See* 35 Ill. Adm. Code 811.320(b).³

If assessment monitoring shows a PFAS concentration, at or beyond the zone of attenuation, exceeding its Section 811.320 groundwater quality standard and attributable to the landfill, then the operator must determine the nature and extent of the groundwater contamination and implement remedial action under Section 811.319(d). *See* 35 Ill. Adm. Code 811.319(b)(3), (d). The required steps for conducting remedial action vary between MSWLFs and other landfills subject to Part 811. *See* 35 Ill. Adm. Code 811.319(d), 811.324, 811.325, 811.326. But the objective of remedial action in all cases includes attaining the applicable Section 811.320 standards outside of the zone of attenuation. *See* 35 Ill. Adm. Code 811.319(d)(5)(A), 811.326(e); *see also* 35 Ill. Adm. Code 813.201(b)(1)(D) (IEPA may modify a permit upon “[p]romulgation of new statutes or regulations affecting the permit”).⁴

³ As referred to in the Section 811.320(a)(3)(B) definition of “Board established standard”, Part 620 was adopted under Section 8 of the Illinois Groundwater Protection Act (415 ILCS 55/8 (2022)). The other statutory reference—Section 14.4 of the Act (415 ILCS 5/14.4 (2022))—is the authority under which the Board adopted Parts 615 and 616, which are discussed in the next section of this opinion.

⁴ In a rulemaking initiated by the Illinois Chapter of the National Solid Wastes Management Association (NSWMA), NSWMA proposed having Part 811 cross-reference Part 620. *See Proposed Amendments to Solid Waste Landfill Rules, 35 Ill. Adm. Code 810 and 811, R07-8,*

Although Section 811.317 on groundwater impact assessments (GIAs) does not expressly refer to Part 620, NWRA is especially concerned with the implementation of GIAs, adding that “the landfill industry has significant reason to believe that the GIA model will fail when inputting the PFAS compounds—and will not be an accurate predictor of PFAS contamination from leachate.” PC 53 at 13; *see also* Pre-filed Testimony of Thomas A. Hilbert at 3-4 (filed Sept. 15, 2022).

Part 814 Existing Landfills

Landfills subject to Part 814 (35 Ill. Adm. Code 814) of the Board’s waste disposal rules also could, without amending Part 814, incur compliance costs related to adding PFAS to the Part 620 groundwater quality standards. This is so because Part 814 cross-references Part 811, which, as just discussed, cross-references Part 620 constituents and standards.

Part 814 applies to specified “existing” non-hazardous solid waste landfills, including “existing” MSWLFs. Generally, Part 814 landfills remaining open are subject to the Part 811 requirements for new units, with specified exceptions. *See* 35 Ill. Adm. Code 814.302(a). Although these Part 814 landfills are not subject to “[t]he hydrogeological site investigation requirements of 35 Ill. Adm. Code 811.315,” they must collect information “to implement a groundwater monitoring program in accordance with 35 Ill. Adm. Code 811.318 and 811.319 and establish background concentrations for the purpose of establishing water quality standards pursuant to 35 Ill. Adm. Code 811.320.” 35 Ill. Adm. Code 814.302(a)(5); *see also* 35 Ill. Adm. Code 811.319(d) (remedial action); 35 Ill. Adm. Code 814.101 (scope and applicability); 35 Ill. Adm. Code 810.103 (definitions for Parts 811 and 814). Accordingly, a Part 814 landfill could face compliance costs related to monitoring and remediation of any of the six Part 620 PFAS.

Part 817 Steel and Foundry Landfills

Generally, Part 817 regulates non-putrescible wastes produced by processes of steel and foundry industries. *See* 35 Ill. Adm. Code 817.101. In the main, Part 817 is modeled on Part 811. *See generally* Steel and Foundry Industry Amendments to the Landfill Regulations (35 Ill. Adm. Code 810 through 815 and 817), R90-26(A) (July 21, 1994). As discussed below, Part 817 includes cross-references both to some of the Part 811 provisions discussed above and to Part 620’s constituents and standards.

Under Part 817, the operator of a subject landfill must conduct “detection monitoring” for a constituent that “appears in, or is expected to be in, the leachate” and for which “[t]he Board has established a groundwater quality standard at 35 Ill. Adm. Code 620, or the constituent may otherwise cause or contribute to groundwater contamination.” 35 Ill. Adm. Code 817.415(a)(2)(A). If a specified increase in the constituent is confirmed through prescribed procedures, “assessment monitoring” is required. 35 Ill. Adm. Code 817.415(a)(4), (b). If assessment monitoring “shows that the concentration of one or more constituents, monitored at or beyond the zone of attenuation, is above the applicable groundwater quality standards of

slip op. at 1, 6-7, 13-14, 20 (Nov. 15, 2007); *see also* NSWMA Proposal at 5-6, 11-13 (filed July 26, 2006).

Section 817.416 and is attributable to the solid waste disposal facility, the operator shall determine the nature and extent of the groundwater contamination . . . and shall implement remedial action in accordance with subsection (d) of this Section.” 35 Ill. Adm. Code 817.415(b)(3).

Remedial action must continue until, among other things, “monitoring shows that the concentrations of all monitored constituents are . . . below the applicable groundwater quality standards of Section 817.416 at or beyond the zone of attenuation, over a period of 4 consecutive quarters.” 35 Ill. Adm. Code 817.415(d)(5)(A). And if the Board has established a Part 620 groundwater quality standard for a constituent, then the applicable Part 817 groundwater quality standard is the Part 620 standard for that constituent, absent an adjustment by the Board based on operator petition and justification. *See* 35 Ill. Adm. Code 817.416(a)(1), (a)(3), (b).

A Part 817 landfill therefore could face compliance costs related to monitoring and remediation of any of the six Part 620 PFAS.⁵

Activities in Setback Zones and Regulated Recharge Areas

Cross-references to Part 620 in Part 615 (“Existing Activities in a Setback Zone or Regulated Recharge Area”) and Part 616 (“New Activities in a Setback Zone or Regulated Recharge Area”) could, without further rulemaking, subject more facilities to compliance costs stemming from the addition of the Part 620 PFAS standards. *See* 35 Ill. Adm. Code 615, 616.

Generally, whether under Part 615 or Part 616, the owner or operator of any of several specified types of facilities located wholly or partially within a setback zone or regulated recharge area must monitor groundwater for each constituent that, first, is in material being stored, treated, disposed of, or otherwise handled at the facility and, second, has a Part 620 standard. *See* 35 Ill. Adm. 615.101, 615.206(a); 35 Ill. Adm. Code 616.101, 616.207(a), 616.208(a); *see also* 35 Ill. Adm. Code 615.102 (“groundwater standards” defined to mean Part 620 standards), 615.201 (applicability); 35 Ill. Adm. Code 616.102 (Part 615 definitions apply), 616.201 (applicability). Therefore, whether any PFAS might have to be monitored would vary depending on the chemical make-up of materials present at each facility. Facilities subject to these monitoring requirements may include land treatment units, surface impoundments, fertilizer storage and handling units, road oil storage and handling units, and de-icing agent storage and handling units. *See generally* 35 Ill. Adm. Code 615, 616.

Part 616 has its own “preventive notification” and “preventive response” provisions, like those in Part 620 discussed below. *See* 35 Ill. Adm. Code 616.209. And with either Part 615 or Part 616, an exceedance of Part 620 standards generally triggers a requirement for the facility owner or operator to perform corrective action to attain the Part 620 standard—unless the owner

⁵ In a rulemaking initiated by Illinois Steel Group and the Cast Metals Association (collectively, SFG), SFG proposed cross-referencing Part 620 in Part 817. *See Steel and Foundry Industry Amendments to the Landfill Regulations, (35 Ill. Adm. Code 810 through 815 and 817, R90-26(A), slip op. at 66, 72-73 (Sept. 23, 1993).*

or operator demonstrates to IEPA that the exceedance was caused by another source or resulted from sampling or lab error. *See* 35 Ill. Adm. Code 615.203, 615.209-615.211; 35 Ill. Adm. Code 616.203, 616.210, 616.211. Again, to the extent PFAS are present in material being managed at these facilities, their owner or operators could incur monitoring and response costs after PFAS become Part 620 standards, regardless of whether Parts 615 and 616 are amended.

TACO-Related Remediation Programs

Leaking USTs (35 Ill. Adm. Code 731 and 734), the Site Remediation Program (SRP) (35 Ill. Adm. Code 740), and RCRA Part B permits and closure plans (35 Ill. Adm. Code 724 and 725) rely on TACO (35 Ill. Adm. Code 742) for remediation objectives. *See* 35 Ill. Adm. Code 742.105. In assessing whether compliance costs may be incurred under any of these programs due to adding the PFAS standards to Part 620, it is critical to recognize first that the Board's rules for the leaking UST and RCRA hazardous waste programs impose corrective action obligations on the respective owners and operators. On the other hand, SRP is a voluntary program.

Whether someone is bound by the leaking UST or RCRA hazardous waste rules or has chosen to enter the SRP, the Board expects that adopting Part 620 PFAS standards would have little, if any, impact on compliance costs under those programs unless and until those programs and TACO are amended. The Board reaches this conclusion for four reasons. First, neither TACO's Tier 1 groundwater remediation objectives nor its lists of similar-acting noncarcinogenic and carcinogenic chemicals includes any of Part 620's six PFAS. *See* 35 Ill. Adm. Code 742, Appendix A, Tables E and F, Appendix B, Table E. Second, even if TACO were amended to include them, none of the six PFAS from Part 620 are, at this point, listed either as indicator contaminants for petroleum UST releases or as hazardous waste or hazardous constituents for releases subject to RCRA corrective action. *See* 35 Ill. Adm. Code 734.405; 35 Ill. Adm. Code 721, 724, Subpart F.⁶

Third, although not stemming from this rulemaking, USEPA has listed two of this rulemaking's six PFAS (PFOA and PFOS, along with their salts and structural isomers) as CERCLA "hazardous substances." *See* 89 Fed. Reg. 39124 (May 8, 2024). CERCLA hazardous substances are, by definition, "regulated substances" within the scope of the Part 731 leaking UST rules and the SRP rules. *See* 35 Ill. Adm. Code 731.112; 35 Ill. Adm. Code 740.120. If PFOA or PFOS contamination of groundwater were a concern for a Part 731 or SRP site before any TACO amendments are made to account for the Part 620 PFAS amendments, Tier 2 or Tier 3 of TACO may be used to provide PFOA or PFOS groundwater remediation objectives. *See* 35

⁶ USEPA has proposed amending its RCRA hazardous waste regulations by "adding nine specific per-and polyfluoroalkyl substances (PFAS), their salts, and their structural isomers, to its list of hazardous constituents. These nine PFAS are perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), perfluorobutanesulfonic acid (PFBS), hexafluoropropylene oxide-dimer acid (HFPO-DA or GenX), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), perfluorodecanoic acid (PFDA), perfluorohexanoic acid (PFHxA), and perfluorobutanoic acid (PFBA)." 89 Fed. Reg. 8606 (Feb. 8, 2024).

Ill. Adm. Code 742.805, 742.810; 35 Ill. Adm. Code 742, Subpart I. And those objectives could account for this rulemaking's Part 620 amendments concerning PFOA and PFOS. *Id.*

Fourth and finally, TACO allows for excluding pathways from further consideration (including by institutional control, such as a groundwater ordinance) and using “area background” concentrations as remediation objectives. *See* 35 Ill. Adm. Code 742.110(a), 742.320(d), 742.410, 742.415, 742.1015. These tools of Part 742 could dramatically limit compliance costs concerning monitoring or remediating PFAS groundwater contamination.⁷

Part 620 Preventive Notification and Preventive Response

As the Board has stated, Part 620 does not impose any affirmative obligation to perform groundwater monitoring or corrective action. *See* GWQS, R89-14(B), slip op. at 16-17, 25. But, once Part 620's PFAS amendments take effect, if Class I groundwater monitoring (otherwise required to be performed) detects any of the six PFAS, the detection will trigger an affirmative obligation on the part of the person conducting the monitoring to provide “preventive notification” to the appropriate regulatory agency under Section 620.305. *See* 35 Ill. Adm. Code 620.302(a)(1), (b)(1), (b)(4), 620.305(a)(1), (a)(2), (b).

In turn, under Section 620.310, the appropriate regulatory agency must conduct a “preventive assessment” and determine whether a “preventive response” is warranted. *See* 35 Ill. Adm. Code 620.310(a)(3), (b). However, if the concentration of the detected contaminant exceeds its Class I standard, “the appropriate remedy is corrective action and Sections 620.305 [preventive notification] and 620.310 [preventive response] do not apply.” 35 Ill. Adm. Code 620.302(c); *see also* 35 Ill. Adm. Code 620.310(a)(3) (“and the applicable standard in Subpart D has not been exceeded”).

If there has been a detection of a PFAS chemical but not an exceedance of its Class I standard (*i.e.*, a preventive response may be required but not corrective action), the appropriate regulatory agency must determine, “based on relevant factors including, but not limited to, the considerations in subsection (a)(3) [of Section 620.310],” whether to require a preventive response. 35 Ill. Adm. Code 620.310(b). The Section 620.310(a)(3) considerations include whether there has been a statistically significant increase above background for PFAS and the following:

- C) The appropriate regulatory agency shall consider whether the owner or operator reasonably demonstrates that:
 - i) The contamination is a result of contaminants remaining in groundwater from a prior release for which appropriate action was taken in accordance

⁷ CERCLA remediations could be economically impacted if the Part 620 PFAS standards are considered ARARs. As noted, two of this rulemaking's six PFAS (PFOA and PFOS, along with their salts and structural isomers) are already listed as CERCLA “hazardous substances.” *See* 89 Fed. Reg. 39124 (May 8, 2024).

- with laws and regulations in existence at the time of the release;
- ii) The source of contamination is not due to the on-site release of contaminants; or
 - iii) The detection resulted from error in sampling, analysis, or evaluation.
- D) The appropriate regulatory agency shall consider actions necessary to minimize the degree and extent of contamination. 35 Ill. Adm. Code 620.310(a)(3)(A)(ii), (C), (D).

Accordingly, if a regulated entity is required to monitor for PFAS, as in the landfill scenarios discussed above, the regulated entity may incur costs for implementing a preventive response, even if the detected PFAS concentration does not exceed its Class I standard.⁸ Section 620.310(c) further provides:

- c) After completion of preventive response pursuant to authority of an appropriate regulatory agency, the concentration of a contaminant listed in subsection (a)(3)(A) in groundwater may exceed 50 percent of the applicable numerical standard in Subpart D only if the following conditions are met:
 - 1) The exceedance has been minimized to the extent practicable;
 - 2) Beneficial use, as appropriate for the class of groundwater, has been assured; and
 - 3) Any threat to public health or the environment has been minimized. 35 Ill. Adm. Code 620.310(c).

As proposed, subsection (a)(3)(A) of Section 620.310 will include all six PFAS.

When Newly Adopted PFAS Standards Would Become Applicable and Enforceable

According to IAWA, Section 740.530(d) of SRP “implies that, in all instances where a groundwater management zone is not in effect, the standards of section 620 are applicable.” PC 76 at 6. Section 740.530(d) of SRP provides that, “[w]hile a groundwater management zone is in effect, the otherwise applicable standards from 35 Ill. Adm. Code 620 shall not be applicable to the contaminants of concern for which groundwater remediation objectives have been approved in the Remediation Objectives Report.” 35 Ill. Adm. Code 740.530(d).

⁸ The lowest detection limit for each PFAS is 0.000002 mg/L. The proposed Class I standards for PFAS exceed the lowest detection limit.

IAWA's conclusion is generally correct.⁹ But IAWA need not rely on an implication from an SRP rule about GMZs to ascertain whether Part 620's PFAS groundwater quality standards would apply after the Board adopts them and files them with the Secretary of State. *See* 5 ILCS 100/5-40(d) (2022) ("Each rule hereafter adopted under this Section is effective upon filing unless a later effective date is required by statute or is specified in the rulemaking."). All groundwaters of the State are designated as one of four classes (Class I, Class II, Class III, and Class IV) or one of two types of groundwater management zones (Part 620 and SRP). *See* 35 Ill. Adm. Code 620.201. In the ordinary course, once the new Class I and Class II PFAS standards take effect, they would apply in Class I and Class II groundwaters, respectively. *See* 35 Ill. Adm. Code 620.410, 620.420.

It also follows that any person who causes, threatens, or allows the release of a Part 620 PFAS chemical to Class I or Class II groundwater so as to cause its corresponding standard to be exceeded may be subject to an enforcement action. *See* 35 Ill. Adm. Code 620.405 ("No person shall cause, threaten or allow the release of any contaminant to groundwater so as to cause a groundwater quality standard set forth in this Subpart to be exceeded."); *see also* 415 ILCS 5/31(c), (d) (2022). In these respects, the addition of Class I and Class II standards for PFAS is no different than the addition of Class I and Class II standards for any other contaminants. When the amendments take effect, they will apply and may be enforced.

Conclusion on Potential PFAS Compliance Costs Without Further Rulemaking

As discussed above, when the Class I and Class II PFAS standards become effective, they will be applicable and enforceable. But Part 620 does not itself impose affirmative obligations to monitor groundwater or to perform corrective action in response to an exceedance of a Part 620 standard. And the Board does not anticipate that the Part 620 PFAS amendments will generate significant compliance costs under the existing remediation programs relying on the current version of TACO.

However, there are situations in which, without further rulemaking, compliance costs for PFAS monitoring and remediation could be incurred due to adopting the Part 620 PFAS amendments. Once the amendments take effect, compliance costs could be triggered, largely due to the current rules of specified regulatory programs cross-referencing Part 620's constituents or standards. Accordingly, these costs could be imposed without any subsequent amendatory rulemaking. Of course, an owner or operator may pursue any of the common forms of regulatory relief (*i.e.*, GMZ, adjusted standard, site-specific rule).

⁹ *See* 35 Ill. Adm. Code 620.410, 620.420 ("Except due to natural causes or as provided in Section 620.450"); *see also* 35 Ill. Adm. Code 740.530(f) ("While the No Further Remediation Letter is in effect, the otherwise applicable groundwater quality standards from 35 Ill. Adm. Code 620.Subpart D are superseded. The applicable groundwater quality standards for the specified contaminants of concern within the area formerly encompassed by the GMZ are the groundwater objectives achieved as documented in the approved Remedial Action Completion Report.").

Costs

The PFAS Regulatory Coalition and NWRA have argued to the Board in their filings and through witness testimony that significant costs will be associated with adoption of the proposed Part 620 PFAS standards. The types of costs raised by these participants are discussed below.

The PFAS Regulatory Coalition raises several cost-related concerns. PFAS Reg. Coalition (Mar. 18, 2022). “The states, municipalities, and private parties that are conducting these cleanups will incur substantial costs as a result. Accordingly, the State should consider the costs to remediate to these proposed standards in its regulatory analysis.” PFAS Reg. Coalition at 17. The Coalition is also concerned with the costs associated with treatment alternatives, such as how to handle the byproducts of PFAS treatment. “For example, a remediating party may not be able to find a landfill to take the spent media, and incineration of the media is currently subject to criticism and further study.” *Id.*

In its comments, the Coalition does not cite specific compliance or remediation costs but does attach a report exhibit which cites costs incurred by facilities in other states that have already adopted PFAS standards. The Environmental Council of the States compiled information on state PFAS standards, advisories, and considerations for future regulatory activities on PFAS. Sarah Longworth, *Processes & Considerations for Setting State PFAS Standards* (Feb. 2020, updated April 2021). In evaluating other states’ PFAS standards, the report provides some examples, circa 2021, of potential costs associated with sampling and monitoring for PFAS. First, the report states that 22 states have a guideline for at least one PFAS in at least one environmental medium. *Id.* at 9. Of those states, ten have groundwater regulatory standards – Alaska, Colorado, Massachusetts, Michigan, New Hampshire, New Jersey, New Mexico, North Carolina, Texas, and Vermont. *Id.* The report cites a Minnesota Department of Health report finding that the “turnaround time for their samples is 45 days and each water sample costs more than \$300.” *Id.* at 24. A New Jersey report also estimates lab analysis at \$300 per PFAS sample but states that “cost is expected to decrease as additional laboratories are certified for PFAS analysis and as market competition increases.” *Id.* at 25.

The report details state agency-related costs associated with developing PFAS standards and rules. That issue is not before the Board at this time as IEPA’s internal costs in preparing the proposed Part 620 amendments and state-wide sampling costs have already been incurred.

The Coalition presented a witness at hearing, Ned Beecher, who relayed his concerns about biosolids – fertilizer used in farmland application that is derived from sewage sludge from wastewater treatment plants. Mr. Beecher pointed to the fact that PFAS have been found in biosolids. He questioned what will happen if current biosolid recycling programs are disrupted should IEPA change the methods in which biosolids are allowed to be used in the State. Beecher Test. at 3-4. He testified that Maine has banned biosolid application to land. *Id.* at 4. He also reported that under the ban in Maine, water resource recovery facilities said their biosolids management costs increased by two times or more. *Id.* No such ban is contemplated in this rulemaking.

Mr. Beecher did not cite specific dollar amounts for any costs associated with sampling and monitoring groundwater for PFAS. However, he stated that “promising developments regarding other approaches to PFAS destruction.” Beecher Test. at 17. He pointed to two relatively new options. The first is the “HALT” process, which he said involves the addition of alkaline material and heat to break up the strong carbon-fluorine bonds in PFAS. *Id.* Second, Mr. Beecher testified that, “in the summer of 2022, researchers discovered a simple, somewhat similar chemical mixture that, when heated, cleaves the carbon and fluorine bonds.” *Id.*

NWRA

NWRA presented two witnesses at hearing, Eric Ballenger and Thomas Hilbert. Mr. Ballenger focused on the concern over PFAS in landfills and subsequent impacts to groundwater. He highlighted that landfills are receivers of PFAS, “not users or producers,” and that landfills provide “a vital function of managing society’s PFAS-containing waste and treatment/remedial waste.” Ballenger Test. at 2. Though Mr. Ballenger did not provide specific monitoring or compliance costs, he reported that the “reliance on landfills is expected to increase in the short term as other protective destruction and disposal management options are being developed.” *Id.*

Mr. Ballenger identified several issues of economic concern for NWRA with the proposed PFAS standards. He described the close relationship that wastewater treatment plants (WWTP) and landfills have concerning biosolids. “Specifically, as to both 807 and 811 [landfill] sites, we are concerned with how the proposed standards will affect our need to remove and dispose of leachate at local WWTPs.” Ballenger Test. at 4. Many landfills receive biosolids from WWTPs for disposal. “When WWTP biosolids are disposed of in landfills it is being ‘looped’ back to the sites. If WWTPs start reducing the acceptance of landfill leachate due to concerns related to PFAS, many landfills may also stop accepting biosolids to reduce PFAS from entering sites and leachate.” *Id.* Mr. Ballenger testified that other states are beginning to restrict or eliminate the land application of biosolids as fertilizer. *Id.* He expressed concern that, “if this also occurs in Illinois,” it will create pressure on landfills to accept more biosolids. *Id.* That could create pressure on landfills that are at limited capacity, and those facilities may also need to add treatment systems to address PFAS. *Id.* at 4-5. Mr. Ballenger did not provide estimates of costs associated with these concerns.

Mr. Hilbert testified that adding PFAS constituents at the levels in the proposed rule “will have currently undefined impacts on multiple other regulatory programs.” Hilbert test. at 2. He asserted that prior groundwater rulemakings have entailed “relatively simple additions of constituents and not at the levels proposed for the six proposed PFAS standards and not with new and different analytical laboratory testing protocols also being proposed.” *Id.* at 5.

Concerning the Part 811 landfill rules, he maintained that “[v]ery few if any [municipal solid waste] landfills in Illinois will be able to pass a GIA model at the currently proposed PFAS groundwater quality standards” without implementing “extremely expensive and unnecessary design standards” or “difficult to achieve contingent remediation plans with associated costly new financial assurance requirements.” *Id.* at 3. He also conveyed NWRA’s concern that municipal solid waste landfills will have “many false readings” because monitoring systems contain “Teflon or similar PFAS containing plastics or other components.” *Id.* at 4. According

to Mr. Hilbert, this “will likely require every Illinois landfill to replace existing groundwater monitoring system components with non PFAS containing components” to avoid PFAS exceedances. *Id.*

Like Mr. Ballenger, Mr. Hilbert addressed the relationship between landfills and publicly owned treatment works (POTWs) regarding PFAS. According to Mr. Hilbert, “[w]hen POTWs refuse to accept landfill leachate, which is beginning to happen, there is a significant economic impact on the landfill which threatens the landfill’s ability to maintain compliance with the leachate removal requirements of the Part 811 rules until they can find an alternative disposal option for the leachate or construct a pretreatment facility to comply with the POTW’s influent standards.” Hilbert Test. at 6. Mr. Hilbert estimated that the capital costs to implement leachate pretreatment for PFAS at a “moderate-sized landfill”—to reduce PFAS to the levels proposed, should such reductions even be feasible—would range from \$2 million to \$7 million. *Id.* He added that, “[m]ultiplying this cost across all Illinois landfills would have an economic impact on the landfill industry alone, currently estimated at several hundred million dollars.” *Id.*

Board Discussion and Findings

Laboratory analysis for PFAS is expected to cost approximately \$300 per sample. The Board finds this cost reasonable. And the cost would likely decrease as more laboratories get certified for PFAS analysis.

This record does not include cost estimates for remediating PFAS-contaminated groundwater. But, for the reasons provided above, the Board anticipates that adopting Part 620 PFAS standards would have little, if any, impact on remediation costs under the programs using TACO unless and until those programs and TACO are amended. During any such rulemaking, the Board – as it has in the past – will evaluate associated costs to regulated entities.

Participants’ economic concerns with adoption of the proposed PFAS standards have centered on the Board’s current landfill rules at Parts 811 and 814. This record, however, lacks information on any additional compliance costs (*e.g.*, for modeling, monitoring, remediation) expected to be incurred under those landfill rules due solely to adding the PFAS standards to Part 620, *i.e.*, without any subsequent amendment to Part 811 or Part 814. *See* 415 ILCS 55/8(b) (2022) (Board must consider “the factors set forth in Title VII of the Environmental Protection Act”); 415 ILCS 5/27(a) (2022) (Board must consider “the economic reasonableness of measuring or reducing the particular type of pollution”); *see also Granite City*, 155 Ill. 2d at 183-84 (Board considered evidence concerning economic reasonableness of compliance with proposed rules); *GWQS*, R89-14(B), slip op. at 25 (“serious flaw” in economic study because it attributed to the new GWQS “*all* the costs of any potential future remedial action” even though “[t]he remediation programs already require cleanup of most of the parameters listed in the instant regulations” (emphasis added)). Therefore, while the Board proceeds to second notice with the PFAS standards, the Board adds to Part 620 an exception to their applicability for landfills that are subject to Part 811 or Part 814. *See* proposed Sections 620.410(f) and 620.420(e).

The Board directs the Clerk to open a sub-docket to explore this issue further. A main purpose of the sub-docket is to receive testimony and evidence on any economic impact that adding the PFAS standards to Part 620 would have on compliance costs under the current versions of Part 811 and Part 814. To that end, the Board further directs that the hearing officer schedule a public hearing in the sub-docket.

In addition, the Board will consider any amendments to Part 811 or Part 814 proposed in response to adoption of the Part 620 PFAS standards. In the sub-docket, the Board also expects to receive cost information from proponents and participants and will use that information to consider removing the Part 620 exception—added today—from the PFAS standards for Part 811 and Part 814 landfills.

Class I and Class II Molybdenum GWQS

In the proposed second notice for public comments, the Board revised the IRIS-based first notice Class I molybdenum GWQS of 0.019 mg/L to 0.023 mg/L based on the 2020 ATSDR MRL. Sec-Not. Op. at 11. Additionally, the Board proposed Class II molybdenum GWQS at the same level as the Class I standard. The Board made these revisions considering comments from participants, including IMO, IEPA and Dynege. While the IMO and Dynege agree with the Board's decision to rely on the more recent human health toxicity value (2020 ATSDR MRL), they continue to express concerns regarding the more conservative approach taken by the Board and IEPA in calculating the Class I molybdenum. PC 72 at 1-5, PC 77 at 5-7. Specifically, IMO and Dynege assert that when calculating the Class I molybdenum GWQS the Board should not apply an uncertainty factor (UF) to extrapolate from a subchronic MRL to a chronic MRL; and use an RSC value of 0.8 instead of 0.2.

For the reasons discussed below, the Board proposes for second notice a Class I molybdenum standard of 0.308 mg/L, which is calculated using a subchronic to chronic UF of 3 and a RSC value of 0.8. The Board also proposes a Class II molybdenum GWQS of 0.308 mg/L.

Uncertainty Factor to Account for Subchronic to Chronic Extrapolation

Participants' Concerns

Dynege and IMO argue that IEPA's use of a UF of 10 to account for the extrapolation of a subchronic MRL into a chronic MRL is inappropriate. PC 77 at 5; PC 72 at 1. Dynege cites USEPA Region 8, the European Chemicals Agency (ECHA), and Colorado's Water Quality Control Commission (Colorado) have "engaged in detailed consideration and technical review to determine whether an uncertainty factor should be applied when deriving a health-based groundwater standard for molybdenum and they have each concluded that the application of any uncertainty factor is inappropriate." PC 77 at 6. These entities decided against the use of an UF for extrapolation from subchronic to chronic MRL because of "the availability of chronic data demonstrating no uncertainty factor is required." PC 77 at 5. IMO also claims that an

application of an UF from subchronic to chronic would be “unprecedented and unwarranted” as it has not been used for a risk assessment for an essential element.¹⁰ PC 72 at 2.

Dynegy argues that USEPA Region 8 has concluded no uncertainty factor is necessary when setting a risk-based molybdenum water quality standard because of the availability of other chronic data. PC 77 at 5. USEPA Region 8 relied on the National Toxicology Program’s (NTP’s) 1997 molybdenum trioxide chronic inhalation study, which found “no further adverse effects from molybdenum in the kidney, which is the most sensitive endpoint.” *Id.*, *Id.* Attach. 1. Further, IMOA contends that the differences between exposure pathway (inhalation versus ingestion) and the form of molybdenum (elemental molybdenum versus molybdenum trioxide) is not a concern because molybdenum trioxide is converted into the bioavailable molybdate in the respiratory tract (as it is in all routes of exposure). PC 72 at 2. The 1997 study found the NOAEL (No Observable Adverse Effects Level) for kidney effects for molybdenum “was the same after a 2-year chronic exposure as it was after a 90-day sub-chronic exposure at comparable systemic (internal) doses of molybdenum.” *Id.* Thus, IMOA argues that an application of “UF is not warranted and should not be included in the calculation method.” *Id.* at 3. Further, IMOA states that because molybdenum is an essential element for humans, the “intake requirements for essential elements and vitamins do not change based on the duration of exposure.” PC 72 at 1. Thus, indicating that human intake will not change whether the exposure is subchronic or chronic “unless the exposures greatly exceed the daily requirements.” *Id.*

IEPA Response

IEPA notes that the application of an UF 10 is justified because Part 620, Appendix A(c)(2)(D) requires “correction factors be applied to extrapolate an inappropriate route of exposure (inhalation) to oral exposure.” PC 71 at 3. IEPA further notes that the 1997 chronic study is based on molybdenum trioxide not elemental molybdenum. *Id.* Finally, IEPA asserts that Colorado decided to apply an UF of 3 to account for extrapolation of ATSDR’s subchronic to chronic MRL after considering USEPA Region 8’s guidance to not apply an UF. *Id.*

Colorado’s Application of an UF of 3

In a site-specific rulemaking to revise the applicable human health water supply water quality standard for molybdenum, Colorado’s Water Quality Control Commission (Colorado) applied a UF value of 3 to account for “extrapolation from a subchronic study to chronic exposure conditions.” PC 71 Attach. 1 at 14.

Colorado stated it would be inappropriate to conclude “the chronic inhalation study provides sufficient evidence to fully characterize chronic ingestion exposure”. PC 71 Attach. 1 at 14. Further, Colorado notes that the ATSDR evaluated NTP’s 1997 chronic inhalation study and used it to assess chronic molybdenum inhalation toxicity but declined to use it to assess chronic oral molybdenum toxicity due to “insufficient evidence”. *Id.*

¹⁰ An essential element is a chemical element that is required for the normal growth, development, and maintenance of living organisms.

Colorado also maintains that because essential elements may result in adverse health impacts in humans, they have recommended daily intake levels as well as tolerable upper limits. PC 71 Attach. 1 at 14. Therefore, Colorado concluded that the homeostatic mechanism to regulate essential elements is not “always a reliable process to prevent toxic effects in humans.” *Id.*

Based on the above factors, Colorado decided to apply an UF of 3 for the extrapolation from subchronic to chronic toxicity value to address increased risk associated with lifetime exposure to molybdenum in drinking water. *Id.*

Board Discussion and Findings

Based on the information presented by Dynegy and IMO A, the Board agrees that the UF factor of 10 may not be appropriate to account for the extrapolation of subchronic to chronic MRL. However, the Board finds that a lower UF of 3 consistent with Colorado’s determination summarized above is necessary to ensure adequate protection from lifetime of exposure of molybdenum.

IMO A asserts that a comparison of the NOAEL from the subchronic toxicity study (Murray et al. 2014) and the chronic inhalation toxicology study (NTP 1997) indicates that the NOAEL ($2.41 \pm 0.48 \mu\text{g/g}$) in the chronic toxicity study of molybdenum is in the same range as the NOAEL ($2.63 \pm 0.48 \mu\text{g/g}$) in the sub-chronic toxicity study. PC 72 at 3. Thus, IMO A argues that an UF is unnecessary because the NOAEL for chronic systemic exposure to molybdenum is not lower than it is for sub-chronic systemic exposure. However, the Board finds this evidence to be insufficient to eliminate the use of UF to account for subchronic to chronic toxicity extrapolation. The Board agrees with Colorado that considering the chronic inhalation study to fully characterize chronic ingestion exposure would be contrary to ATSDR’s conclusions. PC 71 Attach. 1 at 14. In this regard, the ATSDR evaluated the NTP study to evaluate inhalation toxicity, but not for deriving a chronic oral MRL.

Also, while IMO A argues that molybdenum intake in humans as an essential element is not generally affected by duration of exposure, Colorado cautions that homeostatic regulation of essential elements is not always a reliable process to prevent toxic effects in humans. PC 71 Attach. 1 at 14. Thus, most essential elements have both a recommended daily intake as well as a tolerable upper limit. Finally, the Board finds that IMO A’s contention that USEPA, ATSDR and IOM have not applied an UF in risk assessments is not a justification for not using one for the establishing a GWQS intended to protect potable resource groundwater. While USEPA recommended that an UF for subchronic to chronic extrapolation is not necessary, USEPA stated that it would have no objection if Colorado decided to utilize an approach that is more health-protective or conservative. In turn, Colorado used an UF of 3 to calculate the molybdenum water quality standard.

As noted above, the Board continues to have concerns regarding the sufficiency of the chronic inhalation study to fully characterize chronic ingestion exposure. Therefore, the Board will follow Colorado’s lead and apply an UF of 3 to account for subchronic to chronic MRL extrapolation instead of the default value of 10 used at first notice. Given IEPA’s calculation for

determining the HTTAC for molybdenum already includes an UF of 10 for extrapolation from animals to humans, and 10 for variability within humans, the Board finds that the application an UF of 3 for extrapolation of subchronic to chronic toxicity value ensures adequate protection from lifetime of exposure of molybdenum for Class I potable resource groundwater.

Selection of Relative Source Contribution (RSC) Value

The RSC value represents the proportion of the total daily intake of a chemical (molybdenum) that can be derived from water when compared to all other sources of exposure (food, air). PC 71 at 31. Part 620, Appendix A(a) requires the use of an RSC value of 0.2 unless valid chemical-specific data for a chemical is available. The Agency used the default RSC value of 0.2 in calculating the Class I molybdenum GWQS proposed in the second notice for public comments.

Participant Concerns

Dynegy and IMO A disagree with the Board's decision to accept IEPA's HTTAC calculation that uses an RSC value of 0.2 (20%) for molybdenum. PC 77 at 6; PC 72 at 4. Dynegy argues that daily intake of molybdenum from food sources "is significantly less than 20% for individuals of all ages (including children)." PC 77 at 6. They argue that a more appropriate RSC value for molybdenum is 0.8 (80%). Dynegy relies on USEPA Region 8's discussion on Colorado's water supply molybdenum surface water quality standard that indicates the percentage of allowable daily intake (ADI) from food sources is significantly below 20% across all age groups. *Id.* at 7. IMO A asserts that it is not "how much additional exposure to molybdenum via drinking water is needed to meet the recommended daily allowance (RDA)" but instead "how much additional exposure to molybdenum can a person have from drinking water without posing a risk of overexposure to molybdenum." PC 72 at 4. Further, IMO A states that USEPA Region 8 affirmed Colorado's RSC value of 0.8 (80%) in their molybdenum standard. *Id.* Both Dynegy and IMO A urge the Board to use an RSC value of 0.8.

USEPA Region 8 Evaluation

IMO A submitted USEPA Region 8's evaluation of Colorado's water supply molybdenum water quality standard that includes a discussion of the use of RSC value of 0.8 used by Colorado. PC 62. USEPA states the RSC value used to calculate Colorado's water supply molybdenum standard was "derived using the subtraction method" (apportioned amount of the reference dose or RfD) using available information on the exposure pathways in the general population. PC 62 at 5. First, the total allowable daily intake (ADI) of 4.8 mg Mo/day was calculated by multiplying ATSDR's 2020 study RfD of 0.06 mg Mo/kg/d by an average adult body weight of 80 kg. *Id.* at 6. Next, the total contributions from all other sources other than drinking water (inhalation, ingestion of soils, diet, etc.) are subtracted from ADI to arrive at the contribution from daily diet.

USEPA notes that the contribution of molybdenum from inhalation is minimal and the 2020 ATSDR study "suggests that inhalation would contribute less than 0.001% towards an estimated daily molybdenum intake." PC 62 at 6. This estimate was based on national studies

based in several states of ambient molybdenum levels. *Id.* The highest amount of the reported from the data was $0.03 \mu\text{g}/\text{m}^3$ which equates to 0.0006 mg which is less than 0.001% of the 4.8 mg Mo/day. *Id.*

Like inhalation, contribution from “incidental ingestion of soils” is less than 0.001% of daily molybdenum intake. PC 62 at 6. This estimate was based on national data on the average amount of molybdenum in top layers of soil, approximately 0.78 mg/kg with incidences of 2.27 mg/kg at the 95th percentile. *Id.* at 7. Based on the average amount of incidental soil intake, USEPA notes that contribution from soil ingestion accounts for less than 0.001% of daily molybdenum intake and on the high-end accounts for less than 0.005%. *Id.* Further, USEPA determined that dermal absorption from soil to be negligible. *Id.*

Finally, USEPA noted that potential contributions from elevated molybdenum concentrations in irrigation water impacting agricultural crop or residential gardens was not considered due to lack of available information. PC 62 at 7.

Considering contributions from inhalation and incidental soil ingestion to be negligible, USEPA focused on contribution of molybdenum from diet. USEPA notes that the average daily molybdenum intake from diet for adults has been reported to range from 0.180 mg/day to 0.240 mg/day (ATSDR, 2020), which represents 3.75% to 5% of the allowable daily intake. PC 62 at 7. However, USEPA notes that vegetarian and vegan diets contain 30-100% more molybdenum compared diets containing animal products resulting in dietary contributions ranging from 5 to 10% of the ADI. *Id.* Finally, dietary supplements add about 0.024 mg Mo/day (0.5%). Thus, of the food types evaluated, legumes, grains, and nuts had the highest reported molybdenum concentrations especially compared to animal products. *Id.* Compared to diets containing animal products, it has been reported that vegetarian and vegan diets contain between 30-100% more molybdenum, which results in dietary contributions of around 5-7.5% with a maximum of 10%. *Id.* Thus, USEPA states that the contribution of “all relevant non-water sources to daily molybdenum intake is likely around 5% of the allowable daily intake, and unlikely to be greater than 10%”. *Id.* at 7.

Additionally, USEPA considered any potential childhood exposure impacts of using an RSC value of 0.8 by reviewing molybdenum intake by age group. PC 62 at 8. The dietary molybdenum intake (percent of ADI) for children ranged from: 5.4% (age 6 - 11 years), 6% (age 3- 6 years), 1.1% (breast-fed infants), and 11% (bottle-fed infants). *Id.* Thus, USEPA concluded “the relative contribution of molybdenum estimated to come from the diet remains below 20% across all life stages, and below 10% for all but potentially bottle-fed infants.” *Id.*

Considering the above, USEPA Region 8 concluded that dietary contributions to the average daily intake of molybdenum regardless of age group or diet type is less than 20% of the ADI. *Id.* Therefore, the RSC value of 0.8 (80%) used in the calculation of Colorado’s water supply water quality standard will be protective of public health over a lifetime of exposure.

IEPA Response

IEPA maintains that most of the general public's exposure to molybdenum is through food. PC 71 at 3. They cite ATSDR's 2020 toxicological profile for molybdenum that states "exposure to molybdenum to the general population is almost entirely through food." *Id.*

Board Discussion and Findings

As noted above, Part 620, Appendix A(a) requires the use of an RSC value of 0.2 (20%) unless valid chemical-specific data for a chemical is available. The Board relied on the default value to calculate the Class I molybdenum GWQS in the second notice for comments. However, a further examination of the record indicates that the participants have presented molybdenum specific data to justify the use of an RSC value of 0.8 (80%) instead of the default value.

The Board notes that USEPA Region 8's evaluation of Colorado's water supply standard includes daily molybdenum intake data for all relevant non-water sources as a percentage of the ADI for all life stages from infants to adults. As noted above, the daily molybdenum intake from non-drinking water sources ranged from 3.75% for adults to 11% for bottle-fed infants. Thus, even considering the high-end of the daily intake range of 11%, the Board finds that the contribution of all non-drinking water sources to molybdenum intake is significantly less than 20% of the ADI. This finding supports the use of an RSC value of 0.8 (80%) for calculating the Class I molybdenum GWQS because the contribution to daily intake of molybdenum from non-water sources is less than 20%. Therefore, the Board will use an RSC value of 0.8 instead of 0.2 to calculate the Class I molybdenum GWQS.

Calculation of Class I Molybdenum GWQS

Based on the above findings and consistent with the proposed regulation under Part 620, Appendix A, the Board calculated a HTTAC for molybdenum of 0.308 mg/L using ATSDR MRL of 0.06 mg/kg, body weight of a child (0-6 years of age) of 15 kg, per capita daily water consumption for a child (0-6 years of age) of 0.78 liters/day, a subchronic to chronic UF of 3 and a RSC value of 0.8. The Board proposes the HTTAC of 0.308 mg/L as the Class I molybdenum GWQS for second notice.

Class II Molybdenum GWQS

In the second notice for public comments, the Board proposed the Class II molybdenum standard at the same concentration as the Class I standard of 0.023 mg/L. Prop. Second Not. at 15. This approach, the Board explained, is consistent with previous Board rulemakings where Class II standards for many constituents have been adopted based on their Class I standards. See IEPA Prop., Att. IJ-1. *Id.* The Board noted that the Class II standard is set at the same level as Class I standard without applying a treatability factor because of concerns with molybdenum levels in groundwater related to beneficial use for livestock watering. For second notice, the Board proposes a Class II molybdenum standard of 0.308 mg/L to reflect the revision to the Class I standard.

Interplay Between Part 620 and Part 845

On-Site or Off-Site

Dynegy supported IEPA's position that Part 845 regulates on-site contamination at the property of an electric utility or independent power producer, as well as contamination that travels off-site. PC 66 at 3. However, Dynegy noted that IEPA's proposed changes to Sections 620.240 and 620.440 do not reflect "that all groundwater contamination subject to Part 845 should be regulated exclusively under that program." *Id.* Dynegy claimed that IEPA's proposed revisions "could be interpreted as resulting in the simultaneous application [of] Part 845 and Part 620 when contamination regulated under Part 845 migrates offsite." *Id.*

To clarify IEPA's intent, Dynegy proposed the following revisions to IEPA's suggested changes to Sections 620.240 and 620.440:

Section 620.240 Class IV: Other Groundwater

Except as provided in Section 620.250, Other Groundwater is:

- h) Groundwater regulated under 35 Ill. Adm. Code 845 ~~at both active and inactive electric utilities and independent power producers.~~

Section 620.440 Groundwater Quality Standards for Class IV: Other Groundwater

- d) For groundwater ~~at both active and inactive electric utilities and independent power producers~~ regulated under Part 845, the groundwater protection standard (GWPS) under Section 845.600 must not be exceeded for any constituent with a GWPS under Section 845.600. For any constituent that does not have a GWPS under Section 845.600, the groundwater quality standards (GWQS) of Sections 620.410, 620.420, 620.430 or 620.440(b) and (c) apply. PC 66 at 3.

At proposed second notice, the Board agreed with IEPA that, to alleviate potential confusion between the applicability of Part 845 GWPS and Part 620 GWQS, it made sense to (1) include groundwater impacted by CCR surface impoundments regulated under Part 845 as Class IV groundwaters and (2) add Class IV GWQS applicable to Part 845 surface impoundments. *See Prop. Second Not. at 22.* The Board therefore accepted IEPA's suggested amendments to Sections 620.240 and 620.440 with non-substantive changes. *Id.* However, the Board asked IEPA to comment on why the Board should not include the Dynegy's revisions to IEPA's language. *Id.*

In its most recent comment, Dynegy reiterates that Part 845 regulates groundwater contaminated by CCR surface impoundments “both onsite (at the property of an electric utility or independent power producer) and that travels offsite to other properties.” PC 77 at 3, *citing, e.g.*, 35 Ill. Adm. Code 845.650(d), 845.700(g)(5). According to Dynegy, its revisions to IEPA’s proposed text are needed to clarify that “both *onsite* and *offsite* groundwater regulated under Part 845 would be classified as Class IV.” PC 77 at 2 (emphasis in original).

IEPA states that it does not object to Dynegy’s proposed revisions. *See* PC 78 at 3. The Board proposes these revisions to Sections 620.240(h) and 620.440(d) at second notice.

Part 845’s GMZ Ban

At proposed second notice, the Board did not add three subsections to Section 620.250 that IEPA had proposed:

- j) Regardless of subsections (a) through (f), any corrective action conducted under 35 Ill. Adm. Code 845 must follow the corrective action process of Sections 845.650, 845.660, 845.670, and 845.680. A GMZ will not be approved for any constituent with a Part 845 Groundwater Protection Standard (GWPS). A site owner or operator may apply for a GMZ for any constituent with no Part 845 GWPS subject to the requirements of subparts (a) through (f).
- k) The owner or operator of an active or inactive electric utility or independent power producer with a GMZ approved under Parts 620.250 before April 21, 2021 [Part 845’s effective date] to mitigate releases from a CCR surface impoundment, must follow the corrective action process of Part 845.650, 845.660, 845.670, and 845.680 for all constituents with a Part 845 GWPS, but may submit to the Agency in writing, a request to have a corrective action under Part 845 considered as an adequate corrective action process for constituents with no Part 845 GWPS.
- l) Any GMZ that has been approved under Part 620.250 to mitigate releases from a CCR surface impoundment at an active or inactive electric utility or independent power producer is terminated for any constituent with a Part 845 GWPS. The GMZ remains in effect for any constituent named in the GMZ application which does not have a Part 845 GWPS. PC 63 at 35; *see also id.* at 11, 19-21, 24.

Some of IEPA’s proposed rule text above is overbroad. For example, as Dynegy points out, the second sentence of subsection (j) “could lead to the unintended conclusion that a GMZ is never available for a constituent that has both a Part 845 Groundwater Protection Standard and a Part 620 Groundwater Quality Standard, regardless of whether that constituent is located in groundwater regulated under Part 845.” PC 77 at 4. Other proposed provisions amount to truisms or are otherwise unnecessary.

However, the Board agrees with IEPA that Section 620.250 should not remain silent about Part 845 (“Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments”). Specifically, Section 845.600(c) of Part 845 describes a GMZ bar, the constituents subject to it, and its duration:

- c) The owner or operator of a CCR surface impoundment may not obtain alternative groundwater quality standards in 35 Ill. Adm. Code 620.450(a)(4) for the constituents in subsections (a) and (b) [*i.e.*, Part 845 GWPS] before the end of post-closure care under Section 845.780, when closing with a final cover system, or before the end of groundwater monitoring under Section 845.740(b), when closing by removal. 35 Ill. Adm. Code 845.600(c).

The referenced “alternative groundwater quality standards” under Section 620.450(a)(4) are obtained only through a GMZ. *Id.*; *see also* 35 Ill. Adm. Code 620.450(a). In its most recent comment, IEPA does not mention adding the three subsections to Section 620.250.

At second notice, the Board continues to exclude IEPA’s proposed subsections (j), (k), and (l) from Section 620.250. However, the Board proposes a new subsection (n) for Section 620.250, which references the GMZ ban effectuated through Section 845.600(c):

- n) In groundwater regulated under 35 Ill. Adm. Code 845, a GMZ is not available to address any exceedance of a groundwater protection standard specified in 35 Ill. Adm. Code 845.600(a) or (b) (see 35 Ill. Adm. Code 845.600(c)).

For any existing GMZ that is located within Part 845 groundwater and addressing one or more constituents that have GWPS specified in Section 845.600(a) or (b), proposed Section 620.250 will accommodate IEPA either:

- amending the GMZ (*e.g.*, to remove from the GMZ’s scope those constituents with Part 845 GWPS; to have Part 845 corrective action address constituents that have Part 620 GWQS but do not have Part 845 GWPS); or
- terminating the GMZ (if all the constituents being addressed by the GMZ have Part 845 GWPS). *See* PC 63 at 19-21.

Groundwater Management Zones (GMZs)

The Board very much appreciates IEPA’s thoughtful and thorough responses to the many GMZ-related questions posed by the Board at proposed second notice. The amendments that the Board proposed concerning GMZs are largely unchanged today but IEPA’s responses have led to a handful of important changes for second notice.

Below, the Board discusses the following 11 subjects in turn:

1. Part 620 GMZs and the Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and Leaking Underground Storage Tank (UST) Programs
2. Section 620.110: Definition of “Corrective Action Process”
3. Section 620.110: Definition of “Regulatory Agency”
4. Section 620.250(a): “Subject to a Corrective Action Process Approved by the Agency”
5. Section 620.250(b): GMZ Application—Off-Site
6. Section 620.250(c)(2): Establishing and Amending a GMZ
7. Section 620.250(d)(2) and (e): “On-Going Adequacy” Submittals and Reviews
8. Section 620.450(a)(3): Groundwater Quality Standards Inapplicable within GMZ Before Corrective Action Is Complete
9. Section 620.450(a)(4): Post-Corrective Action Standards
10. Section 620.250(d)(1) and (f): GMZ Terminations
11. New Section 620.250(g): Standards Following GMZ Terminations under Section 620.250(f)

Part 620 GMZs and the RCRA, CERCLA, and Leaking UST Programs

At proposed second notice, much of the Board’s GMZ discussion centered on explaining how the amendments were designed to “*require* only what is necessary to accomplish the purposes of GMZs under Part 620, without interfering with other requirements that may apply, including under the leaking UST program, RCRA, or CERCLA.” Prop. Second Not. at 50 (“None of the changes conflict with the existing Part 620 requirements for establishing, monitoring, or terminating GMZs.”).

In response, IEPA clarifies that it agrees with requiring an “application” to establish a GMZ. PC 78 at 4. In addition, IEPA no longer seeks to exempt the RCRA, CERCLA, or leaking UST program from the proposed GMZ process of Section 620.250. *Id.* at 10-11, 341, 343. The Board’s proposed second-notice amendments clarified that Part 620’s Appendix D forms need not be used for the GMZ application or corrective action completion certification—and information in addition to that required may be included. *See* Prop. Second Not. Add. B at 24 (proposed Section 620.250(b)(2), (b)(3), (d)). Therefore, IEPA now agrees that the proposed amendments would not conflict with those programs. PC 78 at 4, 10.

In addition, IEPA no longer asks the Board to open a sub-docket (PC 63 at 12) for potential GMZ rules specific to programs like leaking UST, RCRA, or CERCLA. *See* PC 78 at 20. The Board encourages IEPA, however, to further to consider whether proposing such rules and any corresponding Part 620 amendments might be warranted. IEPA’s responses to the questions posed by the Board’s October 17, 2024 order would surely help to inform a rulemaking proposal. *See, e.g.,* PC 78 at 346-49, 350, 353-57 (responses 6, 7(c), 9(b), 10(a)(ii), (c), (d)).

Section 620.110: Definition of “Corrective Action Process”

In its proposed second notice, the Board revised the current definition of “corrective action process” as follows:

“Corrective action process” means ~~the these~~ procedures and practices that ~~may be imposed by a regulatory agency may impose or perform when a determination has been made that contamination of groundwater has taken place, and are necessary~~ to address a potential or existing violation of any Subpart D standard due to a release of one or more contaminants ~~the standards set forth in Subpart D~~. Prop. Second Not. Add. B at 4.

Accepting the above revisions, the Board makes these additional changes today at second notice, based on IEPA’s most recent comment:

“Corrective action process” means the procedures and practices that a regulatory agency may ~~impose or perform~~, require, or otherwise oversee, including corrective action and controls and management, to address a potential or existing violation of any Subpart D standard due to a release of one or more contaminants.

IEPA no longer proposes (PC 63 at 8) removing the definition’s reference to “a regulatory agency”. See PC 78 at 12. And replacing “impose or perform” with “perform, require, or otherwise oversee” broadens the definition to cover the conceivable roles that a regulatory agency may play during a cleanup. *Id.* at 11-12.

In response to Board questioning, IEPA confirms that the following are examples of “corrective action”, not examples of “corrective action processes”:

groundwater collection and discharge under NPDES [National Pollutant Discharge Elimination System] Permit, groundwater extraction and treatment prior to permitted discharge, capping waste and monitored natural attenuation with a modeled compliance date, lining previously unlined impoundments, slurry walls and source material removal for beneficial use. PC 78 at 14-15.

IEPA contrasts the above examples with a “corrective action process”, which “begins upon approval of a corrective action plan and can include several corrective actions occurring either simultaneously or serially and can continue beyond completion of what would be considered active remedial or corrective action measures.” *Id.* at 14. The Board concurs with IEPA’s descriptions.

Revising the “corrective action process” definition to include “controls and management” helps to resolve a drafting problem with Section 620.250(a), discussed later in this opinion. The Board asked IEPA to provide examples of “*controls and continued management at the site* if concentrations of chemical constituents, as specified in Section 620.450(a)(4)(B), remain in groundwater at the site following completion of such action”, *i.e.*, corrective action. Prop. Second Not. Add. A at 6 (question 19), *quoting* 35 Ill. Adm. Code 620.250(c) (emphasis added). The Board requested that IEPA’s response include examples of “controls” and, separately, examples of “management” if IEPA views the terms as having different meanings. Prop. Second Not. Add. A at 6 (question 19).

IEPA explains that its use of the terms “controls” and “management” varies by program. PC 78 at 363. IEPA provides separate responses for (1) its Bureau of Water, (2) the leaking UST program, (3) RCRA, and (4) CERCLA. For IEPA’s Bureau of Water, IEPA states:

Controls at a GMZ site may be comprised of structures that are part of the corrective action process, but do not require on-going maintenance to be effective and are not removed after the corrective action process is complete. A slurry wall or grout curtain that influences the way groundwater flows are examples of controls that might be used. Management of a former GMZ area subject to a corrective action approved or overseen by IEPA (or another agency) could be accomplished through restrictions imposed by an environmental covenant under the Uniform Environmental Covenants Act (UECA, 765 ILCS 122/). The management would be attached to the deed and require the owner and any subsequent owners to adhere to the restrictions. The restrictions may include prohibition of groundwater use, restrictions on how the surface of the property may be used, or types of structures that could be built on the property. It may be possible depending on site conditions that management under Section 620.450(a)(4)(B) is adequate for a site without any controls. However, when a site is under Section 620.450(a)(4)(B), the Agency believes management will always be necessary, at a minimum, to prevent human contact with the contaminated groundwater or require treatment before it is used. *Id.* at 363-64.

For the leaking UST program,¹¹ IEPA explains:

No GMZ[s] have been requested or established since the adoption of Part 620, so the scenario described by Section 620.450(a)(4)(B) has not occurred. However, for LUST [leaking UST] sites remediated using TACO [Tiered Approach to Corrective Action Objectives, 35 Ill. Adm. Code 742], common controls used would be engineered barriers or institutional controls, including ordinances, Highway Authority Agreements, environmental land use controls, and groundwater use restrictions via ordinance pursuant to 35 Ill. Adm. Code Part 742. *Id.* at 364.

For RCRA,¹² IEPA notes:

¹¹ By “leaking UST program,” IEPA intends to “include Title XVI of the Act and 35 Ill. Adm Code Part 734, which regulate only petroleum USTs, and 35 Ill. Adm. Code Part 731, which regulates hazardous substance tanks and other defined UST systems.” PC 78 at 341.

¹² By “RCRA,” IEPA intends to “encompass remediation under rules corresponding to either Subtitle C or Subtitle D of the federal RCRA statute. IEPA’s Subtitle C and Subtitle D RCRA programs both have sites that utilize GMZs. *** [IEPA includes] ‘State RCRA,’ as used in Appendix D, [which] is a reference to Section 21(f) of the Act [and] which applies to hazardous waste storage, treatment, or disposal operations regulated under the State requirements corresponding to Subtitle C of the federal RCRA statute.” PC 78 at 343.

Once corrective action is considered complete, the site would be required to maintain any necessary controls and manage those controls to maintain conditions at the time corrective action is allowed to cease. Common controls would be those outlined in Part 742, specifically institutional controls (environmental land use controls, ordinances, etc.) and engineered barriers. *Id.* at 364.

For CERCLA,¹³ IEPA states:

Section 620.450(a)(4)(B) (or any alternative groundwater quality standard in Section 620.450) would not apply to CERCLA sites given that the groundwater would have to be cleaned up to groundwater quality standards for the applicable class of groundwater pursuant to Sections 620.410, 620.420, 620.430, or 620.440. *Id.* at 364.

The Board thanks IEPA for its illuminating explanations and examples. The Board also recognizes that for Part 620 GMZs, controls and management are not necessarily implemented only after corrective action but rather may also be implemented concurrently with corrective action.

For second notice, the Board proposes the following changes to the current definition of “corrective action process”, including IEPA’s addition of “controls and management”:

“Corrective action process” means the those procedures and practices that may be imposed by a regulatory agency may perform, require, or otherwise oversee, including corrective action and controls and management, when a determination has been made that contamination of groundwater has taken place, and are necessary to address a potential or existing violation of any Subpart D standard due to a release of one or more contaminants ~~the standards set forth in Subpart D.~~

Section 620.110: Definition of “Regulatory Agency”

The term “regulatory agency” appears in the definition of “corrective action process” and throughout Part 620. And the term “regulatory agency” is itself defined. It means “the Illinois Environmental Protection Agency, Department of Public Health, Department of Agriculture, the Office of Mines and Minerals in the Department of Natural Resources, and the Office of State Fire Marshal.” 35 Ill. Adm. Code 620.110. At proposed second notice, the Board sought comment on whether the United States Environmental Protection Agency (USEPA) and any

¹³ By “CERCLA,” IEPA intends to “encompass those portions of the federal CERCLA statute (42 U.S.C. §§ 9601 *et seq.*) as implemented by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) found at 40 C.F.R. Parts 300- 302. The Agency does not mean to include what 35 Ill. Adm. Code 620.Appendix D refers to as ‘State Superfund,’ which refers to Section 22.2 of the Act in the context of consent decrees or orders.” PC 78 at 343.

other federal agency should be added to the agencies listed in the definition of “regulatory agency”.

IEPA maintains that “[d]oing so could negatively impact Illinois’ CERCLA program.” PC 78 at 10. As primacy for addressing groundwater contamination has been conferred upon Illinois, including USEPA as a regulatory agency for Part 620 purposes “could potentially jeopardize that primacy and/or undercut Part 620 decisions being made by the state.” *Id.* at 11. The Board agrees.

IEPA does suggest a housekeeping change, however, to the current definition of “regulatory agency”. According to IEPA, it would be appropriate for the definition to refer to the “Office of Oil and Gas Resource Management” (OOGRM) within the Illinois Department of Natural Resources (IDNR), in addition to IDNR’s “Office of Mines and Minerals” (OMM). PC 78 at 13. IEPA notes that, “the Oil and Gas Division was within OMM [but] has since been given its own Office (OOGRM).” *Id.* The Board thanks IEPA for pointing this out and, at second notice, amends the definition of “regulatory agency” as IEPA recommends:

"Regulatory agency" means the Illinois Environmental Protection Agency, Department of Public Health, Department of Agriculture, the Office of Mines and Minerals and the Office of Oil and Gas Resource Management in the Department of Natural Resources, and the Office of State Fire Marshal. *Id.* at 370.

Section 620.250(a): “Subject to a Corrective Action Process Approved by the Agency”

For second notice, the Board restores the phrase, “[t]hat is subject to a corrective action process approved by the Agency”, in Section 620.250(a). Accordingly, the Board proposes the following changes to current subsection (a):

- a) Within any class of groundwater, a groundwater management zone (GMZ) may be established as a three-dimensional ~~three-dimensional~~ region containing groundwater being managed to mitigate impairment caused by a the release of one or more ~~from a site:~~
 - 1) ~~That that~~ is subject to a corrective action process approved by the Agency; ~~or~~
 - 2) ~~For which the owner or operator undertakes an adequate corrective action in a timely and appropriate manner and provides a written confirmation to the Agency. Such confirmation must be provided in a form as prescribed by the Agency.~~

The Board had been concerned that the defined term “corrective action process” could be construed as limited to practices and procedures *related to corrective action*, to the exclusion of post-corrective action “controls and management.” As discussed, IEPA now proposes including items in the definition of “corrective action process” that are not corrective action—specifically, “controls and management”. *See* PC 78 at 14.

Revising the “corrective action process” definition to include “controls and management” addresses the Board’s concern over subsection (a)’s phrase—“subject to a corrective action process”—conflicting with the concept of controls and management being implemented *after* corrective action is complete and while the GMZ remains in effect. As a GMZ may have a post-corrective action life (*i.e.*, when Section 620.450(a)(4)(B) applies), making a GMZ always be “subject to a corrective action process” was problematic *if* the term “corrective action process” was restricted to corrective action. That is why the phrase “subject to a corrective action process” could not be permitted to restrict a GMZ’s existence to the duration of corrective action. *See* PC 78 at 351 (response 7(d)).

In response to Board questioning, IEPA explains why the corrective action process may include steps both before and after implementing corrective action:

To reiterate, a “corrective action” is a specific remedial measure taken to address exceedances of standards. A “corrective action process” can be comprised of several separate and distinct remedial measures (or corrective actions) and should necessarily include post-completion of corrective action measures (controls and management). Depending on the Agency program, the “corrective action process” can include several steps prior to implementation of corrective action measures or steps following completion of those remedial measures. If contamination remains and alternative standards are established pursuant to Section 620.450(a)(4)(B), the GMZ remains with outstanding controls and management requirements to demonstrate the corrective action’s adequacy, and therefore the “corrective action process” is not, and cannot be, complete. PC 78 at 15.

The Board agrees with IEPA’s explanation.

Before proposed second notice, IEPA had proposed restoring the phrase, “subject to a corrective action process”, in Section 620.250(a) on GMZs, but not “subject to a corrective action process *approved by the Agency.*” PC 63 at 12 (emphasis added). IEPA now proposes restoring the full phrase, “subject to a corrective action process *approved by the Agency.*” *See* PC 78 at 10. IEPA proposes adding the phrase “so that Part 620 GMZs can continue to be considered ARARs [applicable or relevant and appropriate requirements]” under CERCLA. *Id.*

At proposed second notice, the Board asked for comment on how the GMZ application process would jeopardize Section 620.250 being considered an ARAR for CERCLA sites. *See* Prop. Second Not. at 25. The Board inquired why the GMZ application process would not be disregarded as administrative or otherwise fall within the CERCLA permit exemption; and why the substantive requirement for establishing a GMZ (*i.e.*, being subject to an IEPA-approved “corrective action process”) would not remain an ARAR. *Id.* at 25-26. The Board noted that it simply moved this substantive requirement from current subsection (a)(1)—which authorizes establishing GMZs and describes what a GMZ is—to proposed subsection (c)(2)—which would address GMZ application approvals. *Id.* at 33-34.

IEPA maintains, however, that “if the substantive requirement is included in an administrative process (GMZ application approvals), it is unlikely to receive ARAR approval.” PC 78 at 6. Because the rule text on the GMZ being subject to an IEPA-approved corrective action process appears within a provision governing the application process, the entire provision would be considered administrative and thus not an ARAR, according to IEPA. *Id.* at 8-9. For Part 620 GMZs to continue being approved as ARARs, IEPA insists that there must be “a clear citation” to the substantive requirement. *Id.* at 5. IEPA emphasizes that the current language in and citation to Section 620.250(a)(1) “has already received ARAR approval by USEPA (and the United States Department of Defense (USDOD)).” *Id.* at 10.

The Board appreciates IEPA’s explanation on the import, for ARARs, of being able to cite a substantive requirement that is not housed within a provision addressing administrative requirements. As discussed above, the Board today broadens the definition of “corrective action process” to explicitly include post-corrective action “controls and management.” As that change resolves the Board’s concern over the potential inconsistency within Section 620.250, the Board returns the phrase, “subject to a corrective action process approved by the Agency,” to subsection (a), which should avoid jeopardizing future approvals of Section 620.250(a) as an ARAR. *See* PC 78 at 10.

The Board declines, however, to restore to Section 620.250(a) the phrase “from a site” (*i.e.*, “groundwater being managed to mitigate impairment caused by the release of contaminants from a site:”). 35 Ill. Adm. Code 620.250(a) (emphasis added). The term “site” is currently defined in Part 620 to mean “*any location, place, tract of land and facilities, including but not limited to, buildings and improvements used for the purposes subject to regulation or control by the Act or regulations thereunder.*” 35 Ill. Adm. Code 620.210, quoting 415 ILCS 5/3.460 (2022). In the context of Section 620.250(a), the phrase “from a site” is unnecessary and might be given an unduly restrictive interpretation. It is not the Board’s intent that a GMZ would be unavailable solely because a release, for example, originated from a rail car or had not migrated off-site.

Section 620.250(b): GMZ Application—Off-Site

IEPA explains that extending a GMZ off-site would require the off-site property owner’s permission to the establishment of the GMZ on that off-site property but might not also require *access* to that off-site property. PC 78 at 17-18, 361-63. Accepting the proposed second-notice version of Section 620.250(b)(1), the Board makes the revisions below at second notice to accommodate both when off-site access is necessary and when off-site access is not necessary:

- 1) If the GMZ would extend off-site, the GMZ application must include each off-site property owner’s written permission to the establishment of the GMZ on its property, ~~including access to perform corrective action.~~ If effectively implementing the off-site portion of the GMZ requires accessing an off-site property, the GMZ application must also include the off-site property owner’s written permission for that access. If the applicable written permission or permissions from an off-site property owner are

~~owner's written permission is not obtained—whether permission to establish the GMZ off-site, access the off-site property, or both—~~ the GMZ will not include that off-site property.

The Board makes corresponding changes to Appendix D, Note 4.

Section 620.250(c)(2): Establishing and Amending a GMZ

Based on the already-discussed distinction between a “corrective action process” and “corrective action”, IEPA recommends striking the word “process” from “corrective action process” in the second sentence of proposed Section 620.250(c)(2). *See* PC 78 at 375. Accepting the proposed second-notice version of Section 620.250(c)(2), the Board makes this change below at second notice:

- 2) A GMZ is established when the Agency issues a written determination approving the GMZ, including its corrective action process. Once a GMZ is established and before the corrective action process is complete, the Agency may, as new information warrants and subject to the standards of subsection (c)(1), issue written determinations amending any part of the GMZ, including its size, the contaminants that are subject to it, and its corrective action process, as provided in this subsection (c)(2). A GMZ is amended when the Agency issues a written determination amending the GMZ. If the Agency rejects a submittal of the site owner or operator to amend the GMZ under subsection (c)(2)(i) or (c)(2)(ii), the Agency must do so in a written determination that specifies the reasons for the rejection.

The Board makes corresponding changes to subsections (d) and (f)(1) of Section 620.250, as well as to Appendix D. *See* PC 78 at 375-77.

In answering Board questions, IEPA describes the documentation involved in establishing GMZs, as well as when GMZs take effect, under the RCRA, CERCLA, and leaking UST programs. *See* PC 78 at 344-45 (responses 2, 3, 4). IEPA’s responses indicate no conflict with proposed subsection (a), (b), or (c) of Section 620.250.

IEPA also describes various GMZ-amendment scenarios involving its Bureau of Water, as well as the RCRA and CERCLA programs. *See* PC 78 at 357-60. IEPA’s Bureau of Water has amended GMZs “by changing the size, contaminants of concern, and the corrective action process.” *Id.* at 357. IEPA confirms that the Board’s proposed rule on amending GMZs would not run afoul of any remediation program’s applicable amendment process. *Id.* at 17.

Section 620.250(d)(2) and (e): “On-Going Adequacy” Submittals and Reviews

IEPA states that “while certain programs may request ongoing adequacy demonstrations relative to corrective action before corrective action is complete,” IEPA is not proposing “such a

requirement of general applicability here.” PC 78 at 17. The Board’s second notice includes no requirement for on-going adequacy demonstrations before the completion of corrective action.

The final two sentences of current Section 620.250(c) introduce the concept of “on-going adequacy” reviews:

The Agency shall review the on-going adequacy of controls and continued management at the site if concentrations of chemical constituents, as specified in Section 620.450(a)(4)(B), remain in groundwater at the site following completion of [corrective] action. The review must take place no less often than every 5 years and the results shall be presented to the Agency in a written report. 35 Ill. Adm. Code 620.250(c).

The current rule, however, does not specify the standard by which IEPA is to assess “the on-going adequacy” of controls and management.

In this rulemaking, the Board had proposed that the standard should be the on-going adequacy of the controls and management “to mitigate impairment caused by the release to groundwater within the GMZ.” Prop. Second Not. Add. A at 26-27 (proposed subsections (d)(2) and (e) of Section 620.250). That standard is tied to what a GMZ is. Current Section 620.250(a) provides in part that a GMZ is a “three dimensional region containing groundwater *being managed to mitigate impairment* caused by the release of contaminants” 35 Ill. Adm. Code 620.250(a) (emphasis added). When Section 620.450(a)(4)(B) applies, “controls and management” are being implemented “to mitigate impairment,” *i.e.*, to address exceedances that remain after corrective action is done. It is in this sense that the Board intended the on-going adequacy of controls and management would be assessed.

The Board asked IEPA to explain whether the purpose of post-corrective action “controls and management” would necessarily be to “mitigate impairment” and, if not, to describe the basis on which IEPA would assess their “on-going adequacy.” PC 78 at 365-66. IEPA responds by program. For its Bureau of Water, IEPA states:

The purpose of the controls . . . are to manipulate groundwater flow in a way that minimizes the spread of the contaminants remaining at the site under Section 620.450(a)(4)(B). If the groundwater flow regime at the site changed significantly from the time the corrective action at the GMZ was completed, for instance due to the installation of a groundwater pumping system nearby, the controls put in place as part of the corrective action process may no longer be effective. Because of the failure of controls in this example, the on-going management provided under a UECA restriction prohibiting consumption of on-site groundwater might no longer be adequate to prevent human contact with the groundwater left in place under Section 620.450(a)(4)(B), because under this scenario the groundwater could now be moving off-site, where it can be consumed. If the controls and management have failed, the criteria of subsections 620.450(a)(4)(B)(i) and (ii) may no longer be met. Meeting the criteria of

subsections (i) and (ii) are the bases on which “the on-going adequacy” must be assessed. *Id.* at 366.

For the leaking UST program, IEPA explains that, “[a]t LUST [leaking UST] sites, institutional controls are in place to protect human health by limiting exposure to the contaminated groundwater after approved corrective action has been completed, not to necessarily mitigate its impairment.” *Id.* For RCRA sites, IEPA states that, “[t]he controls are intended to permanently mitigate impairment by preventing further impact to groundwater by the subject release, as groundwater at these concentrations has been determined to be acceptable with controls in place.” *Id.* Finally, for CERCLA sites, IEPA again notes that Section 620.450(a)(4)(B) would not apply “given that the groundwater would have to be cleaned up to groundwater quality standards for the applicable class of groundwater pursuant to Sections 620.410, 620.420, 620.430, or 620.440.” *Id.*

The word “impairment” in this context would seem to mean exceedances of otherwise applicable Class I, Class II, Class III, or Class IV standards due to a contaminant release. But IEPA’s responses suggest that there might be differing interpretations of what it means to “mitigate” that impairment. Although the Board believes the term “mitigate” is flexible enough to encompass “controls and management” in this situation, the Board, to avoid unnecessary contention, replaces the “mitigate impairment” standard for assessing the on-going adequacy of post-corrective action “controls and management” in subsections (d)(2) and (e) of Section 620.250. Specifically, instead of their on-going adequacy to “mitigate impairment caused by the release to groundwater within the GMZ”, the standard is their on-going adequacy to “maintain compliance with Section 620.450(a)(4)(B)(i) and (ii).” Those provisions specify the conditions under which the exceedance concentrations became the standards within the post-corrective action GMZ:

- i) To the extent practicable, the exceedance has been minimized and beneficial use, as appropriate for the class of groundwater, has been returned; and
- ii) Any threat to public health or the environment has been minimized. 35 Ill. Adm. Code 620.450(a)(4)(B)(i), (ii).

Accordingly, showing the changes from proposed second notice, revised subsections (d)(2) and (e) of Section 620.250 read as follows at second notice:

- 2) The owner or operator must demonstrate that it has completed the corrective action under subsection (c)(2) and concentrations of released chemical constituents, as specified in Section 620.450(a)(4)(B), remain in groundwater within the GMZ. The owner or operator must also demonstrate compliance with Section 620.450(a)(4)(B)(i) and (ii), as well as the on-going adequacy of controls and management to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii) ~~mitigate impairment caused by the~~

~~release to groundwater within the GMZ.~~ If the Agency approves this demonstration, the Agency must issue a written determination to that effect in which the Agency states that the GMZ remains in effect. If the Agency rejects this demonstration, the Agency must, in its written determination, specify the reasons for the rejection, which may include the Agency's basis for amending the GMZ to require additional corrective action under subsection (c)(2).

- e) Within five years after the Agency issues a written determination approving a demonstration under subsection (d)(2), the site owner or operator must submit a report to the Agency demonstrating the on-going adequacy of controls and management to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii) ~~mitigate impairment caused by the release to groundwater within the GMZ.~~ The Agency must review the report and issue a written determination approving or rejecting the demonstration.
- 1) The submittal of these reports by the owner or operator and the corresponding issuance of these written determinations by the Agency must occur at least every five years while the GMZ remains in effect. If the Agency rejects a demonstration, the Agency must, in its written determination, specify the reasons for the rejection, which may include the Agency's basis for amending the GMZ to require additional controls or management under this subsection (e).
 - 2) Any amendment to controls or management under this subsection (e) is subject to the amendment provisions of subsection (c)(2), except that the standard for the Agency's determination is whether the controls or management, as amended, would be adequate to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii) ~~mitigate impairment caused by the release to groundwater within the GMZ.~~

The Board asked IEPA whether, if Section 620.450(a)(4)(B) applies, proposed subsections (d)(2) and (e) of Section 620.250 should provide that, on a site-by-site basis, IEPA's written determination may specify why continuing controls and management are unnecessary (which would also make "on-going adequacy" submittals and reviews unnecessary). *See Prop. Second Not. Add. A at 6-7 (question 21(a)).* IEPA opposes such a change and, in its response, states:

Whether or not controls are needed after the corrective action is completed depends on the class of groundwater for which the corrective action process and GMZ was approved and the site specific hydrogeologic conditions. However, if the groundwater in the GMZ area is subject to Section 620.450(a)(4)(B), the Agency cannot envision a scenario where management, which at a minimum

requires a restriction prohibiting groundwater consumption or requiring treatment prior to consumption would not be needed. PC 78 at 366; *see also id.* at 364 (“It may be possible depending on site conditions that management under Section 620.450(a)(4)(B) is adequate for a site without any controls.”).

The Board concurs and does not revise subsection (d)(2) or (e) in a manner that would allow IEPA to make neither controls nor management applicable on a site-by-site basis. However, as controls might not be used for a given site, the Board modifies the rule text that suggests the on-going adequacy demonstration necessarily involves *both* controls and management. Accordingly, that text reads as follows at second notice: “the on-going adequacy of controls, ~~and~~ management, or both, as applicable.”

The Board also asked IEPA whether, if Section 620.450(a)(4)(B) applies, the rules should be amended to allow for IEPA determinations under Section 620.250(d)(2) and (e) to specify, on a site-by-site basis, that “on-going adequacy” submittals and reviews may take place less frequently than at least every five years. *See* Prop. Second Not. Add. A at 6-7 (question 21(c)). IEPA opposes such a change and, in its response, explains:

The 5-year review time was selected because of its relationship between hydrogeologic conditions and groundwater flow. Class I groundwater is the most valuable of the naturally occurring classes and as defined under Section 620.210(a)(2) and (3), could have relatively high rates of flow under natural conditions and faster flow when effected by groundwater pumping. However, when predicting where groundwater may flow to or from, the greater the distance and time between the points being measured the greater the uncertainty in the prediction. Five years strikes a balance between estimating how far a contaminant may have traveled in groundwater, and the accuracy of the prediction using commonly available hydrogeologic data. Therefore, doing reviews on a 5-year interval reflects the changes that may have occurred within the groundwater flow regime that should be evaluated. Further, in portions of the State where the population is growing rapidly, use of groundwater can change significantly over a 5-year period, and potentially expose people to contaminated water left in place under [Section] 620.450(a)(4)(B). In high growth areas, a longer review period could potentially expose even more people, while in low grow areas there may be little or no change in the groundwater use or flow for many years. Because of the variability in anthropogenically caused change to the groundwater system across the State and hydrogeologic parity of the 5-year time interval, the Agency believes continuing the 5-year review for on-going controls and management that currently exists in Part 620 is appropriate. PC 78 at 368.

The Board appreciates IEPA’s discussion. The Board continues to propose retaining the current rule’s five-year maximum interval.

Finally, the Board had included the “mitigate impairment” language in subsection (d)(1) of Section 620.250. But, on further reflection, the Board finds the language redundant, as the site owner or operator must already demonstrate attainment of the groundwater quality standards

for the applicable class. And, as IEPA notes, once the applicable standards for the class of groundwater have been attained, “no on-going controls or management are needed because the standards of Subpart D have been met, and the groundwater is as ‘clean’ as it was before the release impacted it.” PC 78 at 368. At second notice, the Board therefore deletes the second sentence of subsection (d)(1):

- 1) The owner or operator must demonstrate that it has completed the corrective action under subsection (c)(2) and the applicable standards of Subpart D, as specified in Section 620.450(a)(4)(A), have been attained in groundwater within the GMZ. ~~The owner or operator must also demonstrate that the groundwater within the GMZ no longer requires controls or management to mitigate impairment caused by the release.~~

Section 620.450(a)(3): Groundwater Quality Standards Inapplicable Within GMZ Before Corrective Action Is Complete

IEPA confirms that while GMZs are in effect—and before completion of “corrective action”—at leaking UST sites, RCRA sites, and CERCLA sites, the groundwater quality standards specified in 35 Ill. Adm. Code 620.410, 620.420, 620.430, and 620.440 are inapplicable to the released contaminants within and being addressed by the GMZs. PC 78 at 345. IEPA also confirms that those groundwater quality standards are inapplicable based on, and subject to compliance with, 35 Ill. Adm. Code 620.450(a)(3). *Id.*

Section 620.450(a)(4): Post-Corrective Action Standards

The Board at second notice proposes the following clarifying changes to the proposed second-notice version of Section 620.450(a)(4):

- 4) After the Agency issues a written determination approving the demonstration of the site owner or operator under Section 620.250(d)(1) or (d)(2), the standard for each released chemical constituent is:
 - A) The standard specified in Section 620.410, 620.420, 620.430, or 620.440 if the concentration of the constituent, as determined by groundwater monitoring, is less than or equal to the standard for the applicable ~~appropriate~~ class of groundwater specified in one of those Sections; or
 - B) The concentration of the constituent, as determined by groundwater monitoring, if the concentration exceeds the standard for the otherwise applicable ~~appropriate~~ class of groundwater specified in Section 620.410, 620.420, 620.430, or 620.440 and:
 - i) To the extent practicable, the exceedance has been

minimized and beneficial use, as appropriate for the otherwise applicable class of groundwater, has been returned; and

- ii) Any threat to public health or the environment has been minimized. 35 Ill. Adm. Code 620.450(a)(4)(B)(i), (ii).

The phrase “appropriate class” of groundwater is used only twice in Part 620, both in Section 620.450(a)(4). The related phrasing—“as appropriate for the class”—also appears in Section 620.450(a)(4). The Board is concerned that this language is vague when the groundwater’s designation is either changing to a class or remaining as a GMZ. Groundwater classes are determined based on the *applicable* criteria of Sections 620.410, 620.420, 620.430, and 620.440. And if a GMZ exists, the groundwater within that GMZ does not have a “class.” See 35 Ill. Adm. Code 620.201.

If IEPA issues a determination under Section 620.250(d)(1), the GMZ is terminated; Section 620.450(a)(4)(A) applies (*i.e.*, the groundwater quality standards within the *former* GMZ region become those for the applicable class of groundwater); and the designation for groundwater within that former GMZ region becomes Class I, Class II, Class III, or Class IV under Section 620.201(a) (*i.e.*, no longer designated as a GMZ under Section 620.201(b)).

But if IEPA issues a determination under Section 620.250(d)(2), the GMZ continues to exist; Section 620.450(a)(4)(B) applies (*i.e.*, the groundwater quality standards within the GMZ become the exceedance concentrations); and the groundwater within that GMZ remains designated as a GMZ under Section 620.201(b) (*i.e.*, does not become designated as Class I, Class II, Class III, or Class IV under Section 620.201(a)).

Section 620.250(d)(1) and (f): GMZ Terminations

In responding to Board questions, IEPA describes the documentation involved in terminating GMZs under the RCRA, CERCLA, and leaking UST programs. PC 78 at 349-50, 352 (responses 7(a), 7(b), 8). IEPA’s responses do not indicate any conflict with proposed subsections (d)(1) and (f) of Section 620.250 concerning either the mechanisms for terminating a GMZ or when the termination takes effect.

The Board adds two grounds for GMZ termination at second notice. As IEPA explains, during the post-corrective action “controls and management” phase, GMZ termination may be warranted due to the success or failure of the corrective action process:

[t]he Agency can envision only one scenario under Section 620.450(a)(4)(B) where on-going submittals and reviews are not necessary to assure the adequacy of controls and/or management continue to meet the requirements under subsections (i) and (ii) of Section 620.450(a)(4)(B). This single scenario is if through natural attenuation, during the on-going controls and management period, the Subpart D standards are achieved. Put another way, under a Section

620.450(a)(4)(B) scenario, the “on-going adequacy” submittals and reviews will always be necessary unless the GMZ terminates. The GMZ terminates if (B)(i) and (B)(ii) requirements are not met or Subpart D standards are achieved. PC 78 at 367.

The Board amends Section 620.250(f) to account for these two GMZ-termination scenarios during the post-corrective action “controls and management” phase. Accepting the proposed second-notice version of Section 620.250(f), the Board makes the following revisions at second notice:

- f) Without limiting any other legal authority of the Agency to terminate a GMZ, the Agency may issue a written determination terminating a GMZ based on any of the grounds specified in this subsection (f). The determination must specify the grounds for terminating the GMZ. The termination takes effect when the Agency issues this determination. The Agency may terminate a GMZ if:
- 1) The site owner or operator fails to perform or comply with the schedule for any part of the GMZ, including its corrective action ~~process~~ under subsection (c)(2) or its controls or management under subsection (d)(2) or (e);
 - 2) The Agency rejects a proposal to amend the GMZ under subsection (c)(2) or a demonstration under subsection (d) or (e);
 - 3) The site owner or operator commits fraud or misrepresentation in any submittal under subsection (b), (c)(2), (d), or (e); ~~or~~
 - 4) The site owner or operator submits to the Agency a written request to terminate the GMZ under subsection (c)(2); or
 - 5) The Agency, after issuing a written determination approving a demonstration under subsection (d)(2), determines that
 - i) The applicable standards specified in Section 620.410, 620.420, 620.430, or 620.440 have been attained in groundwater within the GMZ; or
 - ii) Additional corrective action is necessary because controls and management are no longer adequate to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii).

With the GMZ-termination ground under subsection (f)(5)(i), the Subpart D standards for the applicable class (*i.e.*, as specified in Section 620.410, 620.420, 620.430, or 620.440) end up being attained. This is the same outcome as under Section 620.450(a)(4)(A), but it is achieved

later, under Section 620.450(a)(4)(B) (*i.e.*, during the post-corrective action “controls and management” phase).

With the GMZ-termination ground under subsection (f)(5)(ii), more corrective action is necessary because the post-corrective action “controls and management” are no longer adequate to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii). As the Board discussed at proposed second notice, once IEPA has determined that corrective action is complete, “there is no mechanism, either in this proposal or Part 620’s current GMZ rules, that provides for resuming corrective action.” 2d Not. Op. at 38-39. But that does not preclude GMZ termination, which, as discussed in this opinion’s next section, would subject what would then be the *former* GMZ region to the standards for the applicable class of groundwater specified in Section 620.410, 620.420, 620.430, or 620.440.

With GMZ termination under subsection (f)(5)(ii), however, the site owner or operator may start the GMZ cycle over again—submit a new GMZ application to IEPA under Section 620.250(b), proposing additional corrective action. And if IEPA approves the new GMZ, compliance with Section 620.450(a)(3) would render inapplicable the otherwise applicable standards specified in Section 620.410, 620.420, 620.430, or 620.440.

New Section 620.250(g): Standards Following GMZ Termination under Section 620.250(f)

Based on IEPA’s most recent comment (PC 78 at 19), the Board adds a new subsection (g) of Section 620.250 at second notice:

- g) Upon GMZ termination under subsection (f), the groundwater within the three-dimensional region formerly encompassed by the GMZ becomes both designated as one of the four classes of groundwater specified in Section 620.201(a) and subject to the standards for the applicable class of groundwater specified in Section 620.410, 620.420, 620.430, or 620.440.

When a GMZ is terminated under subsection (f), the groundwater within the former GMZ is no longer designated as a GMZ under Section 620.201(b). Instead, because Section 620.201(a) becomes applicable, the groundwater within the former GMZ is designated as Class I, Class II, Class III, or Class IV, as applicable. Importantly, as discussed below, the new text clarifies that the groundwater quality standards corresponding to that class apply to the groundwater within the former GMZ.

When corrective action is complete, if the exceedance concentrations become the standards, neither current Section 620.250(c) nor current Section 620.450(a)(4)(B) expressly addresses whether the GMZ continues to exist during the post-corrective action “controls and management” phase, let alone whether, upon GMZ termination, the exceedance concentrations of Section 620.450(a)(4)(B) would be replaced by Class I, Class II, Class III, or Class IV standards.

The Board agrees with IEPA that, upon GMZ termination, Section 620.201(b) would no longer apply to designate the groundwater as a GMZ; Section 620.201(a) would apply instead, meaning the groundwater would be designated as one of the four classes. PC 78 at 19. But a

question could remain as to which groundwater quality standards apply within what would then be the three-dimensional region that formerly was the GMZ.

If the groundwater that had been the GMZ reverts to a Class I designation, for example, that would make applicable Section 620.410 on groundwater quality standards. But Section 620.410 states that its standards apply “[e]xcept . . . as provided in Section 620.450.” 35 Ill. Adm. Code 620.410(a), (b). Thus, the reader is directed back to Section 620.450, under which, in this scenario, the Section 620.450(a)(4)(B) exceedance concentrations were made applicable.

Subsection (a)(1) of Section 620.450 (“Any chemical constituent in groundwater within a groundwater management zone is subject to this Section.”) might suggest that the Section 620.450(a)(4)(B) exceedance concentrations would no longer apply upon GMZ termination. But it is only because of this rulemaking—with new Section 620.250(d)(2) and revised Section 620.450(a)(1)—that the rules will specify the GMZ remains in effect when Section 620.450(a)(4)(B) becomes applicable. And it is not unheard of for alternative groundwater quality standards to apply after GMZ termination. *See* 35 Ill. Adm. Code 620.450(c) (Site Remediation Program).

New subsection (g) to Section 620.250 eliminates these potential vagaries. It will now be explicit that the Section 620.450(a)(4)(B) exceedance concentrations do not remain applicable upon GMZ termination. Instead, the Class I, Class II, Class III, or Class IV standards apply. As IEPA argues, a policy reason may support this outcome, depending upon the circumstances: “If a GMZ is terminated because any of the conditions of Section 620.250(f)(1) through (f)(3) have been met [failure; rejection; fraud or misrepresentation], the owner or operator *should* no longer benefit from the alternative groundwater quality standards under Section 620.450(a)(4)(B).” PC 78 at 19 (emphasis added). IEPA likens the circumstances to what happens in the Site Remediation Program when a No Further Remediation (NFR) letter is voided—the “standards revert back to Subpart D standards” because the alternative standards apply only while the NFR letter is in effect. *Id.*¹⁴ But, as new subsection (g) of Section 620.250 states, it applies to any GMZ termination under subsection (f), not just to terminations under subsection (f)(1), (f)(2), or (f)(3).

Finally, the Board adds a Board Note to the definition of “corrective action process” to avoid two potential ambiguities. As noted above, the new definition would read as follows:

“Corrective action process” means the procedures and practices that a regulatory agency may perform, require, or otherwise oversee, including corrective action and controls and management, to address a potential or

¹⁴ “While the No Further Remediation Letter is in effect, the otherwise applicable groundwater quality standards from 35 Ill. Adm. Code 620.Subpart D are superseded. The applicable groundwater quality standards for the specified contaminants of concern within the area formerly encompassed by the GMZ are the groundwater objectives achieved as documented in the approved Remedial Action Completion Report.” 35 Ill. Adm. Code 740.530(f); *see also* 35 Ill. Adm Code 620.450(c).

existing violation of any Subpart D standard due to a release of one or more contaminants.

The potential ambiguities concern whether specified activities qualify as procedures or practices to “address a potential or existing violation of any Subpart D standard” within the definition’s meaning.

First, before corrective action is complete, under Section 620.450(a)(3), none of the standards specified in Section 620.410 (Class I), 620.420 (Class II), 620.430 (Class III), or 620.440 (Class IV) apply if the owner or operator performs and complies with the schedule for all parts of the GMZ, as IEPA points out. PC 78 at 16, 345. Second, during the post-corrective action “controls and management” phase, the Section 620.450(a)(4)(B) exceedance concentrations apply as the standards, not the Class I, Class II, Class III, or Class IV standards. The question in these two situations is, what “potential or existing violation of a Subpart D standard” is being addressed so as to come within the definition of “corrective action process”?

The Board and IEPA share the view that, in both situations, an exceedance of an otherwise applicable Class I, Class II, Class III, or Class IV standard constitutes, at a minimum, a “potential” violation of a Subpart D standard. *See* PC 78 at 16. To cut off any argument that a potential or existing violation of a Subpart D standard is not being addressed in either the Section 620.450(a)(3) situation or the Section 620.450(a)(4)(B) situation, the Board adds the following Board Note to the “corrective action process” definition:

BOARD NOTE: This definition includes the performance of activities that, under Section 620.450(a)(3), stay the applicability of otherwise applicable standards specified in Section 620.410, 620.420, 620.430, or 620.440. This definition also includes the implementation of controls and management, under Section 620.250(d)(2) and (e), after the completion of corrective action.

Section 620.201: Groundwater Designations

At proposed second notice, the Board revised Section 620.201 as follows:

All groundwaters of the State are designated as:

- a) One of the following four classes of groundwater under ~~in accordance with~~ Sections 620.210 through 620.240:
 - 1) Class I: Potable Resource Groundwater;
 - 2) Class II: General Resource Groundwater;
 - 3) Class III: Special Resource Groundwater;
 - 4) Class IV: Other Groundwater;

- b) A groundwater management zone under ~~in accordance with~~ Section 620.250; or
- c) A groundwater management zone ~~as defined in 35 Ill. Adm. Code 740.120 and established under 35 Ill. Adm. Code 740.530.~~ See Section 620.250(g)-(i). Prop. Second Not. at 58.

The Board had not intended to add—at the end of subsection (a)(3)—either the disjunctive “or” or the conjunctive “and”. *See* Prop. Second Not. at 58. However, at proposed second notice, the Board inadvertently added the word “and” in its Addendum B to the Board’s opinion and order. *See* Prop. Second Not. Add. B at 17. IEPA comments that the word between subsections (a)(3) and (a)(4) “should be ‘or’ because the groundwater class is one of four options.” PC 78 at 371-72. The Board accepts IEPA’s change to have the word “or” between subsections (a)(3) and (a)(4) as it is clearer there than having either no word (the current rule) or the word “and” (the rule at proposed second notice) .

Also for second notice, the Board amends the citation at the end of subsection (c) to reflect the shift in Section 620.250’s subsections due to adding a new subsection (g) to Section 620.250, as discussed above: “See Section 620.250(~~h~~)-(~~j~~)-(~~g~~)-(~~i~~).”

Application of Preventive Notification and Preventive Response to Class I Groundwater Under Sections 620.210 (a)(4) and (b)

In its proposed second notice, the Board asked IEPA to explain why preventive notification and preventive response do not apply to Class I groundwater under Sections 620.210 (a)(4) and (b). The Board also asked whether Section 620.302(a)(1) should be amended to apply preventive notification and preventive response to Class I groundwater under Sections 620.210 (a)(4) and (b). Prop. Second-Not. at 64-65. IEPA answered by saying that it “does not support the inclusion of subsections (a)(4) and (b) of Section 620.210 in preventive notification and preventive response requirements.” PC 78 at 23.

IEPA explains that its position is based on the Illinois Groundwater Protection Act’s requirements for groundwater quality standards. IEPA argues that the Groundwater Protection Act recognizes that groundwater must be afforded protection, including the application of non-degradation, based on factors like accessibility, susceptibility to contamination, utility of the resource, and methods of detecting and quantifying contaminants. PC 78 at 23. Thus, IEPA argues, Section 620.302(a)(1) applies preventive notification and preventive response to Class I groundwater within minimum setback zone of potable water supply wells (Section 620.210(a)(1)); and geologic materials considered to be valuable future resources, and that can be used for high-capacity wells (Sections 620.210(a)(2) and (a)(3)).

Unlike the geologic materials described under Sections 620.210 (a)(2) and (a)(3), IEPA notes that the geologic materials under Section 620.210(a)(4) are marginally capable of supplying water for a private well. PC 78 at 23. Considering the groundwater immediately proximate to such potable wells are afforded the added protection of preventive notice and

preventive response under subsection (a)(1) and the remaining portion of this lesser quality resource is still protected by Class I groundwater standards, IEPA maintains that Class I groundwater under Section 620.210(a)(4) does not warrant the application of preventive notification and preventive response. *Id.* at 23-24.

IEPA further argues that groundwater under Section 620.210(b) generally includes previously impaired groundwater reclassified by the Board as Class I under Section 620.260 after considering a number of factors relating to groundwater quality, existing and anticipated contamination, technical feasibility, and economic reasonableness of eliminating contamination or maintaining existing water quality and the time period over which contaminants will persist as well as the social and economic benefits of the adjusted standard reclassification. PC 78 at 24. IEPA argues that when the reclassification process is taken as a whole, “a determination by the Board under Section 620.210(b) that an aquifer is potable means that the aquifer can be used for potable purposes in spite of contaminants that might be present.” *Id.* In this regard, IEPA notes that reclassified groundwater is also included under Class II groundwater (agricultural, industrial, or other beneficial use groundwater) and Class IV groundwater (naturally and anthropogenically impacted groundwater). IEPA maintains that preventive notification and preventative response requirements must not be extended to Class I groundwater under Section 620.210(b). *Id.*

Board Discussion and Findings

The Board finds that IEPA has adequately explained the reasons for not including the preventive notification and response to Class I groundwater within marginal geologic materials and groundwater reclassified by the Board as Class I groundwater. Therefore, the Board will not make any additional changes to Section 620.302(a)(1).

The Board Note to Section 620.210

Current Section 620.210, which concerns the classification of Class I: Potable Resource Groundwater, contains the following Board Note:

BOARD NOTE: Any portion of the thickness associated with the geologic materials as described in subsections 620.210(a)(2), (a)(3) or (a)(4) should be designated as Class I: Potable Resource Groundwater if located 10 feet or more below the land surface.

Current subsections (a)(2), (a)(3), and (a)(4)(A) of Section 620.210, referenced in the Board Note, read as follows:

- a) Groundwater located 10 feet or more below the land surface and within:

- 2) Unconsolidated sand, gravel or sand and gravel which is 5 feet or more in thickness and that contains 12 percent or less of fines (i.e., fines which pass through a No. 200 sieve tested according to

ASTM Standard Practice D2487-06, incorporated by reference at Section 620.125);

- 3) Sandstone which is 10 feet or more in thickness, or fractured carbonate which is 15 feet or more in thickness; or
- 4) Any geologic material which is capable of a:
 - A) Sustained groundwater yield, from up to a 12 inch borehole, of 150 gallons per day or more from a thickness of 15 feet or less; or ~~***~~. 35 Ill. Adm. Code 620.210(a)(2), (a)(3), (a)(4) (omitting subsection (a)(4)(B)).

At proposed second notice, the Board clarified and amplified the Board Note. *See Prop. Second Not.* at 61-62. The revised Board Note addressed both the “straddling geologic unit” situation (meaning the specified geologic unit extends from above to beneath the 10-foot depth) and the “straddling groundwater unit” situation (meaning the groundwater itself extends from above to beneath the 10-foot depth):

BOARD NOTE: In determining whether geologic material meets a subsection (a)(2) or (a)(3) thickness minimum or the subsection (a)(4)(A) thickness maximum, the entire thickness of the geologic material is considered, regardless of whether all or only some of the thickness is 10 feet or more below the land surface. For example, groundwater that is 10 feet or more below the land surface and within any geologic material described in subsection (a)(2), (a)(3), or (a)(4)(A) is Any portion of the thickness associated with the geologic materials as described in subsections 620.210(a)(2), (a)(3) or (a)(4) should be designated as Class I: Potable Resource Groundwater if located, even if some of the geologic material’s thickness is within 10 feet of the land surface. But if a sustained groundwater yield, from up to a 12-inch borehole, of at least 150 gallons per day requires a geologic material thickness of greater than 15 feet, then subsection (a)(4)(A) is not met, even if only 15 feet or less of the thickness is 10 feet or more below the land surface. In addition, if groundwater that is 10 feet or more below the land surface—and within any region or geologic material described in subsection (a)—also extends upward to within 10 feet of the land surface, then the groundwater 10 feet or more below the land surface is designated as Class I: Potable Resource Groundwater but the groundwater within 10 feet of the land surface is not. Prop. Second Not. at 62.

In its most recent comment, IEPA agrees with the update to the Board Note but recommends that the Board remove the third sentence as it “is simply an inverse of subsection (a)(4)(A) and may create confusion for readers.” PC 78 at 24.

The Board agrees with IEPA that the third sentence of the proposed Board Note is unnecessary. Subsection (a)(4)(A) of Section 620.210 includes a geologic thickness maximum as a criterion, *i.e.*, “a thickness of 15 feet or less.” The proposed Board Note’s third sentence describes a scenario in which this criterion is not met: “a geologic material thickness of greater than 15 feet . . . even if only 15 feet or less of the thickness is 10 feet or more below the land surface.”

But this scenario is already addressed by the proposed Board Note’s first sentence: “In determining whether geologic material meets . . . the subsection (a)(4)(A) thickness maximum, the entire thickness of the geologic material is considered, regardless of whether all or only some of the thickness is 10 feet or more below the land surface.” In the third sentence, even if less than 15 feet of the geologic material’s thickness is below the 10-foot depth, the entire thickness is considered. And as the entire thickness is greater than 15 feet, the subsection (a)(4)(A) thickness maximum is not met.

Accepting the changes to the Board Note in the proposed second notice, the Board today revises the Board Note as follows for second notice:

BOARD NOTE: In determining whether geologic material meets a subsection (a)(2) or (a)(3) thickness minimum or the subsection (a)(4)(A) thickness maximum, the entire thickness of the geologic material is considered, regardless of whether all or only some of the thickness is 10 feet or more below the land surface. For example, groundwater that is 10 feet or more below the land surface and within any geologic material described in subsection (a)(2), (a)(3), or (a)(4)(A) is designated as Class I: Potable Resource Groundwater, even if some of the geologic material’s thickness is within 10 feet of the land surface. ~~But if a sustained groundwater yield, from up to a 12-inch borehole, of at least 150 gallons per day requires a geologic material thickness of greater than 15 feet, then subsection (a)(4)(A) is not met, even if only 15 feet or less of the thickness is 10 feet or more below the land surface.~~ In addition, if groundwater that is 10 feet or more below the land surface—and within any region or geologic material described in subsection (a)—also extends upward to within 10 feet of the land surface, then the groundwater 10 feet or more below the land surface is designated as Class I: Potable Resource Groundwater but the groundwater within 10 feet of the land surface is not.

Section 620.240 Class IV: Other Groundwater

IEPA identifies a typographical error in one of the Board proposed revisions to subsection (f)(1) of Section 620.240. *See* PC 78 at 371-72. The phrase should read “area or impoundment”, not “area of impoundment”. As IEPA points out, “area or impoundment” is used in the first

sentence of subsection (f), as well as in subsections (f)(1)(A) and (f)(1)(B). *Id.* The Board corrects the error today.

Along with the Board's other proposed clarification in Section 620.240(f)(1) (*see* Prop. Second Not. Add B at 23), the Board revises current subsection (f)(1) as follows for second notice:

- 1) The outermost edge of what would be considered the Class IV groundwater is the closest practicable distance from the area or impoundment, but does not exceed:

Section 620.260: Reclassification of Groundwater by Adjusted Standard

Section 620.260 provides an adjusted standard petition procedure before the Board to reclassify groundwater. At proposed second notice, the Board proposed clarifying amendments to Section 620.260's preamble, subsection (a), and subsection (b). *See* Prop. Second Not. at 74. IEPA states that it "doesn't believe the Board's proposed changes significantly alter the purpose of Section 620.260 and has no issue with the Board's proposed changes." PC 78 at 30.

Based on the Board's first notice and proposed second notice, the following shows the Board's revisions to Section 620.260's current preamble, subsection (a), and subsection (b) for second notice:

Any person may petition the Board for an adjusted standard to reclassify a groundwater under in accordance with the procedures for adjusted standards specified in Section 28.1 of the Act and 35 Ill. Adm. Code 104.Subpart D ~~106.Subpart G~~. In any proceeding to reclassify specific groundwater by adjusted standard, in addition to complying with the requirements of 35 Ill. Adm. Code 104.406 106.Subpart G, and Section 28.1(c) of the Act, the petition must shall, at a minimum, contain information to allow the Board to determine:

- a) The specific groundwater for which reclassification is requested, including ~~but not limited to~~ geographical extent of any aquifers, depth of groundwater, and rate and direction of groundwater flow, and that the specific groundwater exhibits the characteristics of the requested class specified as set forth in Section Sections 620.210(b), 620.220(b), 620.230, or 620.240;
- b) Whether the proposed change or use restriction is necessary for economic or social development, ~~by providing information~~ including information concerning any negative economic or social, the impacts of compliance with the currently applicable groundwater quality standards (e.g., job losses, facility closings) on the regional economy, social benefits like loss of jobs or closing of facilities, as well as an and economic analysis contrasting the costs of meeting the current standards with cost savings due to health and environmental benefits resulting from compliance with

~~those costs likely to be incurred in meeting the standards would be beneficial or necessary;~~

Section 620.302: Applicability of Preventive Notification and Preventive Response Activities

At proposed second notice, the Board revised Section 620.302(a)(1) to include groundwater qualifying as Class I groundwater under new subsection (a)(5) or (a)(6) of Section 620.210 or current subsection (b) of Section 620.210. Prop. Second Not. at 74-75. IEPA agrees with the Board's changes. See PC 78 at 30.

Based on the Board's first notice and proposed second notice, below are the Board's changes to the current text of Section 620.302(a)(1) for second notice:

- a) Preventive notification and preventive response activities, as specified in Sections 620.305 through 620.310, apply ~~applies~~ to:
 - 1) Class I groundwater under Section 620.210(a)(1), (a)(2), ~~or (a)(3)~~, (a)(5), (a)(6), or (b) that is monitored by any person specified ~~the persons listed~~ in subsection (b);

Section 620.440: Groundwater Quality Standards for Class IV: Other Groundwater

As the Board discussed at proposed second notice, IEPA proposed that the Board add a new subsection (e) to Section 620.440 that would exempt underground injection control (UIC) programs, including those administered by USEPA, from the Class IV groundwater standards:

- e) Regardless of the limitations in subsection (a), nothing in this Section shall limit underground injection in accordance with an underground injection control program administered by the Agency under the Act, by the Department of Natural Resources, Office of Mines and Minerals under the Illinois Oil and Gas Act [225 ILCS 725], or by the U.S. EPA under the federal UIC regulations [40 CFR 144]. Prop. Second Not. Op at 67, quoting PC 63 at 24-25.

The Board accepted IEPA's proposed new subsection (e) of Section 620.440, with non-substantive revisions, but requested that IEPA explain how it interprets Section 620.440(a)'s phrase, "Except as provided in subsection . . . (e)," with subsection (e)'s phrase, "Regardless of the limitations in subsection (a)." Prop. Second Not. at 68. The Board observed that the phrases appeared to conflict with one another. *Id.* In response, IEPA agrees that the initial phrase of subsection (e) is unnecessary. See PC 78 at 378.

Also, IEPA suggests another revision to new subsection (e) to name the correct IDNR office administering the UIC program, *i.e.*, IDNR's Office of Oil and Gas Resource Management rather than IDNR's Office of Mines and Minerals. PC 78 at 378. The Board thanks IEPA for identifying the correct office within DNR.

As second notice, the Board makes the following changes to IEPA's originally proposed text of new subsection (e) of Section 620.440:

- e) ~~Regardless of the limitations in subsection (a), nothing~~ Nothing in this Section ~~limits shall limit~~ underground injection in compliance accordance with an underground injection control program administered by the Agency under the Act, by the Department of Natural Resources, Office of Oil and Gas Resource Management ~~Mines and Minerals~~ under the Illinois Oil and Gas Act [225 ILCS 725], or by USEPA ~~the U.S. EPA~~ under the federal UIC regulations [40 CFR 144].

Section 620.450: Alternative Groundwater Quality Standards

Section 620.450 is entitled, "Alternative Groundwater Quality Standards." As their headings indicate, Section 620.450's three subsections address three different subjects: groundwater quality restoration standards concerning Part 620 GMZs (subsection (a)); coal reclamation groundwater quality standards (subsection (b)); and groundwater quality standards for post-GMZ groundwater subject to a No Further Remediation (NFR) letter under the Site Remediation Program (SRP) (subsection (c)).

At first notice, the Board proposed two changes to subsection (b)(1) of Section 620.450:

- b) Coal Reclamation Groundwater Quality Standards
- 1) Any inorganic chemical constituent or pH in groundwater, within an underground coal mine, or within the cumulative impact area of groundwater for which the hydrologic balance has been disturbed from a permitted coal mine area under pursuant to the Surface Coal Mining Land Conservation and Reclamation Act [225 ILCS 720] and 62 Ill. Adm. Code 1700 through 1850, is subject to this subsection (b) Section. First-Not. Add. at 54.

During the first notice comment period, IEPA asked the Board to change "subsection (b)" back to "Section" but provided no explanation for why the Board should do so. PC 63 at 38.

The Board explained that it changed "Section" to "subsection (b)" in subsection (b)(1) to be more precise, *i.e.*, any inorganic chemical constituent or pH in groundwater within either of the specified areas is subject to this subsection (b) on coal reclamation groundwater quality standards. *See* Prop. Second Not. at 68. At proposed second notice, the Board retained the text, "subsection (b)", and asked IEPA to provide the reasons for its proposed change back to the existing text, "Section". *Id.*

In response, IEPA maintains that subsection (b)(1) of Section 620.450 must continue to refer to the "Section" instead of "subsection (b)" because "there are currently groundwater management zones (GMZs) at mines that have not completed reclamation." PC 78 at 28. IEPA states that the reference to "Section" in subsection (b)(1) "ties it back to subsection (a)(1),"

which currently states that “[a]ny chemical constituent in groundwater within a groundwater management zone is subject to this Section.” *Id.*, quoting 35 Ill. Adm. Code 620.450(a)(1) (emphasis by IEPA). According to IEPA, “[t]he tie between subsections (a)(1) and (b)(1) is critical because of what subsection (b)(2) states: *Prior to completion of reclamation at a coal mine, the standards as specified in Sections 620.410(a) and (e), 620.420(a) and (e), 620.430 and 620.440 are not applicable to inorganic constituents and pH.*” PC 78 at 28, quoting 35 Ill. Adm. Code 620.450(b)(2) (emphasis by IEPA). IEPA asserts that if subsection (b)(1) refers only to “subsection (b),” then “coal mines would be exempt from groundwater quality standards before reclamation.” PC 78 at 28.

Based on these observations, IEPA arrives at the following conclusions about enforcement and GMZs at coal mines:

However, because subsection (b)(1) includes the cumulative impact area, which extends beyond the permitted area of a mine, and refers to the applicability of the entire Section 620.450, the Agency has enforced Part 620 at coal mines prior to reclamation based on the threat of water pollution under Section 12(a) of the Act and a threat of exceeding a groundwater standards under Subpart D outside the permitted area. The threat of offsite contamination beyond the coal mine permit boundary has been the basis for the on-site GMZs at coal mines; therefore, the Agency believes it is necessary to refer to the “Section.” PC 78 at 28.

The Board appreciates IEPA’s explanation but is unable to discern its import for the issue at hand: whether subsection (b)(1) of Section 620.450 should say “subsection (b)” or “Section”. IEPA does not articulate how the past enforcement it describes hinges on the word “Section” in subsection (b)(1). Under a plain reading subsections (b)(1) and (b)(2) of Section 620.450, before reclamation at a coal mine is complete, the standards specified in Sections 620.410(a) and (e), 620.420(a) and (e), 620.430, and 620.440 do not apply to inorganic constituents or pH in groundwater within an underground coal mine, or within the cumulative impact area of groundwater for which the hydrologic balance has been disturbed from a permitted coal mine area (surface or underground). The phrase, “Prior to completion of reclamation at a coal mine”, in subsection (b)(2) describes *when* the subsection (b)(2) exclusion applies, but *where* the exclusion applies is described in subsection (b)(1). *See* 35 Ill. Adm. Code 620.450(b)(1), (b)(2).

It is also unclear what retaining the word “Section” in subsection (b)(1) has to do with GMZs. The requirements for establishing a Part 620 GMZ (non-SRP) are specified in Section 620.250(a)-(c). The relief provided by that GMZ is specified in Section 620.450(a).

Perhaps there are additional steps in IEPA’s reasoning that it has left to implication, but they elude the Board. On this second-notice record, the Board continues to propose replacing “Section” with “subsection (b)” in Section 620.450(b)(1).

Section 620.505: Compliance Determination

Current Section 620.505(a) reads as follows:

- a) Compliance with the standards at a site is to be determined as follows: 35 Ill. Adm. Code 620.505(a).

At proposed second notice, the Board observed that this text—“[c]ompliance with standards”—might be made more specific. Prop. Second Not. at 69.

The Board agreed with IEPA that not only the Subpart D numerical standards but also the Subpart C non-degradation provisions need a specified point of compliance. *See* Prop. Second Not. at 69. Therefore, at proposed second notice, the Board revised current Section 620.505(a) as follows:

- a) Compliance with the standards of this Part at a site is to be determined as follows: *Id.*

IEPA concurs that the reference to “standards” is limited to the standards of Part 620 and supports the Board’s added text. PC 78 at 28-29.

The Board also observed IEPA’s comment (PC 63 at 38) that “certain Class II standards in [Section] 620.420(a)(3) have modified points of compliance as do certain coal mine activities under [Section] 620.450(b).” Prop. Second Not. at 69. The Board therefore asked whether IEPA interprets these other provisions as exceptions to Section 620.505(a) and, if so, whether text should be added to Section 620.505(a) that accounts for these exceptions, such as, “Except as this Part provides otherwise,”. *Id.*

IEPA responds that it does interpret the cited provisions to be exceptions to Section 620.505(a). *See* PC 78 at 29. Further, IEPA supports the Board’s proposed addition to Section 620.505(a) of the phrase, “Except as this Part provides otherwise,”. *Id.*

Accordingly, for second notice, the Board revises current Section 620.505(a) as follows:

- a) Except as this Part provides otherwise, compliance ~~Compliance~~ with the standards of this Part at a site is to be determined as follows:

Section 620.605: Issuance of a Health Advisory

At proposed second notice, the Board clarified that the new terms “LLOQ” (“Lower Limit of Quantitation”) and “LCMRL” (“Lowest Concentration Minimum Reporting Level”) in proposed Section 620.605(b)(2) apply to the chemical substance for which a guidance level is being determined under that subsection. *See* Prop. Second Not. at 70. IEPA agrees with the Board’s corresponding changes. *See* PC 78 at 29.

Based on the Board's first notice and proposed second notice, the following shows the Board's revisions to the current text of Section 620.605(b)(2) for second notice:

- 2) If there is no MCLG for the chemical substance, the guidance level is either the Human Threshold Toxicant Advisory Concentration or the Human Nonthreshold Toxicant Advisory Concentration for the ~~such~~ substance as determined in compliance with ~~accordance~~ Appendix A, whichever is less, unless the lower concentration for ~~such substance~~ is less than the substance's lowest appropriate LLOQ PQL specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846 (SW-846), incorporated by reference in at Section 620.125, or the substance's lowest appropriate LCMRL specified in the drinking water methods incorporated by reference in Section 620.125 for the substance.

Section 620.APPENDIX B: Procedures for Determining Hazard Indices for Class I: Potable Resource Groundwater for Mixtures of Similar-Acting Substances

At proposed second notice, the Board revised subsections (f)(1) and (f)(2) of Appendix B to ensure that the standards under Section 620.410 for the one-in-one-million cancer risk concentration, LLOQ, and LCMRL are specifically associated with the "substance" for which the acceptable level is being determined under subsection (d) of Appendix B. *See* Prop. Second Not. at 71. The Board also changed subsection (f)(2) to clarify what constitutes the acceptable level of a substance when the one-in-one-million cancer risk concentration of a substance is less than its LLOQ or LCMRL. *Id.* IEPA agrees with those revisions. *See* PC 78 at 29.

Based on the Board's first notice and proposed second notice, below are the Board's changes to the current text of subsections (f)(1) and (f)(2) of Appendix B for second notice:

- f) For a carcinogenic substance ~~substances that are carcinogens~~, the substance's acceptable level in subsection (d) is:
- 1) The substance's standard specified ~~standards listed~~ in Section 620.410; or
 - 2) If a substance has no standard specified in ~~For those substances for which standards have not been established under~~ Section 620.410, the substance's one-in-one-million cancer risk concentration, unless that the concentration ~~for such substance~~ is less than the substance's lowest appropriate LLOQ PQL specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," EPA Publication No. SW-846, incorporated by reference in at Section 620.125, or the substance's lowest appropriate LCMRL specified in the drinking water methods incorporated by reference in Section 620.125.; If the concentration

~~of for the substance, the is less than its lowest appropriate LLOQ or LCMRL, the guidance level is the lowest appropriate LLOQ or LCMRL PQL shall be the acceptable level.~~

Class II Groundwater and pH within 5 Feet of Land Surface for Fill Areas

In the proposed second notice for comments, the Board asked IEPA whether it would be acceptable to delete the phrase “that is within 5 feet of the land surface” in Section 620.420(d) regarding the Class II pH GWQS. Prop. Second Not. at 66. The Agency states that it has no objection to the deletion of the 5-foot limit in Section 620.420(d) “as it is more protective of Class II groundwater overall.” PC 78 at 24, 377. However, IEPA recommends that the Board make a related change to the existing exemption from subsection 620.420(d) in fill areas under Section 620.420(a)(3)¹⁵ to apply the Class II pH GWQS in fill areas within five feet of the land’s surface. *Id.* IEPA explains that the application of pH GWQS in fill areas within five feet of the land’s surface ensures protection of metal pipes or poles that are within the shallow depths from corrosion as well as limit any exposure from acidic or caustic groundwater to workers involved with shallow excavation work. *Id.*

Board Discussion and Findings

The Board agrees with IEPA on the proposed changes to both Sections 620.420(d) and Section 620.420(a)(3) regarding the Class II pH GWQS. The Board will delete the phrase “that is within 5 feet of the land surface” in Section 620.420(d) so that the Class II pH GWQS applies beyond the depth of 5 feet of the land surface. As noted by IEPA, the Board finds this change will be more protective of Class II groundwater. The Board will also make the change to Section 620.420(a)(3), as recommended by IEPA, to ensure that the Class II pH standard will apply within five feet of the land’s surface in fill areas. This change, the Board finds, will ensure protection of metal objects like pipes and poles as well as shallow excavation workers. The Board proposes the following changes to Section 620.420 (a)(3) and (d) for second notice:

Section 620.420(a)(3), (d)

- 3) The standard for any inorganic chemical constituent specified listed in subsection (a)(2) ~~of this Section, for and~~ barium specified in subsection (a)(1) does not apply within fill material or within the upper 10 feet of parent material under fill material on a site not within the rural property class for which subsections (a)(3)(A) or (a)(3)(B) conditions are met. , and ~~or for.~~ For pH, the standard specified in subsection (d) does not apply to groundwater within fill material below 5 feet of land surface or within the upper 10 feet of parent material under such fill material on a site not within the rural property class for which subsections (a)(3)(A) or (a)(3)(B) conditions are met.;

~~d)e)~~ pH

¹⁵ PC 78 incorrectly refers to Section 620.420(a)(3) as Section 620.250(a)(3).

Except due to natural causes, a pH range of 6.5 - 9.0 units must not be exceeded in Class II groundwater ~~that is within 5 feet of the land surface.~~

Class IV Groundwater Quality Standards for Solid Waste Disposal Facilities under Parts 811 through 817

IEPA's comments following first notice included revisions to the current Section 620.440(b) to accommodate the application of Class IV groundwater quality standards to Part 815 landfills. PC 63 at 23. IEPA proposed the following amendments:

- b) For groundwater within a zone of attenuation as defined in 35 Ill. Adm. Code Part 810 and 35 Ill. Adm. Code 811.320(c), ~~as provided in 35 Ill. Adm. Code 811 and 814~~ the standards specified in Section 620.420 must not be exceeded, except for concentrations of contaminants within leachate released from a permitted unit. *Id.* at 24.

The Board declined to make IEPA's proposed changes. Prop. Second-Not. at 67. Instead, the Board proposed the following revisions to subsection (b):

- b) "For groundwater within a zone of attenuation under as provided in 35 Ill. Adm. Code 811, and 814, or 817, the standards specified in Section 620.420 must not be exceeded. This prohibition does not apply to any, except for concentrations of contaminants within leachate released from a permitted unit." *Id.* at 52.

IEPA now comments that its proposed language changes in the first notice comments did not show the deletion of the phrase "as provided in 35 Ill. Adm. Code 811 and 814" in Section 620.440(b). Further, IEPA clarifies that the revisions to subsection (b) were intended to "address the application of Class IV groundwater quality standards to Part 815 landfills by including the Part 810 definition for 'zone of attenuation' which would apply to all solid waste disposal facilities regulated pursuant to 35 Ill. Adm. Code 811 through 817." PC 78 at 25, 378. IEPA also explains that reference to Section 811.320(c) was included because it specifies how "zones of attenuation" are determined in the context of landfills. *Id.* IEPA proposes the following changes to Section 620.440(b) to address the Board's concerns:

- b) For groundwater within a zone of attenuation as defined in 35 Ill. Adm. Code Part 810.103 and clarified, as applicable, by 35 Ill. Adm. Code 811.320(c) ~~under 35 Ill. Adm. Code Part 811, 814, or 817~~, the standards specified in Section 620.420 must not be exceeded. This prohibition does not apply to any concentrations of contaminants within leachate released from a permitted unit.

Board Discussion and Findings

The Board finds that IEPA's clarification resolves the issue within its initial proposed amendments to Section 620.440(b). The Board also agrees that the inclusion of the reference to the definition of "zone of attenuation" extends the application of Section 620.440(b) to landfills regulated under Parts 811 through 817. Also, the reference to Section 811.320(c) illustrates how

a zone of attenuation is determined for landfills that are subject to the Section. Therefore, the Board accepts IEPA's revisions to subsection (b) with the following clarifying changes at second notice:

- b) For groundwater within a zone of attenuation as defined in 35 Ill. Adm. Code Part 810.103, and clarified, as applicable, by determined in compliance with 35 Ill. Adm. Code 811.320(c) under 35 Ill. Adm. Code Part 811, 814, or 817, the standards specified in Section 620.420 must not be exceeded. This prohibition does not apply to any, except for concentrations of contaminants within leachate released from a permitted unit.

Delineation of Class IV Groundwater Under Section 620.240

In the proposed second notice, the Board clarified that the "200-foot" distance under 620.240(b) must be measured "laterally" from the "edge of" a potential primary or secondary source to avoid any confusion with the delineation of Class IV groundwater. Additionally, the Board made changes to subsections (e)(1) and (f)(1) to clarify that the phrase "outermost edge" is associated with what would be considered as Class IV groundwater under these subsections. Prop. Second-Not. at 62-63. IEPA commented that it does not object to the Board's revisions to Sections 620.420 (b), (e)(1) and (f)(1), but argues that the proposed revisions to clarify the phrase "outermost edge" under subsections (e)(1) and (f)(1) are unnecessary. PC 78 at 22-23. Given that that the "outermost edge" of a potential source is coincident with the Class IV groundwater has not been a point of contention with regulated community, IEPA believes that the proposed revisions may raise additional questions.

Board Discussion and Findings

The Board finds that IEPA's proposed revisions to Sections 620.240 (b), (e)(1) and (f)(1) clarify the intent of the rules without making any substantive changes in how those provisions are implemented. While IEPA says that the proposed changes may raise implementation concerns from regulated community, the Board has not received any comments from the public expressing such concerns. Therefore, the Board will use IEPA's proposed revisions to Section 620.240 at second notice.

CONCLUSION

The Board proposes amendments to Part 620 for second notice. Guided by the General Assembly's directives in the Illinois Groundwater Protection Act, these rules provide meaningful protections for a vital resource to the State – groundwater. These amended rules will also clarify the establishment and termination of groundwater management zones throughout Illinois. As a whole, the amendments will increase the protection of groundwater and human health in the State. Further, the Board finds that its second notice proposal will not have an adverse economic impact on the people of the State of Illinois.

The Board greatly appreciates the thoughtful contributions made to this rulemaking's record by IEPA and all other participants in this proceeding.

ORDER

1. The Board directs its Clerk to submit the proposed rules to JCAR for second notice review. The proposed rules appear in Addendum A to this opinion and order.
2. The Board directs its Clerk to open a sub-docket to receive testimony and evidence on potential economic impacts associated with adding the PFAS standards to Part 620 under the current versions of Part 811 and Part 814.

IT IS SO ORDERED.

I, Don A. Brown, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on January 23, 2025, by a vote of 5-0.



Don A. Brown, Clerk
Illinois Pollution Control Board