February 12, 2016

VIA ELECTRONIC MAIL TO douglas.ashline@dec.ny.gov

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New York State Department
of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, NY 12233-3505

Re: Comments on Draft SPDES General Permits for Concentrated Animal Feeding Operations; Permit Nos. GP-0-16-001 and GP-0-16-002

Dear Mr. Ashline,

On behalf of Citizens Campaign for the Environment, Inc., Earthjustice, Environmental Advocates of New York, Riverkeeper, Inc., Sierra Club Atlantic Chapter, Theodore Gordon Flyfishers, Inc. and Waterkeeper Alliance, Inc., [1] we respectfully submit these comments on the draft Environmental Conservation Law ("ECL") and Clean Water Act ("CWA") General Permits for Concentrated Animal Feeding Operations ("CAFOs"); Permit Nos. GP-0-16-001, GP-0-16-002 ("Draft ECL Permit" and "Draft CWA Permit," respectively), published by the New York State Department of Environmental Conservation ("DEC") in the New York Environmental Notice Bulletin ("ENB") on December 23, 2015 (collectively referred to as "Draft Permits"). A Table of Contents for these comments is set forth immediately below. In each section of our comments, we include recommendations. For your convenience, the recommendations are also listed separately in Appendix A, attached hereto.

[1] Earthjustice submits these comments on behalf of itself and Citizens Campaign for the Environment, Inc., Environmental Advocates of New York, Sierra Club Atlantic Chapter, Theodore Gordon Flyfishers, Inc. and Waterkeeper Alliance, Inc.; Riverkeeper submits these comments on its own behalf.

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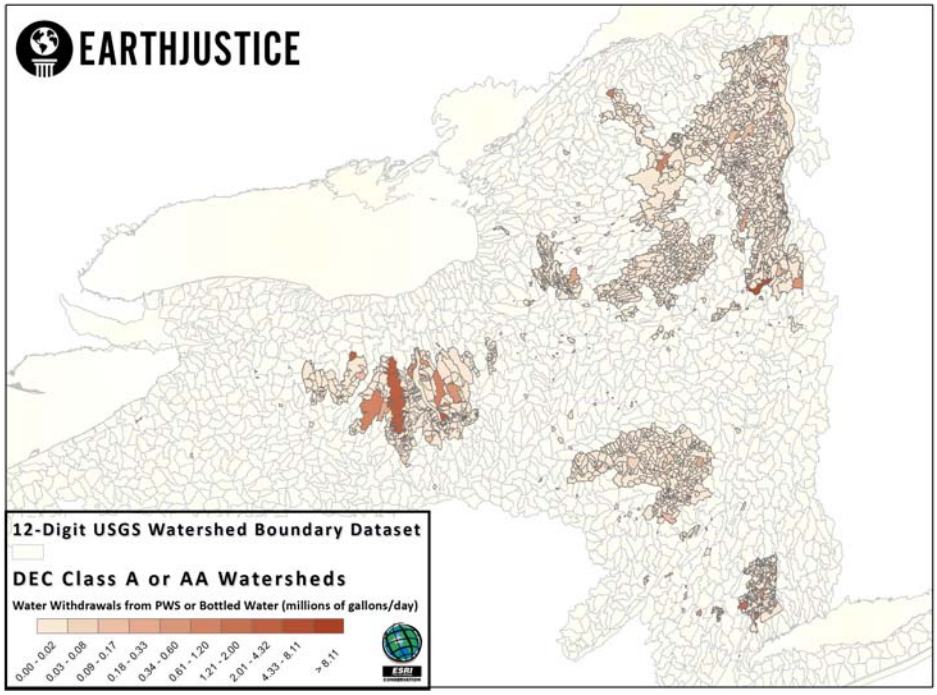
INTRODUCTION

New York is the country's third-largest milk-producing state,[2] with more than 600,000 dairy cows—each of which produces over 100 pounds of waste per day. How this staggering amount of manure is stored and disposed of has serious implications for human health and water quality, especially the drinking water quality for the approximately 10% of the New York population that self-supplies their drinking water.[3] As shown in the map immediately below, large areas of the state are within watersheds designated by DEC as Class A or Class AA, meaning their best use is as drinking water, and indeed, millions of gallons of drinking water is withdrawn from these areas daily.[4]

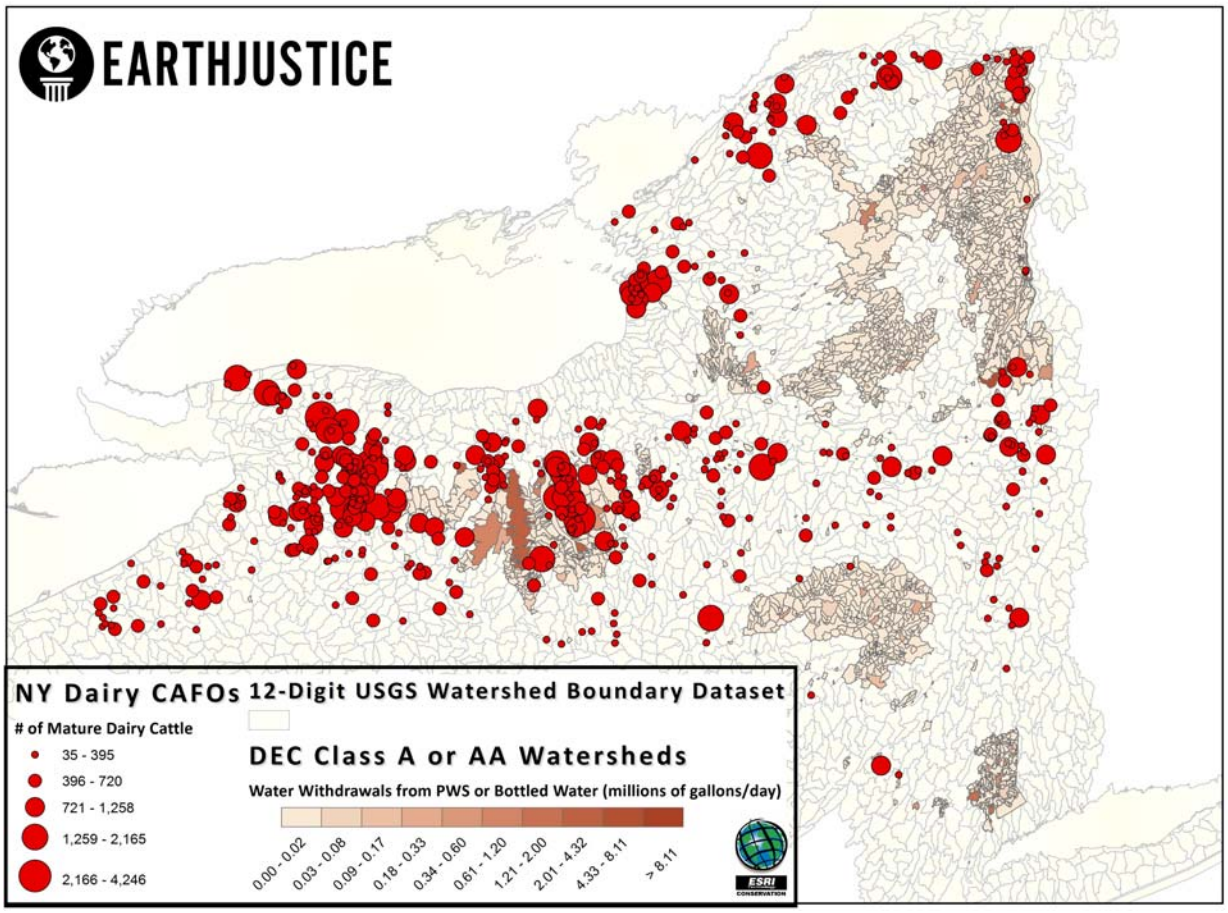


[2] Press Release, Governor Andrew Cuomo, "Governor Cuomo Announces New York State Reclaims Its Status as the Third Highest Producer of Milk in the Nation (Jan. 29, 2014), *available at* https://www.governor.ny.gov/news/governor-cuomo-announces-new-york-state-reclaims-its-status-third-highest-producer-milk-nation.

[3] U.S. Envt'l Prot. Agency, Estimated Nitrate Concentrations in Groundwater Used for Drinking, http://www2.epa.gov/nutrient-policy-data/estimated-nitrate-concentrations-groundwater-used-drinking (last updated Dec. 24, 2015).

[4] Watershed boundary data is from: DEC, Div. of Water, AA and AAs Watersheds- New York State (2008), *available from NYS GIS Clearinghouse at* http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1259. Water withdrawal data is from water withdrawal reports submitted to DEC and GIS data is from: DEC, Div. of Water, Bureau of Water Res. Mgmt., NYS Water Withdrawals – excludes Region 1 (2012), *available at* http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1265. Water withdrawal data was aggregated by watershed in ArcMap 10.2. Base data is from: USGS, Watershed Boundary Dataset, 12-Digit Layer for New York State (2014), *available at* ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/WBD.

As the following map shows, several of these areas are also dense with CAFOs.[5]



In our view, the Draft Permits do not take adequate steps to safeguard the water of New York, including its drinking water, from pollution by CAFO manure and other wastes. This conclusion is based on the serious water contamination incidents New York has experienced over the last few years and the fact that the Draft Permits require only minimal changes to the practices that lead to these incidents.

During the spring of 2014, DEC investigated at least forty incidents of surface water or groundwater contamination resulting from the land application of manure and other

[5] In addition to the sources from footnote 4, this map adds New York CAFO locational data using permit numbers provided to EPA by DEC, which we received from EPA through a public records requested. Coordinates were confirmed at: U.S. Envtl. Prot. Agency, Enforcement and Compliance History Online, https://echo.epa.gov/?redirect=echo (data retrieved July 2015). The map shows CAFOs represented by circles of varying sizes, with larger sizes indicating a greater number of permitted cows.

wastes during the winter months ("winter spreading").[6] In the most dramatic incident, a discharge from a DEC-regulated large CAFO resulted in a plume of liquid manure, measuring 25-by-75 feet, in Lake Owasco, a water body that provides drinking water for 44,000 residents in Central Cayuga County, New York.[7] Also in 2014, DEC fined a Genesee County dairy for contaminating six residential wells with E. coli.[8] Additional winter spreading-related water contamination incidents occurred in the spring of 2015.[9]

These are merely the latest incidents in an ongoing pattern of pollution—discharges from winter spreading have been going on in New York for years. Indeed, in 2013, DEC confirmed that "numerous private and public drinking water wells around the state" – both inside and outside of the karst terrain – "have been impacted by nutrients [from CAFOs] that are not properly managed."[10] DEC also described a 2001 incident in which 48 residential drinking wells were contaminated by CAFO waste and a 2008 incident in which 35 residential drinking wells were contaminated by CAFO waste.[11] Documents received from DEC through public records requests reveal additional incidents of well water contamination in New York from CAFO waste over the last few years. Of course, it is impossible to know how many private wells in New York have high nitrate levels since they are not regularly tested. However, a 1997 study of 419 wells in New York State that provided drinking water to New York farms found detectable levels of nitrates in 95% of

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[6] *See* DEC, Partial Response to FOIL Requests 14-1526 and 14-1658 (July 8, 2014), Summary of New York State Contamination Incidents Related to CAFOs in Winter and Spring of 2014, attached hereto as Appendix B.

[7] Carrie Chantler, *Owasco Lake Advocates Decry Runoff of Manure into Water*, Auburn Citizen, Apr. 6, 2014, http://auburnpub.com/news/local/owasco-lake-advocates-decry-runoff-of-manure-intowater/article_498bd2fe-a7ec-5994-b4ed-005111da2e89.html.

[8] Nancy Sanders, *Dairy Farm Fined for Manure Contamination in March*, WIBV, Oct. 8, 2014, http://wivb.com/2014/10/08/dairy-farm-fined-for-manure-contamination-in-march/; *see also* Steve Orr, *NY, Genesee Officials Probe Water Contamination*, Democrat & Chronicle, Mar. 19, 2014, http://www.democratandchronicle.com/story/news/2014/03/19/genesee-county-water-contamination/6612105/.

[9] *See* Summary of DEC Winter and Spring 2015 pollutant discharge incident investigations, attached hereto as Appendix C. *Cf. N.Y. Farms Warned to Halt Land Applications Due to Melting*, Dairy Herd Management, Mar. 25, 2015, http://www.dairyherd.com/news/ny-farms-warned-halt-land-applications-due-melting.

[10] DEC, Final Environmental Impact Statement, Dairy Industry Rulemaking Proposed Action, State Pollutant Discharge Elimination System (SPDES) Permits for Concentrated Animal Feeding Operations (CAFOs), Land Application & Anaerobic Digesters at 62 (2013) (hereinafter "Dairy FEIS").

[11] *Id*. at 74.

tested wells and levels above 10 milligrams per liter ("mg/L") (the federal drinking water standard)[12] in 15.7% of tested wells.[13]

Other major dairy states have also recently faced the serious consequences of widespread groundwater and well contamination from cow manure. For example, in Kewaunee County, Wisconsin, a virtual state of emergency exists with one-third of drinking water wells failing health standards.[14] In the late 2000s, over 100 wells in Brown County, Wisconsin were contaminated after land application of manure was followed by an early thaw.[15] In addition, in 2013, the U.S. Environmental Protection Agency ("EPA") determined that a cluster of dairies in the Yakima Valley in Washington was contributing to high levels of nitrate contamination in drinking water wells, and subsequently the agency entered into a consent order with the dairies that requires, among other measures, the installation and maintenance of water treatment units for residences, as well as installation and sampling of monitoring wells.[16]

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[12] We note that the 10 mg/l level for nitrate includes very little margin of safety. See Margaret McCasland et al., Cornell University Cooperative Extension, Nitrate: Health Effects in Drinking Water (2012), *available at* http://psep.cce.cornell.edu/facts-slides-self/facts/nit-heef-grw85.aspx ("In the case of nitrate, there may not be a large safety factor. A 1977 report by the National Academy of Science concluded that 'available evidence on the occurrence of methemoglobinemia in infants tends to confirm a value near 10 mg/l nitrate as nitrogen as a maximum no-observed adverse-health-effect level, but there is little margin of safety in this value."). *See also* 10 N.Y.C.R.R. § 5-1.72(12)(ii) (in context of public water systems, "[a] system which detects nitrate at levels above 5 mg/l, but below the MCL must include a short informational statement about the impacts of nitrate on children using language prescribed by the State").

[13] Kitty H. Gelberg et al., *Nitrate Levels in Drinking Water in Rural New York State*, 80 Envt'l Res. Sec. A, 34, 35 (1997) (on file with authors). Nitrate contamination of wells is not unique to New York. A *New York Times* report revealed a town in Wisconsin in which more than 100 wells were polluted by waste from dairies within a few months. Charles Duhigg, *Health Ills Abound as Farm Runoff Fouls Wells*, N.Y. Times, Sept. 17, 2009, http://www.nytimes.com/2009/09/18/us/18dairy.html?pagewanted=1&_r=0.

[14] Lee Bergquist, *One-Third of Wells in Kewaunee County Unsafe for Drinking Water*, Journal Sentinel, Dec. 21, 2015, http://www.jsonline.com/news/statepolitics/one-third-of-wells-in-kewaunee-county-unsafe-for-drinking-water-b99636500z1-363176361.html.

[15] Duhigg, *supra* note 13.

[16] *See* U.S. Envt'l Prot. Agency, EPA-910-R-13-004, Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley, Washington 81-82, (2013), *available at* http://www3.epa.gov/region10/pdf/sites/yakimagw/nitrate_in_water_wells_study_march2013.pdf; Administrative Order on Consent at 7-11, *In re Cow Palace et al.,* EPA Docket No.SDWA-10-2013-0080 (Mar. 9, 2013), *available at* http://www3.epa.gov/region10/pdf/sites/yakimagw/consent_order_yakima_valley_dairies_march2013.pdf; *see also* U.S. Envt'l Prot. Agency, Yakima Dairies Consent Order Update, December 2014, http://www3.epa.gov/region10/pdf/sites/yakimagw/consent_order_progress_update_dec2014.pdf (2014).

Recent incidents of dairy manure-contaminated drinking water in New York, Wisconsin and Washington state should be a wake-up call for DEC. It must take steps to protect New York's water *before* contamination is widespread. As is evident from the tragic situation with lead-contaminated water in Flint, Michigan, once drinking water is polluted, remediation is extremely difficult. To ensure that New York's water is protected, significant modifications must be made to the General Permits, as we describe below.

LEGAL BACKGROUND

The Draft Permits must meet the standards set forth in New York and federal law. First, DEC must "use … all known available and reasonable methods to prevent and control the pollution of the waters of the state of New York"[17] and "safeguard the waters of the state from pollution by preventing any new pollution. . . ."[18] Second, the ECL Permit must ensure that CAFOs are designed, constructed, operated, and maintained so that they will not discharge from the production area;[19] the CWA Permit must ensure that CAFOs are designed, constructed, operated, and maintained so that they will not discharge from the production area except in narrow circumstances.[20] In addition, the Draft Permits must ensure that CAFOs are designed and operated so that any discharge from a land application area, including winter spreading-related discharges, meets all criteria for an agricultural

[17] ECL § 17-0101.

[18] *Id.* § 17-0103. These duties are mandatory. *See id.* § 3-0301 ("[i]t shall be the responsibility of [DEC], in accordance with such existing provisions and limitations as may be elsewhere set forth in law, by and through the commissioner to carry out the environmental policy of the state set forth in section 1-0101 of this chapter."); *In re Frederick Neroni,* DEC File No. R4-2004-0324-38, 2009 WL 2141497, at *8, *9 (N.Y. Dep't of Envtl. Conserv. June 10, 2009). The Administrative Law Judge upheld DEC's order because DEC has the "duty and authority to require the use of all known available and reasonable methods to prevent and control the pollution of the waters of the state of New York.").

[19] DEC, Draft ECL SPDES General Permit for Concentrated Animal Feeding Operations (CAFOs), Permit 0-16-001 § I.B.1 (2015), *available at* http://www.dec.ny.gov/docs/water_pdf/cafogp016001ecl.pdf [hereinafter "Draft ECL Permit"].

[20]DEC, Draft CWA SPDES General Permit for Concentrated Animal Feeding Operations (CAFOs), Permit 0-16-002 § I.B.2 (2015), *available at* http://www.dec.ny.gov/docs/water_pdf/cafogp016002cwa.pdf [hereinafter "Draft CWA Permit"] (noting that discharges are permitted under the CWA when precipitation causes an overflow, which may be discharged provided that 1) "[t]he production area is designed, constructed, operated and maintained to contain all manure, litter, and process wastewater including the runoff and the direct precipitation from a 25-year, 24-hour rainfall event;" and 2) "[t]he production area is operated in accordance with all other additional measures and records required by this general permit"); 40 C.F.R. § 412.31(a) ("Except as provided in paragraphs (a)(1) through (a)(2) of this section, there must be no discharge of manure, litter, or process wastewater pollutants into waters of the U.S. from the production area.").

stormwater discharge.[21] Third, the Draft Permits must ensure that CAFOs will operate in a way that will not cause water quality violations in violation of the Clean Water Act and DEC's antidegradation policy.[22] Finally, like any permit, the Draft Permits must be sufficiently clear to give adequate notice of what they require and to ensure that DEC is not hindered in bringing enforcement actions because the permit terms lack sufficient clarity to hold CAFOs accountable.[23]

I. The Draft Permits Do Not Adequately Protect the Waters of the State from Discharges Resulting from Winter Spreading

The frequency and severity of the recent winter spreading incidents underscore the fact that the *current* CAFO General Permits do not restrict winter manure spreading to the extent needed to meet the legal requirements that CAFOs cannot discharge and cannot degrade water quality. Given this backdrop, we expected that the Draft Permits would ban or significantly limit winter manure spreading since this practice carries a high risk of runoff and discharge while offering little if any agronomic benefits, as discussed in more detail below. Instead, the Draft Permits include only very narrow restrictions on winter manure spreading. Moreover, those provisions are fundamentally unclear, ambiguous and/or

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[21] Discharge to waters of the United States from a CAFO as a result of land application of manure is a discharge from that CAFO subject to NPDES permit requirements, except where it is an agricultural storm water discharge, as provided in 33 U.S.C. 1362(14). 40 C.F.R. § 122.23(e). A precipitation-related discharge of manure that was applied to land in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, as specified in § 122.42(e)(1)(vi)-(ix), is an agricultural stormwater discharge. *Id.*

[22] Memorandum from N.G. Kaul, Dir., DEC Div. of Water, to Reg'l Bureau Eng'rs, Bureau Dirs., & Section Chiefs at 1 (Sept. 9, 1985), *available at* http://www.dec.ny.gov/docs/water_pdf/togs139.pdf (providing guidance for implementing DEC's 1985 antidegradation policy). "Existing uses" are "those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." 40 C.F.R. § 131.3(e). An "existing use" "can be established by demonstrating that: fishing, swimming, or other uses have actually occurred since November 28, 1975; *or* that the water quality is suitable to allow the use to be attained." U.S. Envt'l Prot. Agency, EPA 823-B-94-005a, Water Quality Standards Handbook, Chapter 4: Antidegradation § 4.4 (1994), *available at* http://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter4.pdf (emphasis in original). "In nearly all cases, a waterbody will have achieved some degree of use related to aquatic life, wildlife, and human activity on or after November 28, 1975." Letter from Denise Keehner, Dir., Standards & Health Prot. Div., EPA, to Derek. Smithee, State of Okla., Water Res. Bd. (Sept. 5, 2008), *available at* http://www.epa.gov/sites/production/files/2014-10/documents/existinguse-smithee-letter.pdf.

[23] "The constitutional rules against vagueness relate to two due process issues. The first concerns placing people on notice of unlawful conduct and the second concerns preventing arbitrary and discriminatory enforcement." *In re Geo. A. Robinson & Co.,* DEC File No. B8-0066-84-12 (N.Y. Dep't of Envtl. Conserv. Mar. 2, 1994), *available at* http://www.dec.ny.gov/hearings/11747.html (citing *Grayned v. City of Rockford*, 408 U.S. 104, 108-109 (1972)).

inconsistent. As we understand the Draft Permits, they include the following directives relevant to when CAFOs can spread manure in the winter:

- CAFOs may not spread manure on "fluid-saturated or frozen-saturated soil conditions" or "at a rate that meets or exceeds the [field's] saturation capacity."[24]

- CAFOs may not spread manure on "frozen and/or snow-covered soils" **except**:

  - manure may be "frost-injected or immediately incorporated" when "conditions allow"[25]

  - manure may be applied to frozen and/or snow covered soils using mechanical surface applications when "necessary" [26]

In effect, the only scenarios in which winter spreading is actually prohibited in New York is when the soil is "fluid-saturated" or "frozen-saturated." When soils are frozen and/or snow covered, but not "liquid-saturated" or "frozen-saturated," spreading is permitted "when conditions allow" or "when necessary."

The Draft Permits also suggest that CAFOs should limit winter spreading in "adverse spreading conditions," which the Permits define as when the soil is "frozen (4"+), snow covered (4"+), or encumbered by significant surface icing."[27] Under the Draft Permits, during adverse spreading conditions, manure should be applied in accordance with Karl Czymmek. et al., Cornell Univ., Animal Science Publication Series No. 245, Revised Winter and Wet Weather Manure Spreading Guidelines to Reduce Water Contamination Risk (2015) (hereinafter "Adverse Weather Spreading Guidelines").[28]

As explained below, these provisions will continue to unlawfully allow pollutant discharges or water quality violations, are far less protective than winter spreading controls adopted by other states, are fundamentally unclear, and do not give adequate guidance to CAFO operators or enforcement officers.

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[24] Draft ECL Permit § III.A.8; Draft CWA Permit § III.A.7.

[25] Natural Res. Conserv. Serv. New York, Conservation Practice Standard, Nutrient Mgmt. Code 590 at 5 (2013), *available at* http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_027006.pdf (hereinafter *2013 NRCS NY590 Standard*).

[26] Draft ECL Permit § III.A.8.b; Draft CWA Permit § III.A.7.b (incorporating 2013 NRCS NY590 Standard).

[27] Draft ECL Permit at app. A.D; Draft CWA Permit at app. A.D.

[28] Draft ECL Permit at § III.A.8.b; Draft CWA Permit at § III.A.7.b.

A. The Draft Permits Do Not Establish Standards Designed to Prevent Discharges from CAFOs Resulting from Winter Spreading

The Draft Permits do not meet the requirements of the ECL because they do not require CAFOs to take steps that leading authorities (including within DEC and the New York Department of Agriculture and Markets ("DAM")) consider necessary to avoid water contamination from winter manure spreading.

1. The Adverse Weather Spreading Guidelines Acknowledge That There Will Continue to Be Winter Spreading Discharges in New York

The Adverse Weather Spreading Guidelines acknowledge that winter spreading of manure creates a high risk of nutrient migration in a variety of common New York winter scenarios.[29] For this reason, the Spreading Guidelines recommend practices to "reduce the risk of significant runoff and water quality violations."[30] The Guidelines acknowledge that even complete adherence to the recommendations in that document "cannot prevent all runoff."[31] Yet, the Draft Permits do not even *mandate* compliance with the Spreading Guidelines' less-than-fully protective recommendations (*see* section I.B, below). In other words, the Draft Permits allow manure spreading practices that Cornell, DEC and DAM *expect* will lead to future incidents of pollution from manure runoff. This is not consistent with the ECL, especially because, as described below, there are "known available and reasonable methods to prevent and control the pollution of the waters of the state of New York"[32] that are not included in the Draft Permits.

2. EPA's Consulting Firm Has Warned that Winter Spreading of Manure Lacks Agronomic Benefit, Will Likely Impact Water Quality and Cannot Be Effectively Controlled with BMPs

The conclusion in the Adverse Weather Spreading Guidelines that even complete adherence to their recommendations will not prevent all runoff from winter manure spreading is consistent with recent preliminary guidance from EPA's consulting firm Tetra Tech. Tetra Tech conducted a comprehensive review of literature regarding winter manure spreading in order to develop guidance for EPA on practices to mitigate the risks of this practice. Tetra Tech prepared a presentation based on its literature review which was given

[29] Adverse Weather Spreading Guidelines at 3-4.

[30] *Id.* at 8.

[31] *Id.*

[32] ECL § 17-0101.

to the Cayuga County Water Quality Management Association after the major winter spreading discharge into Lake Owasco in 2014.[33] Tetra Tech advises:

- "The comprehensive literature review found no published research to support agronomic factors as a basis for recommending winter manure application."[34]

- "Frozen soils decrease infiltration and increase runoff."[35] "Most (not all) frozen soils [are] virtually impervious," and there is a "56% increase in runoff volume from frozen soils."[36]

- "Frozen soils and snowpack increase the risk of runoff from winter-applied manure," further questioning the prudence of winter spreading at a time when "[d]ormant or absent crops provide no nutrient uptake," when "[i]ncorporation [is] difficult or impossible," and in light of the fact that "[f]reezing does not reliably kill all pathogens."[37]

- "The magnitude of nutrient losses from winter-applied manure appears to be controlled by a large number of factors whose relative influence is poorly understood. . . ."[38]

Tetra Tech advised that when manure is spread in the winter it is "extremely challenging" to avoid runoff and water quality impacts.[39] Tetra Tech also gave little credence to the idea that Best Management Practices ("BMPs") reduce runoff rates, noting that "[t]here is currently no body of standards and specifications supported by research data for BMPs or other management measures to specifically mitigate potential impacts of winter manure application."[40] Due to the "[l]ack of agronomic benefit, [d]ocumented water quality impacts,

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[33] *See* Carrie Chantler, *County Water Quality Officials Continue Discussion About Winter Manure Spreading,* Auburn Citizen, Dec. 8, 2014, http://auburnpub.com/news/local/county-water-qualityofficials-continue-discussion-about-winter-manure-spreading/article_13f6dde6-504d-5381-8c35-c48745c859d1.html.

[34] PowerPoint Presentation prepared by Tetra Tech, *Winter Manure Application and Water Quality; Overview of the Literature* at slide 7 (Oct. 30, 2014) [hereinafter *Tetra Tech PowerPoint*], *available at* http://auburnpub.com/winter-manure-application-draft-white-paper-presentation/pdf_fef9f5a8-8a50-53b9-a377-eaf2a11a9362.html *(*attached hereto as Appendix D).

[35] *Id.* at slide 8.

[36] *Id.*

[37] *Id.* at slide 11.

[38] *Id.* at slide 13.

[39] *Id.* at slide 14.

[40] *Id.* at slide 18. Tetra Tech specifically noted that BMPs such as "[v]egetation-based practices are largely dormant and less effective during critical mid-winter thaw and spring runoff periods when most nutrient loss occurs." *Id.* at slide 19.

and [a]bsence of effective BMPs," Tetra Tech concluded with the strong directive: "avoid winter manure application."[41]

By allowing winter spreading in any winter condition other than when the soil is "frozen-saturated" or "fluid-saturated," DEC disregards Tetra Tech's strong findings and instead condones a practice that puts the waters of the state at risk.

- Recommendation: The Draft Permits must include additional limits on the practice of winter manure spreading. At a minimum, as discussed in more detail below, the definition of "adverse spreading conditions" must be expanded to make clear that all of the "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided" spreading scenarios identified in the Adverse Weather Spreading Guidelines, not just spreading on liquid- or frozen-saturated soil, are prohibited during "adverse spreading conditions." Alternatively, as discussed below, DEC could delete the definition of "adverse spreading conditions" and revise the Draft Permits to prohibit all practices that the Spreading Guidelines characterize as "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided."

- Recommendation: As the Adverse Weather Spreading Guidelines state: "Operations that use last resort fields in emergency conditions every year need more storage."[42] We urge DEC to alert dairy operators that they must develop and implement plans to install sufficient storage for liquid and solid manure within 5 years because the next version of the ECL permit will be more restrictive in terms of when winter spreading is permitted.

B. The References to the Adverse Weather Spreading Guidelines Result in Significant Ambiguity in the Draft Permits

An additional problem with the treatment of winter manure spreading in the Draft Permits is the unclear intersection between the Draft Permits and the Adverse Weather Spreading Guidelines. The Draft Permits state that "during periods which meet adverse spreading conditions" manure applications "must be made in accordance with the 2015 Revised Cornell Guide, 'Supplemental Manure Spreading Guidelines to Reduce Water

[41] *Id.* at slide 26.

[42] Adverse Weather Spreading Guidelines at 1.

Contamination Risk During Adverse Weather Conditions.'"[43] This statement is unclear in myriad ways.[44]

First, it is unclear why the Draft Permits strictly limit the term "adverse spreading conditions" to circumstances when "soil is frozen (4"+), snow covered (4"+), or encumbered by significant icing." This definition is inconsistent with the Adverse Weather Spreading Guidelines, which identify a variety of high-risk manure-spreading scenarios that would not necessarily be captured within the proposed definition of "adverse spreading conditions." These include "concrete frost" (if that term has a different meaning from frozen-saturated, (*see* section I.D, below)); ice layers on soil of .5 inches or more (if that is different than "significant icing"); and applications made "late in the season just before snowmelt," even if the snow is less than 4 inches.[45] Moreover, the Spreading Guidelines include adverse "wet weather" conditions in addition to winter conditions, but the definition of "adverse spreading conditions" does not include high risk scenarios involving significant rainfall or saturation due to thawing snow and ice.

- Recommendation: The term "adverse spreading conditions" should be expanded to encompass *all* of the manure spreading scenarios the Adverse Weather Spreading Guidelines identify as "should be avoided," "very risky," "high risk," or "higher risk." Alternatively, as discussed below, DEC could delete the definition of "adverse spreading conditions" and revise the Permits to prohibit all practices that the Spreading Guidelines characterize as "should-be-avoided," "very risky," "risky," "high risk and "higher risk."

Second, it is unclear what it means to apply manure "in accordance with" the Adverse Weather Spreading Guidelines since the document is written in informational, guideline-like, non-mandatory terms. Could a CAFO be found in violation of the Permit for engaging in a practice that the Spreading Guidelines characterizes as "should-be-avoided"? This fundamental ambiguity in the Draft Permits must be clarified by stating definitively that practices that the Spreading Guidelines characterize as "should be avoided" "very risky," or "high risk" are prohibited under the CAFO General Permits.

- Recommendation: Section III.8.b of the ECL Permit and Section III.7.b of the CWA Permit should be redrafted to state:

[43] Draft ECL Permit § III.A.8.b; Draft CWA Permit § III.A.7.b.

[44] We note that the name of the Cornell document in the Draft Permits does not match the name of the document that we believe DEC intended to reference: Karl Czymmek. et al., Cornell Univ., Animal Science Publication Series No. 245, Revised Winter and Wet Weather Manure Spreading Guidelines to Reduce Water Contamination Risk , (2015), *available at* http://nmsp.cals.cornell.edu/publications/files/WinterSpreadingGuidelines2015.pdf).

[45] Adverse Weather Spreading Guidelines at 3-4.

Applications of manure, litter, food processing waste, digestate, and process wastewater during **winter and wet weather** periods ~~which meet *adverse spreading conditions* as defined in Appendix A,~~ must be made in accordance with the 2015 Revised Cornell Guide, "Supplemental Manure Spreading Guidelines to Reduce Water Contamination Risk During Adverse Weather Conditions," **meaning that all manure spreading practices identified in the Spreading Guidelines as "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided" are prohibited. The CNMP must reflect these restrictions.**

. ~~and the CNMP must:~~
~~(1) include specific winter application procedures consistent with these guidelines as well as the NRCS NY 590 Standard; and~~
~~(2) identify specific fields to be reserved for adverse weather applications~~

Alternatively, the Draft Permit should list all "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided" that are prohibited, specifically:

- manure applications of 10,000 gallons/acre upon soil that is close to saturation and/or there is a dense six-inch snow layer (3 inches of water per foot) (page 3);
- manure applications on "concrete frost"[46] (page 4);
- manure applications when there is an ice layer approximately .5 inches or more in thickness and largely unbroken (page 4);
- "large"[47] manure applications late in the season just before snowmelt (page 4);
- during high risk weather conditions, manure application at the base of concave slopes or where less permeable layers are close to the surface (page 5);
- manure application in fields with flowing tiles without monitoring for evidence of contamination (page 5);

[46] Concrete frost should be defined as soil that is saturated when it freezes and creates a solid, impermeable layer. Concrete frost, especially when a few inches or more in thickness, prevents all infiltration so if manure is applied it is at substantial risk for runoff.

[47] "Large" manure applications, for the sake of spreading on snowpack, should be defined as 6,000 gallons per acre.

- manure application to fields that are both close to surface water and the surface slope is oriented toward the waterbody (page 6);
- manure applied without incorporation in portions of fields that drain to wells or karst features during frozen, snow covered, or saturated conditions (page 6);
- manure applications on wet soils when 0.25 to 0.5 inches of precipitation is forecasted within the next 48 hours (page 6);
- manure applications on all soils when 1 or more inches of precipitation is forecasted within the next 48 hours (page 6);
- manure applications on snowpack when the weather forecast indicates a warm front of above freezing temperatures within the next few days, and especially if the overnight forecast lows are also to remain above freezing (page 6).

Third, the Draft Permits are hard to understand because of inconsistent use of language between the Draft Permits and the Adverse Weather Spreading Guidelines. For example:

- The Draft Permits prohibit winter manure application when the soil is fluid- or frozen-saturated, but the Adverse Weather Spreading Guidelines do not use these terms. The Spreading Guidelines state that "soil that is saturated when it freezes creates a solid, impermeable layer called 'concrete frost.'" Is concrete frost the same as frozen-saturated? The Spreading Guidelines should clarify what frozen-saturated means and how it relates to "concrete frost."[48]
- DEC's Draft Permits do not prohibit winter spreading based on ice layers, snow density or imminent thaw, even though the Adverse Weather Spreading Guidelines identify these as primary reasons for manure runoff after winter spreading.
- The Draft Permits limit single manure application rates per field to 20,000 gallons per acre, but the Adverse Weather Spreading Guidelines uses 10,000 gallons/acre in its discussion of application rates.[49]

[48] Adverse Weather Spreading Guidelines at 3-4.

[49] Draft ECL Permit § III.A.8.a; Draft CWA Permit § III.A.7.a; Adverse Weather Spreading Guidelines at 3.

- The Draft Permits bar application to saturated soils or application that causes soil to meet or exceed saturation capacity, but the Adverse Weather Spreading Guidelines examine soils *close to* saturation when assessing risk.[50]
- The Draft Permits indicate that the definition of "adverse spreading conditions" is based on scenarios identified in the Adverse Weather Spreading Guidelines, but the definition is limited to "winter conditions," although the Spreading Guidelines also address "wet conditions."

➢ Recommendation: DEC should ensure consistent use of terms and rates in the Draft Permits and Spreading Guidelines. All spreading scenarios and practices that the Spreading Guidelines identify as risky, not just spreading on concrete frost, should be prohibited in the Permits.

Fourth, we are confused about how the "Wet Weather Standard Operating Procedures" ("WWSOPs") (a term that inexplicably is defined in Footnote 6, rather than in the Appendix A definition section) required by Section III.5 of the ECL Permit differ from the procedures required by Section III.8.b of the ECL Permit covering applications during "adverse weather applications." During "adverse weather conditions," spreading must be made in accordance with the Adverse Weather Spreading Guidelines, and those Guidelines cover "wet weather" spreading as well as winter spreading.

➢ Recommendation: To prevent confusion, Section III.5 should reference the Spreading Guidelines and specify that the WWSOPs that are included in all Comprehensive Nutrient Management Plans ("CNMPs") must prohibit spreading in all circumstances that the Spreading Guidelines identify as risky scenarios. In addition, the definition of WWSOPs should be moved into the Definitions section of the Permits.

C. The Draft Permits Do Not Meet the "All Known Available and Reasonable Methods" Standard for Preventing Water Pollution from Winter Spreading

The Draft Permits do not include "all known available and reasonable methods to prevent and control the pollution of the waters of the state of New York."[51] Several states with similar weather patterns and geology have adopted measures that will more effectively

[50] Draft ECL Permit § III.A.8; Draft CWA Permit § III.A.7; Adverse Weather Spreading Guidelines at 3.

[51] ECL § 17-0101.

control runoff due to winter spreading than New York proposes in the Draft Permits.[52] For example, under Maine law, "a person may not spread manure on agricultural fields between December 1st of a calendar year and March 15th of the following calendar year" unless the commissioner grants a variance.[53] To facilitate this prohibition, Maine requires CAFOs to provide for manure storage "for a minimum of 180 days, using containment structure(s) and/or stacking site(s)."[54] Similarly, Wisconsin regulations denote February 1 through March 31 as a "high-risk runoff period" and prohibit surface application liquid manure unless there is a department- approved emergency.[55] Surface application of solid manure is also prohibited during this time if the ground is frozen or there is one or more inches of snow present.[56]

Other states have also implemented measures to amplify voluntary decisions to limit winter spreading, such as expressly recognizing on the face of CAFO permits the inherent risk of winter spreading. Michigan's general NPDES permit for CAFOs concludes that "there are no practices that can ensure the runoff from fields with surface-applied waste on frozen or snow-covered ground will not be polluted."[57] Ohio's general NPDES permit for CAFOs notes that "every attempt shall be made by the permittee to avoid land application during the frozen or snow covered ground conditions because of lack of agronomic benefit and high risk of pollution of surface waters."[58] Express recognition of winter spreading's risks on the face of general CAFO permits is a simple approach to elevating awareness of the potential dangers of this practice. Because this approach has been used by other states and it presents no burden to either DEC or regulated entities, it is undeniably a "known available and reasonable method[] to prevent and control the pollution of the waters of the state of New York."[59]

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[52] *See* Appendix to White Paper prepared by Tetra Tech for U.S. EPA (2014) (received in response to FOIA request No. EPA-HQ-2015-010876 and on file with author).

[53] Me. Rev. Stat. tit. 7, § 4207(1).

[54] 01-001 Me. Code R. ch. 565 **§** 6(1)(B)(4).

[55] Wis. Admin. Code NR **§** 243.14(7)(b)(3)(c).

[56] *Id.* 243.14(6)(b)(3)(c).

[57] State of Mich., Dep't of Natural Res. and Envtl. Qual., National Pollutant Discharge Elimination System, Wastewater Discharge General Permit: Concentrated Animal Feeding Operations, Permit No. MIG010000 pt. III (2015), *available at* http://www.michigan.gov/documents/deq/wrd-npdes-cafo-GP_2015_488595_7.pdf.

[58] Ohio Envtl. Prot. Agency, Authorization to Discharge Under the National Pollutant Discharge Elimination System Concentrated Animal Feed Operation Standard, pt. VII(B)(5), *available at* http://epa.ohio.gov/Portals/35/cafo/CAFO_NPDES_PARTVII.pdf.

[59] ECL § 17-0101.

- Recommendation: Even if DEC does not adopt a date-based ban as other states have done, it must take additional steps to limit winter spreading of manure in New York. At a minimum, it must adopt measures recommended elsewhere in these comments, such as prohibiting practices identified as "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided" in the Spreading Guidelines. DEC should also communicate winter spreading's inherent risks on the face of the final ECL and CWA permits.

Fifth, the Draft Permits are difficult to understand because multiple documents are incorporated into the terms of the permit by reference, but the relevant provisions of the incorporated documents are not laid out. This is especially true for provisions related to winter spreading, but is true throughout these documents. The Draft Permits reference and incorporate: various Natural Resources Conservation Service ("NRCS") standards, the Adverse Weather Spreading Guidelines, Cornell University Nutrient Guidelines, New York Phosphorus Runoff Index (NY P Index), New York Nitrate Leaching Index (NY NLI), Revised Universal Soil Loss Equation, Version 2 (RUSLE2), and so on. The problem is exacerbated by the fact that the incorporated documents reference additional documents in a virtual "Russian nesting doll" of regulations.[60] This raises basic due process concerns. "Vague laws offend several important values. First, because we assume that man is free to steer between lawful and unlawful conduct, we insist that laws give the person of ordinary intelligence a reasonable opportunity to know what is prohibited, so that he may act accordingly. Vague laws may trap the innocent by not providing fair warning."[61] The Draft Permits do not on their face provide a person of ordinary intelligence clear notice of what the Draft Permits allow or require.

- Recommendation: The Draft Permits must clearly identify all external standards that CAFO owners and operators must comply with as a term of the Permit, including any external standards within referenced external standards that are incorporated into the Permits. DEC should include all referenced (and internally referenced) standards on its website and the Draft

[60] For example, what if a CAFO operator wanted to determine the requirements for constructing a waste lagoon? On their face, the Draft Permits say nothing about construction requirements for new waste storage facilities. To understand what is required, a CAFO operator would have to know to look to the NRCS NY313 "Waste Storage Facility" standard, which is listed in the Draft Permits. NRCS NY313, in turn, states that liners "must meet or exceed the criteria in Pond Sealing or Lining (521)." The NRCS Pond Sealing or Lining (521) standard, however, is not referenced in the Draft Permits; moreover, there are in fact 4 separate NRCS 521 standards and they are not all easily located through simple Google searches. It is thus unclear whether DEC expects NY CAFOs to conform to any or all of the NRCS 521 standards.

[61] *Vill. of Hoffman Estates v. Flipside, Hoffman Estates, Inc.*, 455 U.S. 489, 498 (1982), quoting *Grayned*, 408 U.S. at 108–109.

Permits should include a link to the page of the DEC website where those standards can be found through the full term of the Permits.

D. Many of the Terms Related to Manure Application Are Vague and Undefined, and Fail to Provide Clear Direction to CAFOs or DEC's Enforcement Staff

Further confusion about the meaning of the Draft Permits arises because key terms in the Draft Permits are inherently subjective, yet undefined in the Draft Permits' definition section. These include:

1. "saturated" and "frozen-saturated"

"Saturation" is a key concept in the Draft Permits. Application of manure is not allowed on "saturated soils (either fluid-saturated or frozen-saturated soil conditions) or at a rate that meets or exceeds the saturation capacity of that field."[62] However, the Draft Permits do not define what constitutes saturated soil or provide guidance on how to ascertain the saturation capacity of a field. The NRCS NY590 Standard prohibits surface application of manure "when soils are saturated . . . as indicated by visible water on the soil surface with the potential to run off."[63] It is unclear whether the NRCS NY590 Standard's metric for saturation governs the use of "saturated" throughout the Draft Permits. If so, we find that troubling. Defining "saturated" as moisture content that results in visible water on the soil surface with the potential to run off is problematic: it establishes an imprecise metric open to visual interpretation; it may represent saturation in excess of 100% of soil pore volume; and it does not provide a protective buffer to ensure that high-risk-of-runoff scenarios are never approached.[64] Indeed, the Adverse Weather Spreading Guidelines note that "[r]unoff occurs when moisture conditions exceed field capacity. Excess water starts to saturate the soil and this can lead to direct surface runoff or redistribution within the soil profile as interflow that emerges elsewhere downslope in the landscape."[65]

It is critical that DEC clearly define "saturated" and "saturation capacity" in order to create a standard that can be applied with certainty by stakeholders and to ensure that the Draft Permits are in accord with ECL's mandate.

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[62] Draft ECL Permit § III.A.8; Draft CWA Permit § III.A.7.

[63] 2013 NRCS NY590 Standard at 5.

[64] Indeed, even saturation below 100% of soil pore volume but above "field capacity" -- the amount of water remaining in the soil a few days after wetting and after free drainage has ceased -- may still pose the threat of runoff. Cornell Univ., Northeast Region Certified Crop Adviser (NRCCA) Study Resources, Competency Area 2: Soil hydrology AEM, http://nrcca.cals.cornell.edu/soil/CA2/CA0212.1-3.php (last visited Feb. 10, 2016).

[65] Adverse Weather Spreading Guidelines at 3.

- Recommendation: The ideal standard would define "saturated" as moisture content at or in excess of field capacity (i.e., moisture content after free drainage has ceased) to prevent nutrients loss to either surface water or groundwater. This is consistent with the Adverse Weather Spreading Guidelines' finding that moisture above field capacity can lead to runoff, as noted above.[66] However, DEC could also adopt a definition similar to the definitions adopted other states. For example, both Illinois and Wisconsin define "saturated" as "[s]oils in which pore spaces are occupied by liquid to the extent that additional inputs of water or liquid wastes cannot infiltrate into the soil."[67] While this represents saturation at 100% of soil pore volume, this is a definition that is less likely to lead to surface runoff than the NRCS NY590 Standard's metric for saturated soils, which represents saturation in excess of 100% soil pore volume.

- Recommendation: The Draft Permits should also define "frozen-saturated soil." DEC could adopt a definition similar to Illinois, which defines "frozen ground" as "[s]oil that is frozen anywhere between the first 1/2 inch to 8 inches of soil as measured from the ground surface."[68] This definition is consistent with the Adverse Weather Spreading Guidelines, which notes that concrete frost may exist at a shallow level below unfrozen topsoil, and manure applications on concrete frost should be avoided.[69]

2. "significant surface icing"

"Adverse spreading conditions" are defined as when "soil is frozen (4"+), snow covered (4"+), or encumbered by significant surface icing,"[70] but it is not clear what qualifies surface icing as "significant." The Adverse Weather Spreading Guidelines notes that "when an ice layer is approximately 0.5 inch or more in thickness, and largely unbroken, it will prevent manure from contacting the soil, and present high risk for runoff;"[71] however, the Draft Permits do not expressly adopt this interpretation. The Draft

[66] *See id*.

[67] Ill. Admin. Code tit. 35, § 501.361; *see also* Wis. Admin. Code ATCP ch. 51, app. B (defining saturation as "[s]oils where all pore spaces are occupied by water and where any additional inputs of water or liquid wastes cannot infiltrate into the soil.").

[68] Ill. Admin. Code tit. 35, § 501.252.

[69] *See* Adverse Weather Spreading Guidelines at 3-4.

[70] Draft ECL Permit at app. A.D; Draft CWA Permit at app. A.D.

[71] Adverse Weather Spreading Guidelines at 4.

Permits must define what constitutes "significant surface icing" so that CAFOs can know if they are operating in accordance with the Draft Permits.

- Recommendation: The ideal standard would define "significant surface icing" as any ice layer that is impervious and will prevent nutrient incorporation with the soil. This standard is consistent with New York's recognition in other contexts that application of fertilizer upon impervious surfaces presents a high risk of nutrient runoff.[72] A protective standard will preclude any manure application upon surface icing that is 0.5 inches or greater in thickness and largely unbroken. This is consistent with the Adverse Weather Spreading Guidelines, as discussed above.[73]

3. When is winter-spreading "necessary"?

The NRCS NY590 Standard allows surface application of manure to frozen or snow-covered ground where application is "necessary."[74] Neither the Draft Permits nor the NRCS NY590 define what would render winter manure application "necessary." It is critical that the Draft Permits define what constitutes "necessary" winter spreading so that all stakeholders can proceed with certainty.

- Recommendation: To qualify for a necessity based exception, a CAFO should be required to demonstrate that it has sufficient capacity available as of December 1 to store all manure and wastewater generated by the CAFO for 180 days (as Maine requires) without resorting to land application as a means of disposal.[75]

4. injection and incorporation

Under the NRCS NY590 Standard, CAFOs may spread manure on "frozen and/or snow-covered soils" when "conditions allow" using "frost-inject[ion] or immediate[] incorporat[ion]."[76] Given the breadth of this exception, it is critical for DEC to define precisely what it means by "frost-injected" and "incorporated" to be clear that injection and incorporation require meaningful steps that truly incorporate the manure into the soil.

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[72] ECL § 17-2103.3(b) (precluding non-agricultural application of fertilizer to impervious surfaces).

[73] Adverse Weather Spreading Guidelines, at 4.

[74] 2013 NRCS NY590 Standard at 5.

[75] This is consistent with Adverse Weather Spreading Guidelines, which note that operations that spread manure on last resort fields in emergency conditions (e.g., in cases when storage is full, etc.) every year need more storage. Adverse Weather Spreading Guidelines at 1.

[76] 2013 NRCS NY590 Standard at 5; *see* Draft ECL Permit at § III.A.8.b (incorporating standards in the NRCS NY590 Standard); Draft CWA Permit at § III.A.7.b.

- Recommendation: DEC should adopt a definition consistent with Illinois' definition of "injection," which is "[t]he placement of livestock waste 4 to 12 inches below the soil surface in the crop root zone using equipment specifically designed for that purpose, when the applied material is retained by the soil."[77]

- Recommendation: DEC should also adopt a definition consistent with Illinois' definition of "incorporation," which is "[a] method of land application of livestock waste in which the livestock waste is thoroughly mixed or completely covered with the soil within 24 hours. Any ponded liquid livestock waste remaining on the site after application is not considered to be thoroughly mixed or completely covered with the soil."[78]

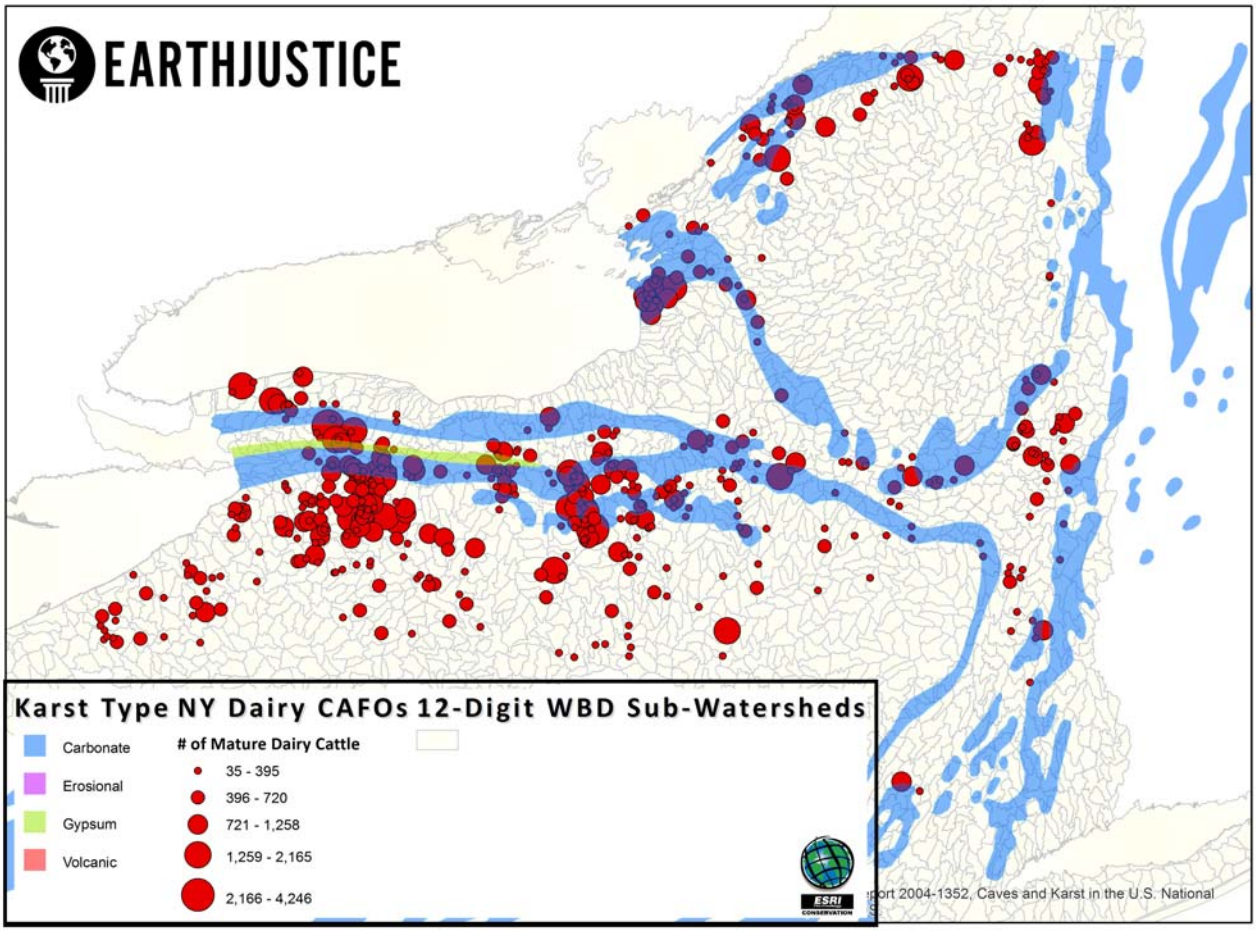
II. The Draft Permits Do Not Adequately Protect Groundwater and Drinking Water from Animal Waste

Protection of groundwater from manure pollution must be a core goal of the CAFO General Permits. The need to protect groundwater is of particular concern in areas in central New York where CAFO facilities are underlain by karst rock formations and drinking water supplies are at higher risk of infiltration from bacteria, enteric viruses, and enteric protozoa (*e.g.*, cryptosporidia and Giardia). As this map shows, many CAFOs are sited in areas with karst topography.[79]

[77] Ill. Admin. Code tit. 35, § 501.263.

[78] *Id.* § 501.261.

[79] The base data and the CAFO data in this map are from USGS and DEC, respectively. *See supra,* note 4. The data are digital representations of a 1984 USGS study. *See* William E. Davies, Engineering Aspects of Karst, http://www.nckri.org/map/maps/engineering_aspects/davies_text.pdf. The files were digitized from: U.S. Geological Survey Open-File Report 2004-1352, Caves and Karst in the U.S. National Park Service, AGI Karst Map of the US, http://pubs.usgs.gov/of/2004/1352/ (2004). File available for download from ArcGIS, USA Karst (Features), http://www.arcgis.com/home/item.html?id=bbd7f9b9595b4a8d80bd5f3aca90ec26 (last modified July 23, 2014).



DEC has acknowledged the concern:

> Groundwater can be impacted by CAFOs if nutrients are not properly managed. Nitrogen is the most likely pollutant to impact groundwater, as it is soluble in water, and can migrate quickly. Ground water is most likely to be impacted when the depth to groundwater is shallow, a direct connection exists between the land surface and groundwater, or the location is in karst terrain.[80]

According to DEC, "[n]itrates, which are nitrogen oxides forming from manure, can migrate to groundwater, impact wells and pose health risks. Nitrates are toxic to humans and responsible for 'blue baby syndrome' causing serious health problems or even deaths in infants. Furthermore, when nitrates reach groundwater and begin to migrate through the aquifer, multiple residential wells can be impacted."[81] EPA has also identified the risk of nitrate transport in karst terrain:

[80] Dairy FEIS at 60-61.

[81] *Id.* at 13.

> High concentrations of nitrate in groundwater are associated with high permeability soil and aquifer material, such as permeable sand and gravel, karst limestone, or fractured rock. In these landscapes, manure applied as fertilizer is susceptible to relatively rapid infiltration, thus contaminating ground water with nitrogen and/or phosphorus."[82]

EPA concurs that "[a]reas with high soil permeability and shallow water tables are generally most vulnerable to groundwater contamination by pollutants."[83] For these same reasons, private researchers have concluded that "the application of animal waste from a CAFO on croplands should not be allowed within karst areas."[84]

As explained below, the Draft Permits fail to adequately protect groundwater in light of the special concerns about manure spreading in karst areas. The flaws in the Draft Permits include that: DEC's special provisions applicable to applying manure on karst are vague and contain no actual mandates; there are no special considerations for winter spreading on karst geology; requirements regarding waste storage lagoons are far too lax given known risks of lagoon leakage; wellhead setbacks in karst areas are also inadequate; and DEC treats karst areas in Genesee County differently than karst areas elsewhere in the state.

A. DEC Should More Stringently Regulate Manure Applications on Soil in Sensitive Areas Such as Karst Topography

The Draft Permits do not provide sufficient groundwater protection from waste applications in sensitive areas. Under the Draft Permits, when manure is applied in "areas with at-risk" groundwater, applications must be "in accordance with" one of two different guidance documents. Manure applied in areas with "at-risk groundwater" in Genesee County must comply with the "Manure Management Guidelines for Limestone Bedrock/Karst Areas of Genesee County, New York: Practices for Risk Reduction" ("Genesee Spreading Guidelines").[85] Application of manure in all other areas within New

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[82] U.S. Envt'l Prot. Agency, EPA/600/R-04/042, Risk Assessment Evaluation for Concentrated Animal Feeding Operations 25 (2004), *available at* http://nepis.epa.gov/Exe/ZyPDF.cgi/901V0100.PDF?Dockey=901V0100.PDF (internal citation omitted).

[83] *Id.* at 53.

[84] W.R. Kelly et al., *Bacteria Contamination of Groundwater in a Mixed Land-Use Karst Region*, 1 Water Quality Exposure & Health 69, 77 (2009), *available at* https://www.researchgate.net/profile/Walton_Kelly/publication/227054410_Bacteria_Contamination_of_Groundwater_in_a_Mixed_Land-Use_Karst_Region/links/00b4951af37e58d2a3000000.pdf.

[85] Draft ECL Permit § III.A.8(c); Draft CWA Permit § III.A.7(c); Karl Czymmek et al., Cornell Univ., Animal Science Publication Series No. 240, Manure Management Guidelines for Limestone Bedrock/Karst Areas of Genesee County, New York: Practices for Risk Reduction, Animal Science Publication Series No. 240, *available at* http://nmsp.cals.cornell.edu/publications/files/Karst_2_15_2011.pdf.

York with "at-risk groundwater" must be made in accordance with "Manure and Groundwater: The Case for Protective Measures and Supporting Guidelines" ("At Risk Spreading Guidelines").[86] In some instances, both standards may apply. Under the NRCS NY590 Standard, when winter spreading in geologically sensitive areas, CAFOs must comply with the At Risk Spreading Guidelines.[87] It is therefore not clear whether winter spreading conducted in Genesee County must comply with both the Genesee Spreading Guidelines and the At Risk Spreading Guidelines.

In addition to compliance with one of the two guidance documents on spreading in karst areas, the Draft Permits require the CNMP to include restrictions that apply "where appropriate" on manure applications "in the vicinity of" sensitive areas.[88] For a variety of reasons, the Draft Permits do not adequately protect groundwater in sensitive areas.

First, the Draft Permits do not define "at-risk groundwater."

- Recommendation: DEC should define "at-risk groundwater." DEC could follow the lead of Wisconsin which defined a "site that is susceptible to groundwater contamination" as including:

  - an area within 250 feet of a private well;
  - an area within 1,000 feet of a municipal well;
  - an area within 300 feet upslope or 100 feet downslope of a karst feature;
  - a channel with a cross-sectional area equal to or greater than 3 square feet that flows to a karst feature;
  - an area where the soil depth to groundwater or bedrock is less than 2 feet;
  - an area where none of the following separates the ground surface from groundwater and bedrock:
    1. a soil layer at least 2 feet deep that has at least 40% fine soil particles;
    2. a soil layer at least 3 feet deep that has at least 20% fine soil particles;

[86] Draft ECL Permit § III.A.8.c; Draft CWA Permit § III.A.7.c; Karl Czymmek et al., Manure and Groundwater: The Case for Protective Measures and Supporting Guidelines (2004), *available at* http://nmsp.cals.cornell.edu/publications/files/Groundwater.pdf.

[87] 2013 NRCS NY590 Standard at 5.

[88] Draft ECL Permit § III.A.8.c; Draft CWA Permit § III.A.7.c.

3. a soil layer at least 5 feet deep that has at least 10% fine soil particles.[89]

Second, even apart from the ambiguity of what is "at-risk groundwater," it is still unclear what constitutes compliance with the two karst spreading guideline documents because they are written in loose, advisory language. For example, the At Risk Spreading Guidelines state:

> [t]he following practices should be applied to soils less than 40 inches deep over limestone *where appropriate*: *Generally* limit liquid manure application rate to 10,000 gallons/A/year or less, depending on nutrient content and crop requirement.[90]

It is unclear what constitutes compliance with a document that only requires action "generally" and "where appropriate." While the Genesee Spreading Guidelines include a few specific requirements to address some high risk scenarios, these scenarios are quite limited.[91] For example, there are no mandates related to application of manure with greater than 12% solids, merely a vague admonition that applications "should be conducted with care."[92]

- Recommendation: All of the suggested best practices identified in the At Risk Spreading Guidelines and Genesee Spreading Guidelines should be explicitly listed and made mandatory in the CAFO General Permits. These practices include prohibitions on:

  - application of manure to soils 40 inches or less in thickness directly over karst, sandy soils, or fractured bedrock,
  - application of liquid manure (<12% solids) in karst areas,
  - application of manure outside the normal growing season to wet, frozen, and/or bare soils,

[89] Wis. Admin Code ATCP 51.01(39).

[90] At Risk Spreading Guidelines at 5 (emphasis added).

[91] For example, the Genesee Spreading Guidelines 1) require a well setback already required for all areas under the Draft Permits; 2) require vegetated buffer and setback for sinkholes and swallets; and 3) in certain areas, require same-day incorporation of liquid manure from January 1 through April 15 of each year. Genesee Spreading Guidelines at 4-5.

[92] *Id.* at 5.

- application of manure on snowpack with high moisture content or snowpack that is about to melt,

- application of manure when significant rainfall is anticipated.[93]

Third, in addition to mandating the best practices regarding manure spreading in sensitive areas from the Cornell karst spreading guidelines, DEC should adopt best practices enacted by other states to protect groundwater in karst areas, as these are "known available and reasonable methods to prevent and control the pollution of the waters of the state of New York."[94] Illinois has adopted standards that provide greater protection to groundwater in geologically sensitive areas such as karst. For example: Illinois has banned application of manure to bedrock outcrops,[95] and application of liquid manure upon land with less than 36 inches of soil covering fractured bedrock, sand, or gravel.[96] Illinois further requires that manure shall not be applied at greater than 50 percent of the agronomic nitrogen rate when there is either less than 60 inches of unconsolidated material over bedrock or when the minimum soil depth to seasonal high water table is less than or equal to two feet.[97] The Illinois Pollution Control Board rejected proposals to reduce the threshold below 36 inches, noting that "liquid livestock waste passes rapidly through fractured bedrock, sand and gravel to infiltrate groundwater and . . . additional soil depth to those formations is necessary to minimize the groundwater impact of land application of livestock waste."[98]

- Recommendation: In accord with "known available and reasonable" best practices from other states, the CAFO Permits should:

  - prohibit manure application at greater than 50% of the agronomic nitrogen rate when there is either less than 60 inches of unconsolidated material over bedrock, sand, or gravel

  - prohibit manure application at greater than 50% of the agronomic nitrogen rate when the minimum soil depth to seasonal high water table is less than or equal to two feet.

[93] Genesee Spreading Guidelines at 3.

[94] ECL § 17-0101.

[95] Ill. Admin. Code tit. 35, § 502.620(i).

[96] *Id.* § 502.620(h).

[97] *Id.* §§ 502.620(j)-(k).

[98] *In re Concentrated Animal Feeding Operations (CAFOs: Proposed Amendments to 35 Ill. Adm. Code Pts. 501, 502, and 504*, No. R12-23, 2014 WL 1598113, at *58 (Ill. Pol. Control Bd. 2014).

Fourth, DEC should add additional protections for groundwater when CAFOs spread manure in the winter on karst geology. Indeed, the Genesee Spreading Guidelines recognize the serious risk posed by this practice in any county of the State, noting that:

> [m]anure applied to the soil surface or on top of snowpack in advance of rain or snowmelt presents a significant risk concern, especially when the manure is not mixed with the soil through incorporation. In karst areas, any soil and water condition that generates flowing water on the surface can potentially impact groundwater by moving into bedrock pathways.[99]

Wisconsin prohibits manure application on frozen ground or snow-covered fields where soils are 60 inches thick or less over fractured bedrock.[100] This is a "known available and reasonable methods to prevent and control the pollution of the waters of the state of New York,"[101] which should be incorporated into the Draft Permits.

- Recommendation: CAFOs in all New York counties should be prohibited from applying manure on frozen ground or snow-covered fields where soils are 60 inches thick or less over fractured bedrock.

B. DEC Should Adopt More Stringent Requirements to Protect Against Leakage from Waste Storage Structures – Both Generally and Also in Sensitive Geologies

Leaching of pathogens and other pollutants such as nitrate from waste storage lagoons at CAFOs is a well-recognized concern.[102] Yet, the Draft Permits do not provide sufficient groundwater protection against lagoon leaching.

The Draft Permits incorporate the standards in NRCS NY313 related to the siting and design criteria for waste lagoons.[103] Under the NRCS NY313, there is no requirement that waste lagoons be lined. Rather, a lagoon may *either* be "located in soils with an acceptable permeability that meets all applicable regulation" or it "must be lined."[104] It is

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[99] Genesee Spreading Guidelines at 3.

[100] State of Wis., Dep't of Natural Res., General Permit to Discharge Under the Wisconsin Pollutant Discharge Elimination System for Large Dairy Concentrated Animal Feeding Operation, WPDES Permit No. WI-0063274-1 § 3.7.4 (2011), *available at* http://dnr.wi.gov/topic/AgBusiness/documents/LargeDairyCAFOGP-WPDESPermit.pdf.

[101] ECL§ 17-0101.

[102] *See, e.g.,* Risk Assessment Evaluation for CAFOs, *supra* note 82, at 58.

[103] NRCS NY, Conservation Practice Standard, Waste Storage Facility, Code 313 at 2, *available at* https://efotg.sc.egov.usda.gov/references/public/NY/nyps313.pdf (hereinafter *NRCS NY313*).

[104] NRCS NY313, at 2.

unclear what would be considered "an acceptable permeability that meets all applicable regulation." This is especially concerning since NRCS NY313 standard allows lagoons to be located in sensitive geologic areas without a liner. Specifically, the NRCS NY313 standard allows a lagoon to be sited in a sensitive area (including: shallow, unconfined underlying aquifer; underlying aquifer is domestic water supply; site is area of solutionized bedrock such as limestone) if "no reasonable alternative exists."[105] Moreover, when a lagoon is constructed in a sensitive area, the NRCS NY313 standard does not mandate a liner; rather, it states only that CAFOs should "*consider*[] providing an additional measure of safety from pond seepage" such as by using a liner.[106] Even if a liner is used, it is permissible to use a clay liner. These requirements fall well below the obligation of DEC to "use … all known available and reasonable methods to prevent and control the pollution of the waters of the state of New York."[107]

It is well-established that lagoon liners serve a critical function in protecting groundwater from CAFO waste in any kind of soil or in any geology.[108] It is also well-documented that clay-lined lagoons will inevitably crack and leak, exposing groundwater to pollution.[109] For these reasons, the Washington state draft CAFO permits state: "[The

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[105] *Id.* at 6.

[106] *Id.* (emphasis added).

[107] ECL § 17-0101.

[108] For example, a study done by the United States Geological Survey in the state of Washington showed nitrogen seepage of roughly 2000 pounds of nitrates into groundwater from an earthen lagoon in a single year. Stephen E. Cox & Sue C. Kahle, U.S. Geological Survey, Water-Resources Investigations Report 98-4195, Hydrology Ground-Water Quality, and Sources of Nitrate in Lowland Glacial Aquifers of Whatcom County, Washington, and British Colombia, Canada 102 (1999), *available at* http://pubs.usgs.gov/wri/1998/4195/report.pdf; *see also* Minn. Pollution Control Agency, Effects of Liquid Manure Storage Systems on Ground Water Quality – Summary Report 5 (2001) *available at* https://www.pca.state.mn.us/sites/default/files/rpt-liquidmanurestorage-summary.pdf ("[U]nlined manure basins have greater impacts on ground water quality than open feedlots or earthen- and concrete-lined storage systems. Concrete-lined basins appear to have minor impacts to ground water even when placed over coarse-textured soils. Cohesive soil-lined basins (earthen liners) and open lots impact ground water, but impacts vary widely from site to site").

[109] Risk Assessment Evaluation for CAFOs, *supra* note 82, at 58 ("Clay-lined lagoons have the potential to leak and impact groundwater quality, since they are susceptible to burrowing worms and cracking as they age. Appropriately sealed below ground storage tanks are effective means for preventing seepage of manure to ground water in sites with porous soils and fractured bedrock." (citations omitted)); W. W. McNab et al., UCRL-JRNL-219615, Assessing the Impact of Animal Waste Lagoon Seepage on the Geochemistry of an Underlying Shallow Aquifer at 2-3 (2006), *available at* https://e-reports-ext.llnl.gov/pdf/331439.pdf ("[S]everal studies have suggested that [engineered clay liners or the self-sealing effects that may arise from the settling of particulate matter] slow[] but do[] not stop leakage. . . . Leakage through manure lagoon clay liners has also been reported"); Laura L. Jackson, *Large-Scale Swine Production and Water Quality*, *in* Pigs, Profits, and Rural Communities, 103, 106 (Kendall M. Thu & E. Paul Durrenberger, eds.,1998) ("All newly constructed earthen lagoons leak until soil pores in the walls and floor are gradually sealed

Department of] Ecology has determined that *if the CAFO has a lagoon that does not have a double geomembrane liner with a leak detection system between the liner layers that it is discharging to groundwater*.[110]

Other states do a far better job of safeguarding their groundwater. Indeed, many states mandate that all newly constructed waste lagoons in all soil types be built with a liner.[111] In addition, some states impose special groundwater protections when waste

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with solids from animal waste. . . . Pockets of sandy material in otherwise sound lagoon walls or floors could result in serious seepage. . . . Regardless of lagoon construction, each time the lagoon is pumped out the walls dry out and crack. As the lagoon refills, a pulse of waste seeps out of these cracks until they swell and close."); B.L. Harris et al., Texas A&M Univ., Reducing Contamination by Improving Livestock Manure Storage and Treatment Facilities 1 (1998), *available at* http://nasdonline.org/static_content/documents/1626/d001508.pdf ("Facilities for manure stored in liquid form may sometimes leak or burst, releasing large volumes of pollutants. Manure stored in earthen pits can form a semi-impervious seal of organic matter and bacterial cells on the bottom and sides. The seal limits leaching, but seasonal filling and emptying can cause the seal to break down.").

[110] Wash. State Dep't of Ecology, Preliminary Draft Concentrated Animal Feeding Operation General Permit 5 (2015) *available at* http://www.ecy.wa.gov/programs/wq/permits/cafo/docs/preliminaryDraftCAFOPermit2015.pdf (emphasis added).

[111] These states include Maryland, Virginia and New Jersey:

> **Maryland**
> "Lagoon bottoms and the inner slopes of embankments designed or constructed or modified after the effective date of the permit shall be designed and built in accordance with a CNMP and all applicable NRCS standards and lined with impervious material such as clay, bentonite, or other sealing material to preclude pollution of ground water by seepage. The permeability of the liner shall be 10^{-7} cm/sec or less, and for materials other than synthetic liners, the liner shall be a minimum thickness of two feet."
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> Md. Dep't of the Env't, Maryland Permit No. 14AF, General Discharge Permit for Animal Feeding Operations, at 17 (2014), *available at* http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/AFO/Documents/gd_permit%20signed.pdf.
>
> **Virginia**
> "Earthen waste storage facilities constructed after December 1, 1998, shall include a properly designed and installed liner. Such liner shall be either a synthetic liner of at least 20 mils thickness or a compacted soil liner of at least one foot thickness with a maximum permeability rating of 0.0014 inches per hour. A Virginia licensed professional engineer or an employee of the Natural Resources Conservation Service of the United States Department of Agriculture with appropriate engineering approval authority shall certify that the siting, design, and construction of the waste storage facility comply with the requirements of this permit. This certification shall be maintained on site."
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> 9 Va. Admin. Code, § 25-192-70(I)(B)(3)).

storage lagoons are constructed in karst terrain. These provisions generally require either liners or groundwater monitoring downgradient of the lagoon to ensure that there is no leakage into groundwater, or both. For example, under Ohio regulations, "[a] fabricated structure, manure storage pond or manure treatment lagoon shall not be located in a karst area without design of groundwater monitoring or engineered controls or both that are installed and implemented as approved by the director."[112] These measures are "known available and reasonable methods to prevent and control the pollution of the waters of the state of New York"[113] that DEC is obligated to include in its CAFO permits.

- Recommendation: In non-karst areas, DEC should mandate that all new waste storage lagoons be constructed with a liner.

- Recommendation: For CAFOs in karst areas, DEC should lay out steps CAFOs should take to find "reasonable alternatives" to construction of waste lagoons in sensitive areas. If there is no reasonable alternative, DEC should mandate that all waste storage lagoons (existing or new construction) must be constructed with a synthetic liner OR the facility should install a groundwater

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New Jersey
"The waste retention structure shall be either be [sic] a lined basin or a storage tank. The liner may be either synthetic or soil. Synthetic liners must be at least 30 mils thick and constructed to prevent the flow of liquids through the liner. Soil liners must be at least 1 feet thick with a maximum saturated hydraulic conductivity of 3.28×10^{-9} ft/sec (1×10^{-7} cm/sec) under maximum anticipated hydrostatic head. Facilities with areas unsuitable for lined basins due to bedrock, topography, deep weathering or outcrops of fractured bedrock, must install a storage tank or demonstrate that the structural integrity of the lined basin foundation will not be affected. . . . During construction and installation, synthetic liners are to be inspected for uniformity, damage, and imperfections and to ensure tight seams and joints, and the absence of tears and blisters. . . . Existing waste retention structures (those constructed prior to the effective date of the general permit), must be certified that they meet or upgraded to meet the standard contained in NRCS - Conservation Practice Standard for Waste Storage Facility (No. CODE 313)."

N.J. Dep't of Envtl. Prot., Permit No. NJ0138631, Stormwater Discharge New Master General Permit § H(4)(e), *available at* http://www.state.nj.us/dep/dwq/pdf/cafogp.pdf.

[112] Ohio Admin. Code 901:10-2-02. In addition, Virginia requires monitoring wells for new earthen waste storage facilities constructed within one foot of seasonal high water table. *See* 9 Va. Admin. Code § 25-192-70(I)(A)(2) ("At earthen liquid waste storage facilities constructed after December 1, 1998, to an elevation below the seasonal high water table or within one foot thereof, groundwater monitoring wells shall be installed. A minimum of one up gradient and one down gradient well shall be installed at each earthen waste storage facility that requires groundwater monitoring. Existing wells may be utilized to meet this requirement if properly located and constructed.").

[113] ECL § 17-0101 (emphasis added).

monitoring well downgradient of the lagoon to confirm that excess agricultural waste is not seeping into groundwater.

C. DEC Should Adopt More Stringent Requirements to Protect Against Leakage from Animal Mortality Burial Pits

Animal mortality burial pits present leaking and leaching dangers similar to those of manure storage facilities, but in addition to potential contamination from pathogens, nutrients and other conventional contaminants, animal carcasses also contain high levels of hormones that pharmaceuticals.[114] The Draft Permits would subject animal mortality burial pits to the same construction design standards as manure storage facilities.[115] That is, under some circumstances unlined mortality burial pits may be constructed and operated within karst areas or other areas with vulnerable groundwater. Only where "seepage from mortality facilities will create a potential water quality problem and it is deemed necessary to reduce seepage," will a clay liner "or other acceptable liner technology" be required.[116] The NRCS NY316 practice standard does not provide guidance on when it will be "deemed necessary to reduce seepage," leaving the case-by-case determination up to the CNMP planner. Nor does the NRCS NY316 standard identify other types of "acceptable liner technology" besides clay liners, which are known to be "susceptible to burrowing worms and cracking as they age."[117]

The EPA has recommended that "CAFOs should ensure that the burial locations are not in sensitive areas (e.g., floodplains, areas with shallow water tables, sandy soils, near surface water, or near groundwater wells)."[118] This is a "known

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[114] Qi Yuan et al., *Potential Water Quality Impacts Originating from Land Burial of Cattle Carcasses* 457 Science of the Total Env't 246, 246 ("High concentrations of conventional contaminants were detected in leachate collected from the field burial pits. In addition, 17β-estradiol and monensin were also observed at maximum concentrations of 20,069 ng/L and 11,980 ng/L, respectively. Estimated mass loading of total steroid hormones and veterinary pharmaceuticals were determined to be 1.84 and 1.01 μg/kg of buried cattle carcass materials.").

[115] NRCS, Conservation Practice Standard, Animal Mortality Facility, Code NY316 (2004) at 1, *available at* ftp://ftp.dec.ny.gov/dow/Chesapeake%20Record/2010%20NRCS%20Standards%20in%20New%20York/316%20-%20Animal%20Mortality%20Facility.pdf (hereinafter *NRCS NY 316*) ("All structural components integral to animal mortality management shall meet the structural loads and design criteria as described in NRCS conservation practice standard 313, Waste Storage Facility, unless otherwise designated.")

[116] *Id.* at 2.

[117] Risk Assessment Evaluation for Concentrated Animal Feeding Operations, *supra* note 82, at 58.

[118] U.S. Envt'l Prot. Agency, EPA-821-B-04-006, Managing Manure Nutrients at Concentrated Animal Feeding Operations at 2-22 (2004), *available at* http://www3.epa.gov/npdes/pubs/cafo_manure_guidance.pdf.

available and reasonable method[] to prevent and control the pollution of the waters of the state of New York,"[119] especially when there are other methods of carcass disposal available to CAFO operators, such as incineration. Where other disposal options are unavailable, liners must be required for all burial pits, and synthetic liners must be required in karst areas.

- Recommendation: In non-karst areas, DEC should mandate that all new animal mortality burial pits be constructed with a liner.

- Recommendation: For CAFOs in karst areas, where there is no reasonable alternative method of carcass disposal, DEC should mandate that all animal mortality burial pits (existing or new construction) must be constructed with a synthetic liner OR the facility should install a groundwater monitoring well downgradient of the pit to confirm that excess contaminants are not seeping into groundwater.

D. Setbacks from Wellheads Are Insufficient to Protect Public Health

The Draft Permits' wellhead setbacks for karst areas do not satisfy ECL's mandate that DEC use all known available and reasonable methods to maintain reasonable standards of purity of the waters of the state consistent with public health. While the Draft Permits require that manure spreading be set back a minimum of 100 feet from any wellhead – whether the land application site is on karst geology or not,[120] past incidents of well contamination by nutrient and pathogen migration indicate that a 100 foot setback is not sufficiently protective. For example, in 2014, Hi-Brow Farm placed manure 220 feet away from a neighboring private wellhead. DEC calculated the application rate to be 6,000 gallons per acre, significantly less than the prescribed 10,000 gallon per acre rate. Although the impacted wellhead was suspected of being improperly constructed and under the direct influence of surface water, this incident evidences the ability of nutrients and bacteria to migrate aggressively through groundwater.[121] Similarly, in 2014 Leduc's Green Acres—while operating under a SPDES permit—spread manure while complying with setback requirements. Subsequently E. Coli was found in neighboring wells and Ludec's Green Acres was advised by DEC to stop spreading within 1000 feet of the wellheads.[122]

[119] ECL § 17-0101 (emphasis added).

[120] Draft ECL Permit § III.A.8.d; Draft CWA Permit § III.A.7.d.

[121] Letter from Chad M. Sievers, P.E., DEC, to Jay Skellie & Tom Guilette, Hi-Brow Farms, LLC (Feb. 26, 2014) (received from FOIL Request Nos. 14-1526 and 14-1658 and on file with authors).

[122] Letter from Tamara Venne, Envtl. Prog. Specialist 1, DEC, to Bill Leduc et al., Leduc's Green Acres (Apr. 28, 2014) (received from FOIL Request Nos. 14-1526 and 14-1658).

This concern is amplified because the Draft Permits do not require a more protective wellhead setback in geologically sensitive areas that serve as greater conduits for contamination migration. "Human activities in karst areas, including manure application, have a higher potential to contaminate groundwater as compared to most other hydrogeologic conditions found in New York State."[123] However, neither the *At Risk Spreading Guidelines*, nor the *Genesee Spreading Guidelines* require or recommend a wider wellhead setback than the 100-foot setback required generally by the Draft Permits.[124] Several other states have adopted greater protections for wellheads from animal waste spreading.[125]

- Recommendation: DEC should adopt wellhead setback requirements that are protective of public health, recognize that private wells are the only source of water for many rural residents, and reflect the empirical observations of DEC that nutrients and pathogens can migrate further than 100 feet when they enter groundwater. Specifically, DEC should prohibit manure applications within 200 feet of a private wellhead.

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[123] Genesee Spreading Guidelines at 1.

[124] Draft ECL Permit § III.A.8.d; Draft CWA Permit § III.A.7.d; At Risk Karst Spreading Guidelines at 4-5; Genesee Spreading Guidelines at 5-7.

[125] These states include South Dakota, Colorado and Wyoming:

South Dakota
"Wastewater containment structures or the manure and wastewater disposal sites cannot be located closer than 1,000 feet from an existing public water well or drinking water source *nor 250 feet from an existing private water well* or drinking water source. Wastewater containment structures and the manure and wastewater disposal sites should not be located closer than 150 feet from a water well or drinking water source that is owned by the producer." U.S. Envtl. Prot. Agency, State Compendium – Region 8; Programs and Regulatory Activities Related to Animal Feeding Operations 257 (2002), *available at* http://www.colorado.edu/economics/morey/8545/student/caforegs/region8.pdf (emphasis added); *see* S.D. Dep't of Env't & Natural Res., The Most Frequently Asked Questions about the State General Permit Process for Concentrated Animal Feeding Operations, http://denr.sd.gov/des/fp/cafofaq.aspx (last visited Feb. 11, 2015).

Colorado
Colorado bans land application within 150 feet of a wellhead at "non-permitted large CAFOs." 5 Colo. Code Regs. § 1002-81:81.6(2)(a)(i)(D). Colorado also bans siting of waste storage facilities within 150 feet of a wellhead at all CAFOs. *Id.* § 1002-81:81.8(6)(a).

Wyoming
Wyoming prohibits land application of liquid, slurry, or solid manure within 200 feet of a domestic water supply wellhead. 20 Wyo. Code R. §§ 37(d), 38(e)(3), 39(a).

- Recommendation: DEC should adopt a more protective wellhead setback for manure applications made in geologically sensitive areas such as karst. Because of the higher potential to contaminate groundwater as compared to other hydrogeologic areas, DEC should prohibit manure applications within 300 feet of a private wellhead in geologically sensitive areas such as karst.

E. The Draft Permits Must Be Modified to Reflect the ECL's Limits on Pollutant Discharges to Groundwater

The draft CWA and ECL Permits unlawfully exclude protections for groundwater in their definition of "discharge."[126] The definitions serve to prohibit or substantially limit discharges to "surface waters of the state," but not those that impact groundwater. Under New York law, SPDES permits are required to prevent or limit discharges to all waters of the state, including groundwater.[127] Of course, CAFO operators must be and are allowed to introduce manure, litter and process wastewater into the soil in order to fertilize crops. Nonetheless, DEC is still bound to protect the groundwater of the state from over-application and mis-application of waste, both of which can result in groundwater contamination.[128] Such protections are common among states that regulate groundwater discharges, such as Oregon and California.[129]

Yet, under the Draft Permits operators would only be required to prevent discharges from CAFOs to surface waters, not the broader set of waters of the state. DEC must remedy

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[126] *See*, *e.g.*, Draft ECL Permit, app. A.T; Draft CWA Permit, app. A.U.

[127] *See* ECL § 17-0803 ("[I]t shall be unlawful to discharge pollutants to the waters of the state from any outlet or point source without a SPDES permit issued pursuant hereto or in a manner other than as prescribed by such permit."). ECL § 17-0105 defines waters of the state broadly to include "all …bodies o*f surface or underground water*, natural or artificial, inland or coastal, fresh or salt, public or private . . . which are wholly or partially within or bordering the state or within its jurisdiction." (emphasis added).

[128] New York regulations explicitly exempt from groundwater protection rules the "normally accepted agricultural practice of utilizing chemicals and fertilizers for growing of crops for human and animal consumption," but any discharge of manure, litter or process wastewater in excess of "normally accepted agricultural practice" would be unlawful. *See* 6 N.Y.C.R.R. § 702.21(a)(2).

[129] Or. Dep't of Agriculture, Quick Guide; Oregon's CAFO Program 7 (2004), *available at* http://library.state.or.us/repository/2011/201104061406123/index.pdf (CAFO operators must "prevent animal waste discharges from [their] operation into nearby streams, drainage ditches, and groundwater."); Cal. Reg'l Water Quality Control Bd., Bd. Order No. R7-2013-0800, Waste Discharge Requirements and General National Pollutant Discharge Elimination System (NPDES) Permit for Concentrated Animal Feeding Operations within the Colorado River Basin Region § VI(B) (2008), *available at* http://www.waterboards.ca.gov/coloradoriver/board_decisions/adopted_orders/orders/2013/0800cafo.pdf ("The discharge shall not cause the underlying groundwater to be degraded, to exceed water quality objectives, to unreasonably affect beneficial uses, or to cause a condition of pollution or nuisance.").

its omission of adequate groundwater protections by extending all appropriate surface water quality protections to groundwater.[130] In doing so, DEC should also address the discrepancy between Appendix A in the Draft Permits – which notes that hydrologic connection means "the interflow and exchange between surface impoundments and surface water through an underground conduit or groundwater"[131] – and the main text of the Draft Permits, which does not acknowledge that contaminants migrate through groundwater to surface water.

It is important to note that these groundwater protections would not be new prohibitions, as they are already established under New York law. Just last year, DEC issued a Notice of Violation to a CAFO operator for a discharge to groundwater and contamination of a private well, stating, among other things, that discharges to groundwater are illegal:

> Section 17-0803 of the ECL states that "Except as provided by subdivision five of section 17-0701 of this article, it shall be unlawful to discharge pollutants to the *waters of the state* from any outlet or point source without a SPDES permit issued pursuant hereto, or in a manner other than as prescribed by such permit." Additionally, Section 17-0501 of the ECL states that 'It shall be unlawful for any person directly or indirectly, to . . . cause or contribute to a condition in contravention of the standards adopted by the Department pursuant to Section 17-0301.'"[132]

As the ECL provides—and as DEC stated in its enforcement action—discharges to all waters of the waters of the state are illegal. Accordingly, to the extent that discharges to groundwater are excluded the Draft Permits, DEC is not fulfilling its obligations to enforce ECL § 17-0803 ("unlawful to discharge pollutants to the waters of the state").[133] Furthermore, the Draft Permits' failure to adequately protect groundwater contravenes ECL's clear mandate that DEC use all known available and reasonable methods to maintain

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[130] *See* Draft ECL Permit § I.B.1; Draft CWA Permit at § I.B.2. Sections of the ECL Permit that contain surface water quality protections which must be extended to groundwater include, but may not be limited to, sections I.A.3.d (discharges of process wastewater); I.B.1 (discharges from production areas); III.A.6 (operation and maintenance of BMPs); III.B.2 (design and construction of retention facilities); III.E.2.a (significant changes in design, construction, operation, or maintenance); IV.B (overflow and discharge reporting); Appendix A(T) (definition of discharge); and Appendix A(XX) (definition of waters of the state).

[131] Draft ECL Permit at app. A.EE; Draft CWA Permit at app. A.EE.

[132] Letter from Scott A. Rodabaugh, P.E., Reg'l Water Engineer, DEC, to Mark Barie, Lor-Rob Dairy Farm (April 23, 2015) (received from FOIL Request No. 15-3542 and on file with authors) (internal citations and marks omitted).

[133] Furthermore, this lack of groundwater protection also conflicts with 6 N.Y.C.R.R. § 703.2's prohibition against any discharge to groundwater in "amounts that will adversely affect the taste, color or odor thereof, or impair the waters for their best usages."

reasonable standards of purity of the waters of the state consistent with public health. As noted above, ECL defines "waters of the state" expansively to include surface or underground water.[134]

Moreover, groundwater discharges are illegal under federal law. In *Community Association for Restoration of the Environment, Inc. v Cow Palace LLC*, 80 F. Supp. 3d 1180 (E.D. Wash. 2015), the U.S. District Court for the Eastern District of Washington found that the over-application of animal waste to fields and leakage from manure lagoons into underground aquifers constituted open dumping of a solid waste under the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901-6992k. The Draft Permits must be modified to reflect these important human health protections and notify CAFO operators of their potential liability.

- Recommendation: Sections of the ECL and CWA Permits that contain protections that are specific to surface water should be modified to include groundwater as well. These include, but may not be limited to:

  - CWA Draft Permit sections I.B.1 (new swine, poultry or veal calf CAFOs); I.B.2 (discharges from production area); III.E.2.a (significant changes in design, construction, operation, or maintenance); Appendix A(U) (definition of discharge); Appendix A(KK) (definition of overflow); and Appendix A(TT) (definition of waters of the state).
  - ECL Draft Permit sections I.A.3. (discharges of process wastewater); I.B.1 (discharges from production areas); III.A.6 (operation and maintenance of BMPs); III.B.2. (design and construction of retention facilities); III.E.2.a (significant changes in design, construction, operation, or maintenance); IV.B (overflow and discharge reporting); Appendix A(T) (definition of discharge); and Appendix A(XX) (definition of waters of the state).

III. The ECL and CWA Permits Do Not Provide for All the Public Participation Legally Required When Approval Is Sought for New or Substantially Modified CNMPs

The draft CWA and ECL permits do not provide for all the meaningful public participation in the CAFO permitting process that is legally required. In particular, the ECL Permit lacks the legally required public participation in connection with new and substantial modifications to CNMPs. While the CWA Permit provides for public participation for some CNMP modifications, certain substantial modifications are excluded. Moreover, it is

[134] ECL § 17-0105.

unclear from the Draft Permits whether final CNMPs or CNMP modifications will be publicly available even when draft CNMPs or CNMP modifications are published for comment. Because CNMPs are effluent limitations that are part of a CAFO's permit (as discussed below), there is no basis for shielding final CNMP documents from the public.

A. The CWA Permit Must Be Modified to Provide for Public Comment on All Major CNMP Modifications

We appreciate that DEC has changed the proposed CWA Permit to require public participation in connection with permitting new CAFO facilities and requests to make certain major modifications of existing facilities.[135] This will *partially* rectify the current situation that prompted EPA to determine that New York's CWA Permit is unlawful, since it fails to provide for the public review of new or substantially modified CNMPs required under the CWA.[136]

Unfortunately, we believe that DEC has not gone far enough to correct the unlawful lack of public participation in the CWA permitting process. The draft CWA Permit still would not require notice and comment for a range of major permit modifications that DEC has acknowledged are "substantial," the statutory trigger for public participation. For example, under the Draft Permit, the following scenarios would trigger a requirement of notice to DEC, but not of public participation[137]:

- any change in design, construction, operation or maintenance that "has the potential to impact the discharges of pollutants" to surface waters of the state,
- constructing a manure storage facility with a volume greater than one million gallons,

[135] Under the Draft CWA Permit, the major modifications that would necessitate public participation include the "(1) addition of new land areas of land not previously included in the ANMP/CNMP. …; (2) [c]hange to a field specific maximum annual application rates that do not comply with NRCS standards; [or] (3) [i]mplementation of any other required management practices that do not meet NRCS standards." Draft CWA Permit § IV.F.3.

[136] *See* Region 2, U.S. Envt'l Prot. Agency, New York State Animal Agriculture Program Assessment 32 (2015), *available at* http://www.epa.gov/sites/production/files/2015-07/documents/new_york_animal_agriculture_program_assessment_final_2.. EPA found: "New York State's confidential treatment of CAFO CNMPs is not consistent with the 40 CFR § 122.23(h) federal CAFO requirement, which requires permit writer review of the CAFO's NMP and an adequate opportunity for public review of both a CAFO's NMP and the terms of the NMP incorporated into the draft permit."

[137] Draft CWA Permit §§ III.E.2.a-c, II.B.2.a.1-2; *see* Draft ECL Permit §§ II.B.2.a.1-2.

- increasing the number of animals by 20%.[138]

According to DEC, notice is required in these scenarios because "[t]his information was deemed significant by the Department based on a risk to water quality and public interest, respectively."[139]

The lack of public participation in these circumstances is wrong as a matter of law and policy. As a legal matter, under the CWA, if changes to a CNMP are "substantial," the proposed changes must be made available for public review and comment.[140] These three scenarios are "substantial" because, DEC determined, they pose a "risk to water quality."[141] Indeed, these are precisely the type of changes that EPA considered "substantial" under EPA regulations,[142] meaning the proposal to make these changes should be subject to public participation.

As a policy matter, public participation in the siting and construction of manure storage is particularly crucial for the protection of water quality. This is especially so because the applicable NRCS part 313 standards are merely *considerations* to help guide decision-making, especially in the contexts of siting and determining when additional/voluntary safeguards are necessary.[143] The NRCS NY313 standards give DEC wide discretion to approve the siting of unlined manure storage facilities even where

[138] It is clear that DEC intends to use as its baseline figure for measuring 20% growth the number of animals identified in each CAFO's initial Notice of Intent to Obtain Permit Coverage under the CWA Permit. To help farmers comply with this new requirement, DEC should specify that baseline figure, either in the new permit or in related documents.

[139] DEC, Fact Sheet for New York State Department of Environmental Conservation CWA SPDES General Permit for Concentrated Animal Feeding Operations (CAFOs) at 4-5 (2015), *available at* http://www.dec.ny.gov/docs/water_pdf/factsheetgp016002cwa.pdf (hereinafter *CWA Permit Fact Sheet*).

[140] *See* 40 C.F.R. § 122.42(e)(6)(ii) (B) ("If the Director determines that the changes to the terms of the nutrient management plan are substantial, the Director must notify the public and make the proposed changes and the information submitted by the CAFO owner or operator available for public review and comment").

[141] CWA Permit Fact Sheet at 4-5.

[142] 40 C.F.R. § 122.42(e)(6)(iii)(D) ("substantial changes" to a CNMP include "[c]Changes to site-specific components of the CAFO's nutrient management plan, where such changes are likely to increase the risk of nitrogen and phosphorus transport to waters of the U.S.").

[143] For instance, the NRCS states, "[s]iting of manure storage facilities must *consider* potential contamination of ground water and the production of undesirable odors," and "[f]eatures, safeguards, and/or management measures to minimize the risk of failure or accidental release, or to minimize or mitigate impact of [catastrophic] failure *should be considered*." NRCS NY, Conservation Practice Standard, Waste Storage Facility, Code 313 at 1, 7 (2014).

impacts to ground water are likely.[144] Given the enormous discretion DEC has in connection with the siting of manure storage, public participation is especially appropriate. Interested stakeholders, such as neighbors, farming groups, and environmental advocacy groups could provide data and factual information about the local conditions that might indicate when a stricter design standard, a stronger liner, or a different location may be necessary. The public may also suggest other viable alternatives or mitigation practices sufficient to avoid significant environmental risk.

Indeed, it was the attentiveness and quick thinking of Jefferson County residents that initially brought the potential water quality impacts of a proposed 7.5 million gallon manure storage facility in Rutland, New York, to DEC's attention. Neighbors and local government officials raised concerns about the site's location in "an area of solutionized bedrock," on a shallow, unconfined aquifer that serves as a critical domestic drinking water supply.[145] The facility would have been situated just one-half mile upgradient from the Black River, a Class A stream, at a point of the river that is only 1.5 miles upstream of the water intake to the City of Watertown's water treatment facility.[146] DEC ultimately stopped construction of the manure storage facility due to the significant water quality concerns raised by the public. Without a public review process, and in lieu of the vigilance shown by the Jefferson County residents, these types of pollution problems can literally and figuratively slip through the cracks and disrupt communities and environments.

The Jefferson County case was not unique. Another similar situation occurred last year where a dairy owner dug a new manure lagoon capable of holding up to 9 million gallons of cow manure without notifying neighbors, or even town or county officials.[147] There has been a significant amount of backlash related to construction of these facilities, as the public rightly feels it is improperly cut out of the decision-making process. Requiring notice and comment prior to construction of major manure storage facilities would help

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[144] *See id.* at 8 (allowing the siting of manure storage facilities without liners even where an underlying aquifer is at a shallow depth and not confined, or where the aquifer is a domestic water supply or ecologically vital water supply).

[145] *See* MJ Sligar, Proposed Manure Storage Facility (MSF) On the Ridge Road, Town of Rutland, JC, NY, How to Proceed (June 4, 2015) (prepared for meeting with Jefferson County Soil & Water Conserv. Comm.) (attached to Letter from Sharon Addison, City Mgr., City of Watertown, New York, to Judy Drabicki, DEC & David Komorawski, Res. Conservationist, USDA NRCS at 1 (June 10, 2015) (on file with authors)).

[146] *Id.* at 4 ("The perpendicular distance from the Ridge Road to the Black River would intersect a point approx. 1.5 miles upstream of the City of Watertown Coagulation Basin intake.").

[147] *See* Jim Kenyon, *Courtland County Farmer Builds Large Manure Lagoon Without Notifying Local Authorities*, CNY Central.com, (Nov. 26, 2014), *available at* http://www.cnycentral.com/news/story.aspx?id=1128313.

alleviate community frustration and prevent these frequent contentious situations from arising.

- Recommendation: CWA Permit section III.E should be modified to add a new subsection (6), which states: "Whenever the preparation of a revised CNMP is required due to circumstances described in section III.E.2.a-c, the availability of the revised CNMP will be posted to the ENB and the plan will be available for public review an comment for 30 days. Following the 30 day comment period the Department may extend the public comment period, require submission of an application for an individual SPDES permit or alternative SPDES general permit, or accept the CNMP as complete."

- Recommendation: DEC should clarify that the CNMP for a CWA-permitted CAFO will be publicly available since it is part of the CAFO's permit.

B. The ECL Permit Must Be Amended to Provide for Public Notice and Comment on New or Significantly Modified CAFO Facilities

DEC errs in not allowing for the same level of public notice and comment on new or substantially modified CNMPs under the ECL permit as it requires under the CWA permit. First, under both the CWA and the ECL, comprehensive nutrient management plans are effluent limitations, the terms of which must be included in a CAFO's permit. Under the CWA, this is clear from the Second Circuit's ruling in *Waterkeeper Alliance, Inc. v. EPA.*[148] CNMPs are also effluent limitations under New York law. Indeed, the definition of "effluent limitation" is virtually the same under the CWA and the ECL.[149] Given the broad definition of "effluent limitation" in the ECL, DEC's assertion that only the "technical

[148] 399 F.3d at 502 (holding that CNMPs are effluent limitations).

[149] Under the CWA, "effluent limitation" is defined as:

> any restriction … on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean, including schedules of compliance.

33 U.S.C. § 1362(11). Under the ECL, "effluent limitation" is defined as

> any restriction on quantities, quality, rates and concentrations of chemical, physical, biological, and other constituents of effluents which are discharged into or allowed to run from an outlet or point source into waters of the state promulgated by the federal government.

ECL § 17-0105.

standards" that guide development of site-specific CNMPs are considered effluent limitations, and the CNMPs themselves are not,[150] makes no sense and is legally incorrect.

Second, in Waterkeeper, the Second Circuit clarified that all effluent limitations are part of a CAFO's permit.[151] The New York courts have discussed with approval the reasoning in *Waterkeeper* (as well as a case similar from the Ninth Circuit[152]), that the manner in which a permitted facility "develop[s] and implement[s] . . . required pollutant discharge control measures" – essentially, its CNMP – constitutes "the functional equivalent" of permit terms.[153]

Third, both the CWA and the ECL mandate public participation when a permit is developed or significantly revised. The CWA states: "[p]ublic participation in the development, revision, and enforcement of any . . . effluent limitation established by the Administrator or any State . . . shall be provided for, encouraged, and assisted by the Administrator and the States."[154] The same is true under the ECL, which requires notice and public participation when DEC seeks to establish a new general CAFO permit or when a CAFO seeks an individual permit.[155] As the First Circuit Court of Appeals has explained

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[150] ECL Fact Sheet at 4 (emphasis added) ("Each farm-specific CNMP identifies the environmental sensitivities of the farm and utilizes the technical standards set by the United States Department of Agriculture - Natural Resources Conservation Service (USDA - NRCS) to mitigate those environmental impacts. These *technical standards are the effluent limitations* to be included in each farm-specific nutrient management plan.").

[151] 399 F.3d at 502.

[152] *Envtl. Defense Ctr., Inc. v. U.S. E.P.A.*, 344 F.3d 832, 854 (9th Cir. 2003) (in context of general permit, permitting agency must review individualized pollution control measures for each permitted entity to avoid "impermissible self-regulatory system").

[153] *Natural Res. Def. Council, Inc. v. N.Y. Dep't of Envt'l Conservation*, 35 Misc. 3d 652, 665 (Sup. Ct. Westchester Cnty. 2012), *rev'd on other grounds*, 111 A.D.3d 737 (2d Dep't 2013), *aff'd*, 2015 WL 1978968 (N.Y. May 5, 2015) (quoting *Waterkeeper*, 399 F.3d 486, 502 (2d Cir. 2005)); *see* 33 U.S.C. § 1362(11).

[154] 33 U.S.C. § 1251(e).

[155] Specifically, the ECL requires:

> Public notice of a complete application for a SPDES permit, including: (i) all renewals of SPDES permits issued in lieu of NPDES permits; (ii) other permit renewals, except renewals of permits for projects defined as minor in article 70 of this chapter; and (iii) modifications involving substantive changes in permit requirements or authorized activities, except modification of permits for projects defined as minor under article 70 of this chapter, shall be circulated in a manner designed to inform interested and potentially interested persons and any other state, the waters of which may be affected, of such application.

ECL § 17-0805. In addition, DEC must publicly notice all draft CAFO permit approvals along with pertinent information, such as proposed effluent limitations (i.e., CNMPs). 6 N.Y.C.R.R. §§

it, public participation is "intended to alert [the permitting agency] to potential problems with the draft permit and to ensure that it has an opportunity to address those problems before the permit becomes final."[156]

In sum, the public must have the opportunity to comment on the terms of an ECL-permitted CAFO's CNMP and major revisions thereto on an equivalent basis as it participates in the terms of a CWA-permitted CAFOs CNMP and revisions thereto because under both federal and New York law: a) the terms of a CNMP are effluent limitations, b) effluent limits are part of each CAFO's permit, and c) the public has a right to participate in the development and major revision to permits.[157] There is thus no basis for distinguishing in the level of public participation under the two types of CAFO SPDES permits.

We also note that if DEC finalizes the ECL Permit without allowing for public participation in the development or modification of site-specific CNMPs, it may prevent ECL-permitted facilities from avoiding liability under the CWA for discharges of what the CAFO operator claims are "agricultural stormwater" discharges. CAFOs can take advantage of this "permit shield" provision in the CWA and discharge manure, litter and process wastewater to waters of the United States only where those materials have been "applied in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients."[158] Public participation in developing CNMPs is a prerequisite to ensuring the site-specific nutrient management practices will guarantee appropriate agricultural utilization of nutrients.[159] Without following the CWA-mandated procedure of subjecting CNMPs to public review, neither the certified nutrient management planner nor DEC can ensure that the site specific nutrient management practices will be sufficient. At the very least, public participation in developing CNMPs under the ECL will help CAFO operators preempt legal challenges to site specific management practices after a precipitation related discharge occurs.

- Recommendation: The ECL Permit must be modified to recognize that nutrient management plans are effluent limitations that are subject to public comment and hearing and must be reviewed and approved by the permitting authority in the same manner as CNMPs developed for CAFOs operating

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621.7(b)(7)(i)(a), 750-1.9(a). If the public's comments raise "substantive and significant" issues, DEC is required to hold an adjudicatory public hearing on the adequacy of the draft permit. *Id.* at § 621.8(b).

[156] *Adams v. EPA*, 38 F.3d 43, 51 (1st Cir. 1994); *see* ECL § 17-0701(3).

[157] *See Waterkeeper,* 399 F.3d at 499, 503.

[158] 40 C.F.R. § 122.23(e).

[159] *See id.* § 122.23(h)(1).

under the CWA Permit (including any modifications to the CWA permit in light of the discussion immediately below).

- Recommendation: DEC should clarify that the final CNMP for an ECL-permitted CAFO will be publicly available since it is part of the CAFO's permit.

C. Production Area Discharges from CAFOs Authorized under the ECL Permit Will Not Qualify for Any Affirmative Defense Unless DEC Affords the Public Opportunity to Comment on Their CNMPs

We are concerned that language in the ECL Permit Fact Sheet may cause confusion about whether and when a defense is available to ECL-permitted CAFOs that discharge from their production areas. DEC states that it "performed a technical evaluation for a class of specific facilities (CAFOs) within a specified geographical area (NY) and determined that an upset/bypass is beyond the reasonable control of the CAFO if the 100-year storm criteria coupled with WWSOPs are properly managed (40 CFR 122.41(n))."[160] From this language it appears that DEC is attempting to establish an affirmative "upset/bypass" defense for operators of "no discharge" ECL-permitted CAFOs that discharge pollutants from production areas.

DEC appears to be basing this on New Source Performance Standards established in EPA's 2008 CAFO Rule, which require new CWA-permitted swine, poultry, and veal calf CAFOs to make a showing, based on site-specific best management practices, to prove they are capable of no discharge of manure, litter or process wastewater from production areas, except in unforeseeable circumstances outside of the operator's reasonable control.[161] Of critical importance, under EPA's regulations, these site-specific permitting standards must be subject to public notice and comment.[162] Although DEC may group similarly-situated CAFOs with identical storage facility designs together for the sake of the no-discharge showing,[163] to meet EPA's standards, each CAFO facility must also develop a site-specific CNMP "that includes the operational and management measures utilized in the geographical

[160] DEC, Fact Sheet for New York State Department of Environmental Conservation ECL SPDES General Permit for Concentrated Animal Feeding Operations (CAFOs) at 6 (2015), *available at* http://www.dec.ny.gov/docs/water_pdf/factsheetgp016001ecl.pdf (hereinafter *ECL Permit Fact Sheet*).

[161] Revised NPDES Permit Regulation and Effluent Limitations Guidelines for CAFOs, 73 Fed. Reg. 70,418, 70,459-61 (Nov. 20, 2008) (codified at 40 C.F.R. pts. 9, 122, and 412).

[162] *Id.* at 70,460 ("[T]his demonstration will be subject to public participation requirements . . . ."); *Id.* at 70,461 ("Because the elements demonstrating no discharge are permit conditions established in a process that provides for public participation and on-going oversight, use of this alternative should further ensure compliance with the no discharge requirements.").

[163] *Id.* at 70,462.

assessment,"[164] and, under the *Waterkeeper* ruling, each individualized CNMP must be subject to public review.

In the event of an accidental discharge beyond an operator's reasonable control, there is a permit shield benefit for CAFOs that make the "no discharge" showing and obtain CWA permit coverage: "the CAFO would already have established in the permitting process an affirmative defense with respect to any discharge."[165] Thus, there is a significant incentive for CAFO operators to obtain CWA Permit coverage. DEC cannot extend this permit shield benefit to "no-discharge" ECL-permitted CAFOs without first subjecting each CAFO's site-specific CNMP to public notice and comment. While it is not mandatory for ECL-permitted CAFOs that claim "no-discharge" status to obtain CWA permit coverage, DEC must acknowledge that those CAFOs will be liable under the CWA for penalties of up to $37,000 per day of violation for any discharge from their production areas, even when Wet Weather Standard Operating Protocols have been implemented.

- Recommendation: DEC must clarify that ECL-permitted CAFOs cannot avail themselves of a defense to a discharge from their production areas unless their CNMPs have been subject to public review.

D. DEC Must Inform the Public of the Final Terms of Each CAFO's CNMP and CNMP Modification

Because CNMPs are effluent limitations that are part of a CAFO's permit under the CWA and ECL (as discussed above), final CNMPs and final CNMP modifications must be publicly available. Indeed, EPA's regulations mandate this for CWA-permitted CAFOs, and there is no legal basis for treating ECL-permitted CAFOs differently. Under EPA regulations:

> When the Director authorizes coverage for the CAFO owner or operator under the general permit, the terms of the nutrient management plan shall become incorporated as terms and conditions of the permit for the CAFO. The Director shall notify the CAFO owner or operator *and inform the public* that coverage has been authorized and *of the terms of the nutrient management plan* incorporated as terms and conditions of the permit applicable to the CAFO.[166]

As the Second Circuit has determined, failure to make final CNMPs publicly available would also frustrate the intent of the CWA to provide the public with the right "to enforce the terms of [] nutrient

[164] *Id.*

[165] *Id.* at 70,461.

[166] 40 C.F.R. § 122.23(h)(1) (emphasis added).

management plans" through citizen suit actions.[167] Without access to the terms of CNMPs, the public would have no ability to determine whether operators were complying with the terms of their permits.

- Recommendation: DEC should clarify that final CNMPs and substantial CNMP modifications for all permitted CAFOs will be publicly available.

E. NOIs Should be Available for Comment; The Content of DEC's NOI Form Should be Brought into Compliance with EPA Regulations and Best Practices in Other States

As discussed above, under both the CWA and ECL, the CNMP is part of each CAFO's permit and must be published for notice and comment. As part of that publication, we urge DEC to publish in the ENB the CAFO's completed Notice of Intent ("NOI") form, which must be submitted to DEC along with the CNMP.[168]

We also note that DEC's current NOI form does not meet EPA's requirements. According to EPA:

> The contents of the notice of intent *shall be specified in the general permit* and shall require the submission of information necessary for adequate program implementation. . . . *Notices of intent for coverage under a general permit for concentrated animal feeding operations must include the information specified in § 122.21(i)(1)*, including a topographic map.[169]

In accord with this regulation, we urge DEC to specify the content of its NOI in the Draft Permits. In addition, we urge DEC to update the content in the NOI form to include information mandated by EPA in 40 C.F.R. § 122.21(i)(1), but omitted from the current NOI, namely:

- latitude and longitude of the production area (entrance to production area);[170]

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[167] *Waterkeeper Alliance*, 399 F.3d at 503-04 (citing 33 U.S.C. § 1251(e) ("Public participation in the . . . enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this chapter shall be provided for, encouraged, and assisted by the Administrator and the States.")).

[168] The Prefaces to the Draft CWA Permit and the Draft ECL Permit state: "[a]n owner or operator may apply for coverage under this General Permit by submitting a Notice of Intent (NOI) and a Comprehensive Nutrient Management Plan (CNMP) Certification to [DEC]."

[169] 40 C.F.R. § 122.28(b)(ii) (emphasis added). The current NOI omits the requirement for a topographic map.

[170] *Id.* § 122.21 (i)(1)(iii). The current NOI form is not specific that the coordinates should be for the entrance to the production area.

- the total number of acres under control of the applicant available for land application of manure, litter, or process wastewater;[171]
- estimated amounts of manure, litter, and process wastewater generated per year (tons/gallons);[172]
- estimated amounts of manure, litter and process wastewater transferred to other persons per year (tons/gallons).[173]

In addition, EPA regulations require the NOI to include: "The type of containment and storage (anaerobic lagoon, roofed storage shed, storage ponds, underfloor pits, above ground storage tanks, below ground storage tanks, concrete pad, impervious soil pad, other) and total capacity for manure, litter, and process wastewater storage (tons/gallons)."[174] While the current NOI asks for some information about each waste storage structure, such as whether it was designed and built in accordance with NRCS standards, and evaluated by a professional engineer, it does not ask for key information required by EPA regulations, such as: a) the type of storage structure, and b) for each structure, the total capacity for manure, litter, and process wastewater storage (tons/gallons).[175]

In addition to these changes, we urge DEC to amend the NOI to ask for the total number of days of capacity[176] and the date of construction[177] for each storage structure -- information that other state CAFO programs require and that is "necessary for adequate program implementation."[178] Finally, we urge DEC to amend the owner/operator certification at the end of the NOI to reflect not only that the contents of the NOI are correct, but also that the owner/operator agrees to comply with the terms of the applicable general permit, including the site-specific CNMP.

- Recommendation: DEC should:

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[171] *Id.* § 122.21 (i)(1)(vii).

[172] *Id.* § 122.21 (i)(1)(viii).

[173] *Id.* § 122.21 (i)(1)(ix).

[174] 40 C.F.R. § 122.21 (i)(1)(vi).

[175] *See id.*

[176] *See* Vt. Agency of Agric., Food & Markets, General Permit for Medium Farm Operations (MFO GP) Appendix A: Notice of Intent to Comply, http://agriculture.vermont.gov/sites/ag/files/Appendix_A.MFO_NOIC.2012-2017.pdf; Ariz. Dep't of Envtl. Quality, Notice of Intent for Concentrated Animal Feeding Operations Under AZPDES Permit No. AZG2004-002, https://www.azdeq.gov/environ/water/permits/download/cafonotice.pdf (2004).

[177] *See* Md. Dep't of the Env't, Notice of Intent: General Discharge Permit for Animal Feeding Operations, http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/AFO/Documents/Notice%20of%20Intent.pdf (2011).

[178] 40 C.F.R. § 122.28(b)(ii).

- publish each CAFO's NOI in the ENB when it publishes the CNMP
- specify the content of the NOI form in the Draft Permits
- update the content in the NOI form to include information mandated by EPA in 40 C.F.R. § 122.21(i)(1), but omitted from the current NOI, as outlined above
- update the NOI form to require additional information about storage capacity required by other state CAFO programs, as outlined above
- amend the owner/operator certification at the end of the NOI form to include certification of compliance with the terms of the applicable general permit, including the site-specific CNMP.

IV. The CWA Permit Omits Required Directives About Agronomic Application Rates; To Ensure Compliance, DEC Should Require Yearly Soil Sampling on All Fields to Which Manure, Litter, or Process Wastewater Are Applied

The Draft CWA Permit does not include the specificity regarding agronomic rates that the Clean Water Act requires. EPA's regulations state that "[a]ny permit issued to a CAFO must include a requirement to implement a nutrient management plan that . . . [e]stablish[es] protocols to land apply manure, litter or process wastewater in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter or process wastewater."[179] In addition, the terms of the NMP must include "field-specific rates of application" based on pounds of both nitrogen and phosphorus.[180] The Draft CWA Permit does not comply with EPA's regulations because it does not specify the site specific nutrient management practices that must be included in each CNMP, including that both nitrogen and phosphorus must be accounted for when determining agronomic rates. (Notably, the term "agronomic rates" is defined in the permit, but is never used.) In addition, 40 C.F.R. section 122.42(e) and 40 C.F.R. part 412 specify many additional requirements for a nutrient management plan that are not included in the Draft CWA Permit such as provisions related to storage, mortality management, recordkeeping, effluent limits, and so on.

- Recommendation: Section III.A of the Draft CWA Permit (entitled "Minimum CNMP Content") must be amended to include *all* of the content that EPA requires in a CWA NMP.[181]

[179] *Id.* § 122.42(e)(1).

[180] *Id.* § 122.42(e)(5) (requiring terms to address application rates using either the linear approach or the narrative rate approach – both of which require application rate setting for nitrogen and phosphorus).

[181] *See id.* § 122.42(e); *id.* pt. 412.

We strongly urge DEC to modify the draft ECL and CWA Permits to require CAFOs to conduct regular sampling of soil so that DEC and the public can confirm that waste is being applied agronomically, and that water quality is not impacted by CAFO operations. DEC regulations require CAFO SPDES permittees to conduct monitoring "to determine compliance with effluent limitations and water quality standards. . . ."[182] In the context of CAFOs permitted under the ECL, where the effluent limitation requires "zero discharge," it is essential that the permit require monitoring "to determine compliance" with the effluent limitations, meaning to determine if the CAFO is discharging. Yet both draft permits require only very limited monitoring.

New York CAFOs should be required to regularly sample the soil on fields where agricultural wastes will be land-applied to ensure that phosphorus and other nutrients are not over-applied. DEC admits that excess phosphorus "is a leading contributor to water quality impairments in watersheds of New York and other areas of the nation."[183] The Department also acknowledges that phosphorus "can have negative impacts on public drinking water reservoirs and potentially public health,"[184] that much land in New York already has high phosphorus levels, and many waterbodies in the state are already impaired by excess phosphorus (with 41% of the State's CAFOs located in watersheds that feed impaired waterbodies).[185]

While manure, litter, food processing waste, digestate, and process wastewater must be tested once per calendar year at each New York State CAFO,[186] the current ECL CAFO Permit, by incorporation of NRCS Conservation Practice Standard NY590, requires soil testing only once every three years. Soil sampling only once every three years is inadequate. Other states currently require yearly soil and manure testing. For instance, South Dakota mandates that "[t]he producer must take annual soil and manure samples and have samples tested for nitrogen and phosphorus."[187]

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[182] 6 N.Y.C.R.R. § 750-1.13.

[183] Dairy FEIS at 54; *see id*. at 64 ("Phosphorus has caused widespread impacts across the state."); *id*. at 116 ("[m]any waterbodies in New York State are impaired due to excess phosphorus…").

[184] *Id*. at 54.

[185] *Id.* at 65-66 & tbl.43-2.

[186] Draft ECL CAFO Permit § IV.E.

[187] S.D. Dep't of Env't & Natural Res., *supra* note 125. Texas has heightened soil monitoring requirements for CAFOs in "major sole-source impairment zones" whereby the Texas Center for Environmental Quality must annually collect soil samples for each CAFO. 30 Tex. Admin Code § 321.36. Texas defines major sole source impairment zones as a "watershed that contains a reservoir (1) that is used by a municipality as a sole source of drinking water supply . . . and (2) at least half of the water flowing into which is from a source that, on the effective date of this subchapter, is on the list of impaired state waters . . . ." Tex. Water Code Ann. § 26.502. In Oklahoma, soils in areas in

Dr. Quirine Ketterings, a Professor of Nutrient Management in Agricultural Systems at Cornell University's Nutrient Management Spear Program has stated that "[a]nnual [soil] testing will result in more reliable records, as it allows us to build these trends over time much quicker than testing every three years. . . . The tendency is to over-apply if you don't know how much you need, so soil testing is core in fine-tuning soil fertility and crop management."[188] With respect to the burden on farmers, Antonio P. Mallarino, a professor of soil fertility and nutrient management at Iowa State University, states "[t]he cost of soil sampling and testing, relative to the crop prices and cost of fertilizers and other inputs, has decreased significantly in recent years. Therefore, this is a great time to use soil testing to improve nutrient management and the profitability of crop production."[189]

- Recommendation: DEC should require annual soil sampling on each land application field since the costs are minor and there are significant advantages for nutrient management planning.

- Recommendation: DEC should establish a system to allow for electronic reporting and searches of soil sample results, as other states have done. See, for example: North Carolina's Public Access Laboratory-information System ("PALS") website, http://www.ncagr.gov/agronomi/pals/.

V. DEC Must Continue to Require Annual Nutrient Management Plans for Large CAFOs Authorized Under the ECL Permit

The purpose of a nutrient management planning "is to ensure agricultural waste will be utilized with minimal effects on the soil, surface water, groundwater, air quality, and will protect public health, safety, and welfare."[190] Annual Nutrient Management Plans ("ANMPs") are crucial to ensure that each CAFO's nutrient management practices are up to date and utilize the most recently available data from soil tests, manure analysis, previous years' crop performances, and other information gathered by the producer.[191] "These factors

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which swine waste is applied must be analyzed annually for phosphates, nitrates and soil pH. Okla. Stat. tit. 2 § 20-10(G).

[188] *Saving with Soil Testing*, Growing, June 1, 2010, http://www.growingmagazine.com/vegetables/sweet-corn/saving-with-soil-testing/.

[189] *Id.*

[190] N.D. Dep't of Health, Guideline 30: Nutrient Management Plans for Agricultural Processing Facilities 1 (2009), *available at* https://www.ndhealth.gov/wm/Publications/Guideline30NutrientManagementPlansForAgriculturalProcessingFacilities.pdf.

[191] Univ. of Neb.-Lincoln, Annual Plan Sample, http://water.unl.edu/manure/annual-plan (last visited Feb 11, 2016).

will keep [CNMPs] current and meaningful."[192] Despite the usefulness of annual CNMP updates in ensuring appropriate handling of manure, litter and process wastewater, DEC has proposed to remove the requirement for Large ECL-permitted CAFOs to complete ANMPs. DEC purportedly based its relaxation of this permitting requirement on the legal definition of ECL-permitted CAFOs as "no discharge" facilities.[193] DEC also reports that ANMPs were not used "to determine the compliance status of farms," nor were they "helpful in addressing or mitigating water quality impacts."[194]

Contrary to DEC's assertions, ANMPs are more crucial for "non-discharging" CAFOs than for the "discharging" CWA-permitted CAFOs, upon which the ANMP requirement will continue to be imposed.[195] In order to establish their status as "no discharge" facilities, ECL-permitted CAFOs must meet a higher bar for water pollution prevention than CWA-permitted facilities, so up-to-date nutrient management planning at ECL CAFOs is even more important. Additionally, determining compliance status of farms was never the purpose for the ANMP requirement; rather, the New York State Department of Agriculture and Markets ("DAM") has determined that ANMPs are useful *forward-looking* plans "to guide the producer in agricultural environmental management and compliance with [water quality] permit[s]."[196]

Relaxation of the ANMP requirement in the ECL Permit is strictly prohibited by the anti-backsliding protections afforded by the ECL, which provide that "when effluent limitations are established they must be at least as stringent as the effluent limitations previously required unless . . . an exception is warranted as provided" under the CWA.[197] As ANMPs serve to ensure the most up-to-date and accurate guidelines to handle and land apply manure, litter, and process wastewater, the ANMP requirement constitutes an effluent limitation under the broad definition set forth in the ECL. Any attempt to lessen ANMP

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[192] eXtension, Implementing a Nutrient Management Plan, Oct. 27, 2015, http://articles.extension.org/pages/16797/implementing-a-nutrient-management-plan.

[193] *See* ECL Permit Fact Sheet at 4.

[194] *Id.*

[195] CWA Permit Fact Sheet at 4.

[196] DAM, Soil & Water Conservation Comm., Agricultural Environmental Management CNMP Fact Sheet 1, Developing Annual CNMP Updates 1 (2006), *available at* http://www.nys-soilandwater.org/aem/forms/CNMPUpdateFactSheet.pdf. The ANMP takes into account "changes in farm facilities, landbase, management, and/or CAFO policy since the original CNMP." *Id.* The plans should be kept "current about upcoming changes on the farm (increases in livestock numbers, new barns, new parlor, etc.) so that the changes are planned and implemented in line with the CNMP." *Id.* And "[i]n cases where [the] changes occur without the planner's knowledge, the planner should evaluate the latest conditions and update the CNMP with recommendations in accordance with NRCS standards and the CAFO general permit." *Id.*

[197] ECL § 17-0809(3).

requirements would be unlawful backsliding, in violation of ECL § 17-0809(3). When done right, dynamic, iterative nutrient management planning completed on an annual basis will help farmers stay ahead of the water pollution curve, benefitting all parties.

- Recommendation: DEC must continue to require all ECL-permitted CAFOs to complete ANMPs.

VI. DEC Should Finalize and Implement the Important New Pollution Controls It Has Proposed in the Draft Permits

DEC has proposed five new water quality protections in the Draft Permits that will have long-lasting benefits for both CAFO operators and water quality. We encourage DEC to finalize these proposed important modifications to the Draft Permits:

- Updated rainfall event maps. DEC proposes to account for changing weather patterns by updating the 25-year, 24-hour rainfall event map and incorporating the 100-year, 24-hour rainfall event map, each developed by the Northeast Regional Climate Center and the Natural Resources Conservation Service.[198] Given EPA's and DEC's determinations that climate change will cause more frequent and more intense storms,[199] these updated maps will more realistically predict future weather patterns to help CAFO operators design their facilities and develop plans to prevent inadvertent discharges. The previous permits defined a 25-year, 24-hour rainfall event by reference to "the National Weather Service in Technical Paper Number 40, 'Rainfall Frequency Atlas of the United States,' May 1961, and subsequent amendments, or equivalent regional or state rainfall probability information developed there from." What was considered a 25-year storm by the May 1961 Rainfall Frequency Atlas of the United States is now a far more frequent occurrence, and the National Weather Service has not amended the frequency report for New York State. Faced with changing weather patterns, CAFO operators should be guided by the updated measure of what level of rainfall constitutes 25-year and 100-year, 24-hour storms.

[198] Draft ECL Permit at app. A.A-B; Draft CWA Permit at app. A.A-B.

[199] DEC's Climate Action Panel not only predicts that "[h]eavy precipitation is expected to fall more frequently, and there may be a trend toward longer-lasting events that compound the damage" a prediction EPA agrees with. DEC, Impacts of Climate Change in New York, Projected Impacts, http://www.dec.ny.gov/energy/94702.html (last visited Feb. 11, 2016); U.S. Envtl. Prot. Agency, Understanding the Link Between Climate Change and Extreme Weather, http://www3.epa.gov/climatechange/science/extreme-weather.html (last visited Feb. 12, 2016). ("In recent years, a larger percentage of precipitation has come in the form of intense single-day events. . . . It is likely that the frequency and intensity of extreme precipitation events will increase over most of the United States.").

- Professional evaluation of existing structural BMPs. DEC has proposed to require professional evaluations (or the equivalent) of existing waste storage facilities.[200] DEC has also proposed similar professional evaluation requirements for Vegetated Treatment Areas and Waste Transfer Systems.[201] Professional evaluations of these structural BMPs are critical to guarantee safety for CAFO operators and indicate where further pollution prevention practices may be necessary to prevent unlawful discharges to surface or groundwater.

- Continuous Monitoring of Waste Transfers. DEC has proposed constant monitoring of mechanical waste transfer systems during operation.[202] While waste transfer systems are typically reliable, a failure of these systems has the potential to cause a catastrophic discharge. In 2015, a mechanical failure of a waste transfer system caused 7,000-9,000 gallons of manure to flow into a Schoharie Creek tributary.[203] The discharge was made significantly worse because CAFO staff had left the waste transfer system unattended, allowing the discharge to continue until discovered.[204] The CAFO operator reported:

  > The result of a mechanical failure, manure from one of the facility's two concrete manure storages (CWSF #1) was propelled by an agitation pump outside the confines of the structure. The incident occurred during routine manure transfer operations while the farm staff were away from the site conducting land application. Upon discovery the pump was immediately de-energized. Manure reached a nearby "Class C" tributary of Schoharie Creek.[205]

  The discharge could have been avoided entirely or significantly mitigated if attendant staff were on site during the waste transfer. Waste transfers must be constantly monitored to ensure prompt response and minimize the impact from inevitable future breakdowns of the mechanical systems.

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[200] Draft ECL Permit § III.A.4.b; Draft CWA Permit § III.A.4.b.

[201] Draft ECL Permit § III.A.4.c & d.; Draft CWA Permit § III.A.4.c & d.

[202] Draft ECL Permit § III.B.4; Draft CWA Permit § III.B.4.

[203] DEC, Concentrated Animal Feeding Operation (CAFO) Incident Report Form, Stony Brook Farm at 2 (May 29, 2015) (received from FOIL Request No. 15-3542 and on file with authors).

[204] *Id*.

[205] *Id.*

- Emergency Action Plans. Under DEC's proposal, CNMPs would include an emergency/spill response plan, detailing locations of cleanup equipment, mapping sensitive water resources and the most appropriate lands to receive additional manure, and indicating emergency contact information.[206] This is a practical step to ensure the fastest and most appropriate response to emergency situations, which will benefit CAFO operators and water quality alike.

- Manure Export Recordkeeping Improvements. DEC proposes to improve recordkeeping requirements for waste export from CAFO facilities. Whereas the previous permits required records to be kept only when manure was exported from an ECL CAFO "to any one recipient in amounts greater than 50 tons annually,"[207] under the Draft Permits CAFOs would be directed to keep records of each "[t]ransfer of manure, litter, food processing waste, digestate, and process wastewater to other persons," regardless of volume.[208] While storage and land application at CAFOs is strictly regulated, those same activities may avoid proper oversight when occurring offsite. Identifying end users of CAFO waste is necessary to help DEC prevent or respond to significant water quality problems if and when they occur.

VII. The Draft Permits Impermissibly Remove Effluent Limitations Designed to Prevent Discharges from Facilities Sited in Floodplains

The Draft Permits remove protections against discharges due to the siting of CAFOs in floodplains. This violates Environmental Conservation Law section 17-0809(3), which requires that "when effluent limitations are established they must be at least as stringent as the effluent limitations previously required unless . . . an exception is warranted as provided in section [sic] 303(d) and 402(o) of the [CWA]."[209] As DEC is aware, a memorandum from former-Commissioner Martens to the Governor's then-Assistant Secretary for Energy and the Environment regarding deregulation of certain dairies advised: "NYS Law bars the Department from allowing a SPDES permit to be more lenient than a previous permit in

[206] Draft ECL Permit § III.A.7; Draft CWA Permit § III.A.6.

[207] DEC, State Pollutant Discharge Elimination System (SPDES) General Permit for Concentrated Animal Feeding Operations (CAFOs), General Permit No. GP-0-14-001, at § VI.E.o (2014), *available at* http://www.dec.ny.gov/docs/water_pdf/gp01401.pdf (hereinafter *Current ECL Permit*).

[208] Draft ECL Permit § III.B.13; Draft CWA Permit § III.B.13.

[209] ECL § 17-0809(3).

antibacksliding provisions enacted in 1988 (ECL 17-0809(3)). . ." [210] The Draft Permits violate this principle of law.

A. The Draft ECL Permit Eliminates Protections in the Current ECL Permit

On its face, the Draft ECL Permit no longer restricts construction of new facilities in the 100-year floodplain. The current ECL Permit prohibits construction in flood plains in two circumstances. First: "*New facilities* shall not be built in a surface water of the State, including wetlands, and must be built outside of the 100-year floodplain (excluding agricultural fields)." [211] Second: "*New structures on existing facilities* shall not be built in a surface water of the State, including wetlands, and must be built outside of the 100-year floodplain unless protected from inundation by the 100-year flood as documented by a Professional Engineer currently licensed to practice in New York State."[212] By contrast, the Draft ECL Permit omits the prohibition on building "new facilities" in 100-year flood plains, while retaining the prohibition on "new structures in existing facilities."[213]

As a result, the Draft ECL Permit is less protective than the current ECL Permit. Because any facility built in the 100-year floodplain is at risk of discharging to waters of the state in the event of a 100-year storm, all new or expanded facilities should be protected from inundation during such an event, and failure to require this protection violates the prohibition on back-sliding.

- Recommendation: DEC should retain existing restrictions on the construction of new facilities in the 100-year flood plain to ensure no backsliding. The recommended new 100-year floodplain provision should read as follows:

  > New facilities shall not be built in a surface water of the State, including wetlands, and must be built outside of the 100-year floodplain (excluding agricultural fields). New or expanded structures on existing facilities shall not be built in a surface water of the State, including wetlands, and must be built outside the 100-year floodplain unless protected from inundation by the 100-year flood as documented by a Professional Engineer currently licensed to practice in New York State.

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[210] Memorandum from Joe Martens, Comm'r, DEC, to Tom Congdon, Assistant Sec'y for Energy & the Env't (2012), Administrative Record in *Riverkeeper, et al. v. Martens*, No, No. 4166-13 (Sup. Ct. Albany Cty), document DEC001304 (emphasis added), a copy of which is attached as Appendix E.

[211] Current ECL Permit § VI.E.f (emphasis added).

[212] *Id.*

[213] Draft ECL Permit § III.B.8 (emphasis added).

B. The Draft CWA Permit is Less Protective than the Current ECL Permit

The Draft CWA Permit's 100-year floodplain provision is both more and less protective than the current CWA Permit, which provides:

> *New and expanded wastewater retention facilities* may not be located in the 100-year flood plain unless the facility is protected from inundation and damage that may occur during that flood event.[214]

We applaud DEC's decision to improve the protections afforded by this provision in the Draft CWA Permit by expanding it to cover all new structures in 100-year flood plains, not only wastewater retention facilities. However, the Draft CWA Permit's floodplain provision suffers from the same backsliding flaw as the Draft ECL Permit insofar as it applies only to new structures on existing facilities, and does not apply to new facilities. Because any facility built in the 100-year floodplain is at risk of discharging to waters of the state in the event of a 100-year storm, all new or expanded facilities should be protected from inundation during such an event.

- Recommendation: DEC should include restrictions on the construction of new facilities in the 100-year flood plain in the Draft CWA Permit in the same manner as the current ECL Permit. The new 100-year floodplain provision should read as follows:

  > New facilities shall not be built in a surface water of the State, including wetlands, and must be built outside of the 100-year floodplain (excluding agricultural fields). New or expanded structures on existing facilities shall not be built in a surface water of the State, including wetlands, and must be built outside the 100-year floodplain unless protected from inundation by the 100-year flood as documented by a Professional Engineer currently licensed to practice in New York State.

VIII. The Draft Permits Would Create Unlawful SPDES Permit Exclusions for Construction Projects

Both draft permits set forth identical "Permit Requirements for Construction Activities at CAFO Facilities" in each permit's respective Appendix B. The requirements would create new, unlawful exemptions from the SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-15-002 (the "Construction General Permit"). The exemptions in Section B of each Appendix would allow CAFO operators to construct buildings and facilities with up to five acres of disturbance without first preparing

[214] Draft CWA Permit § III.B.8.

Stormwater Pollution Prevention Plans ("SWPPP") or Notices of Intent ("NOI") to Obtain Coverage under the Construction General Permit.

DEC may authorize such exclusions only in watersheds for which no total maximum daily loads ("TMDL") have been established for pollutants of concern related to construction activities.[215] The draft "Permit Requirements for Construction Activities" do not distinguish between TMDL and non-TMDL watersheds. DEC must incorporate these federal limitations on exemptions from the Construction SPDES General Permit into the ECL and CWA Permits.

Yet even in unimpaired waterbody watersheds where DEC has authority to create new exemptions from the Construction General Permit, such exemptions would be neither reasonable nor prudent. Unless developers submit NOIs and SWPPPs, DEC has no formal oversight role over post-construction stormwater design. Without a SWPPP, the New York City Department of Environmental Protection would be similarly excluded from post-construction oversight authority for any projects (<5,000 square feet) within the NYC Watershed. Likewise, there would be no formal role for the public.

There are a number of proposed exempted projects that are especially likely to change hydrology and/or create impervious surfaces and cause significant runoff, including:

- access road improvement;
- constructed wetlands;
- streambank and shoreline protection;
- manure storage systems;
- pesticide handling facilities;
- petroleum product storage;
- spill prevention and containment; and
- wetland mitigation projects.[216]

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[215] Federal regulations limit such exemptions to construction projects for which:

> Storm water controls are not needed based on a "total maximum daily load" (TMDL) approved or established by EPA that addresses the pollutant(s) of concern or, for non-impaired waters that do not require TMDLs, an equivalent analysis that determines allocations for small construction sites for the pollutant(s) of concern or that determines that such allocations are not needed to protect water quality based on consideration of existing in-stream concentrations, expected growth in pollutant contributions from all sources, and a margin of safety.

40 C.F.R. § 122.26(b)(15)(i)(B).

[216] Draft CWA Permit at app. B.B; Draft ECL Permit at app. B.B. Note that wetland mitigation projects may require additional permits under ECL Article 15 and/or CWA Section 404.

With these exemptions, DEC is relinquishing its authority—and the right of the public—to ensure these projects are completed safely for water quality and human health. Given that potential harms from construction of agricultural projects are the same as those for every other industry in the state, there is no rational basis for a regulatory carve-out for the agricultural industry.

- Recommendation: Major CAFO infrastructure projects (<5 acres) should not be exempt from the Construction General Permit. At the very least, DEC must incorporate federal limitations on exemptions from the Construction General Permit into the ECL and CWA Permits. Rather than exempting CAFOs from the Construction General Permit, DEC should create a process to streamline approval for the construction of major CAFO infrastructure projects, and determine whether SWPPPs are necessary in each case.

IX. Both Draft Permits Must Be Amended to Exclude Non-Contact Cooling Water Discharges

A. The ECL Prohibits Authorization of Non-Contact Cooling Water Discharges Under the CAFO SPDES General Permits

Both draft permits propose to authorize discharges of up to 100,000 gallons per day of non-contact cooling water at temperatures up to 70° Fahrenheit.[217] This proposal, if implemented, would frustrate the legislature's intent to permit thermal discharges separately from other pollutant discharges.

The Uniform Procedures Act ("UPA") provides that DEC may issue a general permit for a "category" of point sources of one or more discharges, which:

- involve the same or substantially similar types of operations;
- discharge the same types of pollutants;
- require the same effluent limitations or operating conditions;
- require the same or similar monitoring; and
- which will result in minimal adverse cumulative impacts.[218]

It is our understanding that most New York State CAFOs do not utilize non-contact cooling systems or discharge non-contact cooling water. These types of thermal discharges are uncharacteristic of CAFOs, which typically discharge only manure, litter and process wastewater. The two discharge categories necessitate widely different types of effluent limitations. That is, CAFOs may only discharge manure, litter and process wastewater

[217] Draft ECL Permit § III.B.1.a.3; Draft CWA Permit § III.B.1.a.3.

[218] ECL § 70-0117(6)(a).

when such materials are stored and land applied in accordance with a CNMP. By contrast, thermal discharges are limited by, and must be monitored for, temperature and volume values. As most CAFOs do not utilize non-contact cooling operations, and thermal discharge effluent limitations are widely different than those for the typical discharges of manure, litter and process wastewater already authorized under the CAFO permit, the two point source categories should not be grouped together under the same general permit.[219]

Moreover, the UPA further specifies three "categories" of discharges that may be authorized under a general permit only when, "by virtue of their nature and location, the department determines such discharges are more appropriately controlled under a general permit than under individual permits."[220] Thermal discharges are one of the three discharge "categories" that must undergo this additional scrutiny prior to authorization under a general permit. There is no such requirement for the authorization of manure, litter and process wastewater discharges under CAFO general permits. DEC has not shown that "by virtue of their nature and location," the non-contact cooling water discharges would be more appropriately controlled under any general permit, let alone under the CAFO general permits. In fact, DEC has not identified the nature or location of the discharges. Regardless, as the legislature has distinguished thermal discharges from CAFO discharges, it would be inappropriate to group the discharges together under the forthcoming CAFO permits.

- Recommendation: DEC must remove the provisions that authorize non-contact cooling water discharges from the Draft Permits. Such thermal discharges may be authorized under a separate general permit issued pursuant to the procedures set forth in ECL section § 70-0117(6)(b).

B. The Proposed Effluent Limitations for Non-Contact Cooling Water Discharges Would Fail to Meet Minimum Water Quality Standards and Would Not Guarantee that New York Waters Will Continue to Meet Their Best Uses

Pursuant to ECL section § 17-0811, all "SPDES permits . . . shall include provisions requiring compliance with . . . effluent limitation [and]… any further limitations necessary to insure compliance with water quality standards adopted pursuant to state law."[221] The scant effluent limitations provided in the draft CAFO permits for non-contact cooling water

[219] Note that in the case of the ECL permit, it would be paradoxical for DEC to authorize a "non-discharging" CAFO to discharge thermal pollutants to waters of the state.

[220] ECL § 70-0117(6)(b).

[221] *See also* 40 C.F.R. § 122.4(d) ("No permit may be issued . . . (d) When the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States.").

thermal discharges would fail to guarantee that trout or non-trout receiving waters could continue to meet their best uses.[222] New York regulations forbid the discharge of heated liquid into class AA-Special fresh surface waters,[223] but such prohibition is not reflected in the permit limitations. Moreover, the permit, which limits thermal discharges to 100,000 gallons per day at 70˚ Fahrenheit, cannot guarantee that all Class A, B or C Waters will maintain their suitability of the waters for fish, shellfish and wildlife propagation and survival.[224]

In order to guarantee that state waters continue to support their best uses, state water quality regulations impose strict effluent limitations for thermal discharges.[225] These minimum regulatory effluent limitations must be reflected in all SPDES permits that authorize thermal discharges in New York State, but they are missing from the draft CAFO permits. For instance, the General Criteria Governing Thermal Discharges sets forth a list of narrative effluent limitations that must be adhered to:

- The natural seasonal cycle shall be retained.
- Annual spring and fall temperature changes shall be gradual.
- Large day-to-day temperature fluctuations due to heat of artificial origin shall be avoided.
- Development or growth of nuisance organisms shall not occur in contravention of water quality standards.
- Discharges which would lower receiving water temperature shall not cause a violation of water quality standards and section 704.3 of this Part.
- For the protection of the aquatic biota from severe temperature changes, routine shut down of an entire thermal discharge at any site shall not be scheduled during the period from December through March.[226]

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[222] *See* 6 N.Y.C.R.R. § 704.1(a) ("All thermal discharges to the waters of the State shall *assure* the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water." (emphasis added)); *id.* § 701.1 ("The discharge of . . . wastes shall not cause impairment of the best usages of the receiving water . . . ."); *id.* § 703.2. The discharges of up to 100,000 gallons of water at temperatures of up to 70º Fahrenheit, as proposed in the Draft Permits, are prohibited in class AA waters and may, in other circumstances, harm fish or shellfish.

[223] *Id.* § 701.3.

[224] *See id.* §§ 701.6-8.

[225] *Id.* §§ 703.2, 704.2, 704.3 & 704.4.

[226] *Id.* § 704.2(a).

There are also numerical limitations for trout and non-trout waters in part 704.2(b), but only the numerical limitations for trout waters are referenced in the permits.[227] Part 702.16(a) of the NYCRR prohibits DEC's authorization of thermal discharges that fail to comply with all of the narrative and numerical effluent limitations cited above. Failure to modify the terms of the Draft Permits to incorporate these minimum pollution controls would be an *ultra vires* action, in violation of ECL § 17-0803, and arbitrary and capricious.

- Recommendation: DEC must revise the terms for thermal discharges to incorporate the minimum effluent limitations and water quality standards set forth in 6 NYCRR parts 701.1, 701.3, 701.8, 703.2 t.1, 704.1, 704.2, 704.3, and 704.4

CONCLUSION

For all the reasons above, we urge DEC to incorporate our recommendations (which are reproduced in Appendix A, attached hereto) when it finalizes the Draft Permits. We appreciate the opportunity to submit these comments and would be happy to meet with you to discuss our comments and recommendations.

Sincerely,

Eve C. Gartner
Tucker Wisdom-Stack
Earthjustice

On behalf of Earthjustice, Citizens Campaign for the Environment, Environmental Advocates of New York, Sierra Club Atlantic Chapter, and Theodore Gordon Flyfishers

Michael Dulong
Riverkeeper, Inc.

On behalf of Riverkeeper, Inc.

[227] *See* Draft ECL Permit § III.B.1.b.2; Draft CWA Permit § III.B.1.b.2

Appendix A

Collected Recommendations of Environmental Coalition

SUMMARY OF RECOMMENDATIONS OF CITIZENS CAMPAIGN FOR THE ENVIRONMENT, INC.; EARTHJUSTICE; ENVIRONMENTAL ADVOCATES OF NEW YORK; RIVERKEEPER, INC.; SIERRA CLUB ATLANTIC CHAPTER; THEODORE GORDON FLYFISHERS, INC.; AND WATERKEEPER ALLIANCE, INC. ON DRAFT CAFO PERMITS*

February 12, 2016

I. RECOMMENDATIONS REGARDING PROTECTING WATERS OF THE STATE FROM DISCHARGES RESULTING FROM WINTER MANURE SPREADING

1. The Draft Permits must include additional limits on the practice of winter manure spreading. At a minimum, the definition of "adverse spreading conditions" must be expanded to make clear that all of the "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided" spreading scenarios identified in the Adverse Weather Spreading Guidelines, not just spreading on liquid- or frozen-saturated soil, are prohibited during "adverse spreading conditions." Alternatively, DEC could delete the definition of "adverse spreading conditions" and revise the Permits to prohibit all practices that the Spreading Guidelines characterize as "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided."

2. As the Adverse Weather Spreading Guidelines state: "Operations that use last resort fields in emergency conditions every year need more storage." We urge DEC to alert dairy operators that they must develop and implement plans to install sufficient storage for liquid and solid manure within 5 years because the next version of the ECL permit will be more restrictive in terms of when winter spreading is permitted.

3. Section III.8(b) of the ECL Permit and Section III.7(b) of the CWA Permit should be redrafted to state:

   > Applications of manure, litter, food processing waste, digestate, and process wastewater during **winter and wet weather** periods ~~which meet *adverse spreading conditions* as defined in Appendix A,~~ must be made in accordance with the 2015 Revised Cornell Guide, "Supplemental Manure Spreading Guidelines to Reduce Water Contamination Risk During Adverse Weather Conditions," **meaning that all manure spreading practices identified in the Spreading Guidelines as "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided" are prohibited. The CNMP must reflect these restrictions.**
   >
   > **.** ~~and the CNMP must:~~
   > ~~(1) include specific winter application procedures consistent with these guidelines as well as the NRCS NY 590 Standard; and~~

* Citations and definitions are omitted throughout this document. For full context, please reference the foregoing comments.

~~(2) identify specific fields to be reserved for adverse weather applications~~

Alternatively, the Draft Permit should list all "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided" practices that are prohibited, specifically:

- manure applications of 10,000 gallons/acre upon soil that is close to saturation and/or there is a dense six-inch snow layer (3 inches of water per foot);
- manure applications on "concrete frost";
- manure applications when there is an ice layer approximately .5 inches or more in thickness and largely unbroken;
- "large" manure applications late in the season just before snowmelt;
- during high risk weather conditions, manure application at the base of concave slopes or where less permeable layers are close to the surface;
- manure application in fields with flowing tiles without monitoring for evidence of contamination;
- manure application to fields that are both close to surface water and the surface slope is oriented toward the waterbody;
- manure applied without incorporation in portions of fields that drain to wells or karst features during frozen, snow covered, or saturated conditions;
- manure applications on wet soils when 0.25 to 0.5 inches of precipitation is forecasted within the next 48 hours;
- manure applications on all soils when 1 or more inches of precipitation is forecasted within the next 48 hours;
- manure applications on snowpack when the weather forecast indicates a warm front of above freezing temperatures within the next few days, and especially if the overnight forecast lows are also to remain above freezing.

4. DEC should ensure consistent use of terms and rates in the Draft Permits and Spreading Guidelines. All spreading scenarios and practices that the Spreading Guidelines identify as risky, not just spreading on concrete frost, should be prohibited in the Permits.

5. To prevent confusion, Section III.5 of the ECL Permit should reference the Spreading Guidelines and specify that the WWSOPs that are included in all CNMPs must prohibit spreading in all circumstances that the Spreading Guidelines identify as risky scenarios. In addition, the definition of WWSOPs should be moved into the Definitions section of the Permits.

6. Even if DEC does not adopt a date-based winter-spreading ban as other states have done, it must take additional steps to limit winter spreading of manure in New York. At a minimum, it must adopt measures recommended elsewhere in these comments, such as prohibiting practices identified as "high-risk," "very risky," "higher risk," "risky" and "should-be-avoided" in the Spreading Guidelines. DEC should also communicate winter spreading's inherent risks on the face of the final ECL and CWA permits.

7. The Draft Permits must clearly identify all external standards that CAFO owners and operators must comply with as a term of the Permit, including any external standards within referenced external standards that are incorporated into the Permits. DEC should include all referenced (and internally referenced) standards on its website and the Draft Permits should include a link to the page of the DEC website where those standards can be found through the full term of the Permits.

8. The ideal standard would define "saturated" as moisture content at or in excess of field capacity (i.e., moisture content after free drainage has ceased) to prevent nutrients loss to either surface water or groundwater. This is consistent with the Adverse Weather Spreading Guidelines' finding that moisture above field capacity can lead to runoff, as noted above. However, DEC could also adopt a definition similar to the definitions adopted other states. For example, both Illinois and Wisconsin define "saturated" as "[s]oils in which pore spaces are occupied by liquid to the extent that additional inputs of water or liquid wastes cannot infiltrate into the soil." While this represents saturation at 100% of soil pore volume, this is a definition that is less likely to lead to surface runoff than the NRCS NY590 Standard's metric for saturated soils, which represents saturation in excess of 100% soil pore volume.

9. The Draft Permits should also define "frozen-saturated soil." DEC could adopt a definition similar to Illinois, which defines "frozen ground" as "[s]oil that is frozen anywhere between the first 1/2 inch to 8 inches of soil as measured from the ground surface." This definition is consistent with the Adverse Weather Spreading Guidelines, which notes that concrete frost may exist at a shallow level below unfrozen topsoil, and manure applications on concrete frost should be avoided.

10. The ideal standard would define "significant surface icing" as any ice layer that is impervious and will prevent nutrient incorporation with the soil. This standard is consistent with New York's recognition in other contexts that application of fertilizer upon impervious surfaces presents a high risk of nutrient runoff. A protective standard will preclude any manure application upon surface icing that is 0.5 inches or

greater in thickness and largely unbroken. This is consistent with the Adverse Weather Spreading Guidelines, as discussed above.

11. To qualify for a necessity based exception, a CAFO should be required to demonstrate that it has sufficient capacity available as of December 1 to store all manure and waste water generated by the CAFO for 180 days (as Maine requires) without resorting to land application as a means of disposal.

12. DEC should adopt a definition consistent with Illinois' definition of "injection," which is "[t]he placement of livestock waste 4 to 12 inches below the soil surface in the crop root zone using equipment specifically designed for that purpose, when the applied material is retained by the soil."

13. DEC should also adopt a definition consistent with Illinois' definition of "incorporation," which is "A method of land application of livestock waste in which the livestock waste is thoroughly mixed or completely covered with the soil within 24 hours. Any ponded liquid livestock waste remaining on the site after application is not considered to be thoroughly mixed or completely covered with the soil."

II. RECOMMENDATIONS REGARDING PROTECTING GROUNDWATER AND DRINKING WATER FROM ANIMAL WASTE

1. DEC should define "at-risk groundwater." DEC could follow the lead of Wisconsin which defined a "site that is susceptible to groundwater contamination" as including:

    - an area within 250 feet of a private well;
    - an area within 1,000 feet of a municipal well;
    - an area within 300 feet upslope or 100 feet downslope of a karst feature;
    - a channel with a cross-sectional area equal to or greater than 3 square feet that flows to a karst feature;
    - an area where the soil depth to groundwater or bedrock is less than 2 feet;
    - an area where none of the following separates the ground surface from groundwater and bedrock:
        1. a soil layer at least 2 feet deep that has at least 40% fine soil particles;
        2. a soil layer at least 3 feet deep that has at least 20% fine soil particles;
        3. a soil layer at least 5 feet deep that has at least 10% fine soil particles.

2. All of the suggested best practices identified in the At Risk Spreading Guidelines and Genesee Spreading Guidelines should be explicitly listed and made mandatory in the CAFO General Permits. These practices include prohibitions on:

    - application of manure to soils 40 inches or less in thickness directly over karst, sandy soils, or fractured bedrock;
    - application of liquid manure (<12% solids) in karst areas;
    - application of manure outside the normal growing season to wet, frozen, and/or bare soils;
    - application of manure on snowpack with high moisture content or snowpack that is about to melt;
    - application of manure when significant rainfall is anticipated.

3. In accord with "known available and reasonable" best practices from other states, the CAFO Permits should:

    - prohibit manure application at greater than 50% of the agronomic nitrogen rate when there is either less than 60 inches of unconsolidated material over bedrock, sand, or gravel;
    - prohibit manure application at greater than 50% of the agronomic nitrogen rate when the minimum soil depth to seasonal high water table is less than or equal to two feet.

4. CAFOs should be prohibited from applying manure on frozen ground or snow-covered fields where soils are 60 inches thick or less over fractured bedrock.

5. In non-karst areas, DEC should mandate that all new waste storage lagoons be constructed with a liner.

6. For CAFOs in karst areas, DEC should lay out steps CAFOs should take to find "reasonable alternatives" to construction of waste lagoons in sensitive areas. If there is no reasonable alternative, DEC should mandate that all waste storage lagoons (existing or new construction) must be constructed with a synthetic liner OR the facility should install a groundwater monitoring well downgradient of the lagoon to confirm that excess agricultural waste is not seeping into groundwater.

7. In non-karst areas, DEC should mandate that all new animal mortality burial pits be constructed with a liner.

8. For CAFOs in karst areas, where there is no reasonable alternative method of carcass disposal, DEC should mandate that all animal mortality burial pits (existing or new construction) must be constructed with a synthetic liner OR the facility should install a groundwater monitoring well downgradient of the pit to confirm that excess contaminants are not seeping into groundwater.

9. DEC should adopt wellhead setback requirements that are protective of public health, recognize that private wells are the only source of water for many rural residents, and reflect the empirical observations of DEC that nutrients and pathogens can migrate further than 100 feet when they enter groundwater. Specifically, DEC should prohibit manure applications within 200 feet of a private wellhead.

10. DEC should adopt a more protective wellhead setback for manure applications made in geologically sensitive areas such as karst. Because of the higher potential to contaminate groundwater as compared to other hydrogeologic areas, DEC should prohibit manure applications within 300 feet of a private wellhead in geologically sensitive areas such as karst.

11. Sections of the ECL and CWA Permits that contain protections that are specific to surface water should be modified to include groundwater as well. These include, but may not be limited to:

    - CWA Draft Permit sections I(B)(1) (new swine, poultry or veal calf CAFOs); I(B)(2) (discharges from production area); III(E)(2)(a) (significant changes in design, construction, operation, or maintenance); Appendix A(U) (definition of discharge); Appendix A(KK) (definition of overflow); and Appendix A(TT) (definition of waters of the state);
    - ECL Draft Permit sections sections I(A)(3)(d) (discharges of process wastewater); I(B)(1) (discharges from production areas); III(A)(6) (operation and maintenance of BMPs); III(B)(2) (design and construction of retention facilities); III(E)(2)(a) (significant changes in design, construction, operation, or maintenance); IV(B) (overflow and discharge reporting); Appendix A(T) (definition of discharge); and Appendix A(XX) (definition of waters of the state).

12. DEC should retain existing restrictions on the construction of new facilities in the 100-year flood plain to ensure no backsliding. The recommended new 100-year floodplain provision should read as follows:

    > New facilities shall not be built in a surface water of the State, including wetlands, and must be built outside of the 100-year floodplain (excluding agricultural fields). New or expanded structures on existing facilities shall not be built in a surface water of the State, including wetlands, and must be built outside the 100-year floodplain unless protected from inundation by the 100-year flood as documented by a Professional Engineer currently licensed to practice in New York State.

13. DEC should include restrictions on the construction of new facilities in the 100-year flood plain in the Draft CWA Permit in the same manner as the current ECL Permit. The new 100-year floodplain provision should read as follows:

New facilities shall not be built in a surface water of the State, including wetlands, and must be built outside of the 100-year floodplain (excluding agricultural fields). New or expanded structures on existing facilities shall not be built in a surface water of the State, including wetlands, and must be built outside the 100-year floodplain unless protected from inundation by the 100-year flood as documented by a Professional Engineer currently licensed to practice in New York State.

III. RECOMMENDATIONS REGARDING PUBLIC PARTICIPATION FOR NEW OR SUBSTANTIALLY MODIFIED CNMPS

1. Section III.A of the Draft CWA Permit (entitled "Minimum CNMP Content") must be amended to include *all* of the content that EPA requires in a CWA NMP.
2. The ECL Permit must be modified to recognize that nutrient management plans are effluent limitations that are subject to public comment and hearing and must be reviewed and approved by the permitting authority in the same manner as CNMPs developed for CAFOs operating under the CWA Permit (including any modifications to the CWA permit).
3. DEC must clarify that ECL-permitted CAFOs cannot avail themselves of a defense to a discharge from their production areas unless their CNMPs have been subject to public review.
4. CWA Permit § (III)(E) should be modified to add a new subsection (6), which states: "Whenever the preparation of a revised CNMP is required due to circumstances described in § III(E)(2)(a)-(c), the availability of the revised CNMP will be posted to the ENB and the plan will be available for public review and comment for 30 days. Following the 30 day comment period the Department may extend the public comment period, require submission of an application for an individual SPDES permit or alternative SPDES general permit, or accept the CNMP as complete."
5. DEC should clarify that final CNMPs and substantial CNMP modifications for all permitted CAFOs will be publicly available.
6. DEC should
    - publish each CAFO's NOI in the ENB when it publishes the CNMP;
    - specify the content of the NOI form in the Draft Permits;
    - update the content in the NOI form to include information mandated by EPA in 40 C.F.R. § 122.21(i)(1), but omitted from the current NOI, as outlined in our comments;
    - update the NOI form to require additional information about storage capacity required by other state CAFO programs, as outlined in our comments;

- amend the owner/operator certification at the end of the NOI form to include certification of compliance with the terms of the applicable general permit, including the site-specific CNMP.

IV. ADDITIONAL RECOMMENDATIONS

1. Section III.A of the Draft CWA Permit (entitled "Minimum CNMP Content") must be amended to include *all* of the content that EPA requires in a CWA NMP.
2. DEC should require annual soil sampling on each land application field since the costs are minor and there are significant advantages for nutrient management planning.
3. DEC should establish a system to allow for electronic reporting and searches of soil sample results, as other states have done. See, for example: North Carolina's Public Access Laboratory-information System ("PALS") website, http://www.ncagr.gov/agronomi/pals/.
4. DEC must continue to require all ECL-permitted CAFOs to complete ANMPs.
5. Major CAFO infrastructure projects (<5 acres) should not be exempt from the Construction General Permit. At the very least, DEC must incorporate federal limitations on exemptions from the Construction General Permit into the ECL and CWA Permits. Rather than exempting CAFOs from the Construction General Permit, DEC should create a process to streamline approval for the construction of major CAFO infrastructure projects, and determine whether SWPPPs are necessary in each case.
6. DEC must remove the provisions that authorize non-contact cooling water discharges from the Draft Permits. Such thermal discharges may be authorized under a separate general permit issued pursuant to the procedures set forth in ECL § 70-0117(6)(b).
7. DEC must revise the terms for thermal discharges to incorporate the minimum effluent limitations and water quality standards set forth in 6 NYCRR parts 701.1, 701.3, 701.8, 703.2 t.1, 704.1, 704.2, 704.3, and 704.4 .

Appendix B

Summary of New York State Contamination Incidents Related to CAFOs in Winter and Spring of 2014

DEC, Summary of New York State Contamination Incidents Related to CAFOs During Winter and Spring of 2014

DEC Region	County	Town / City	Farm Name	SPDES ID	Incident Description	CAFO	Non-CAFO	Farm Size	Date of Incident
4	Albany	New Scotland	Hill Top	NYA000576	Complaint of manure stockpile in a field possibly contaminated a private well	X		Medium	29-Mar-14
	Montgomery	Florida	STONY BROOK, INC.	NYA000144	Reported that manure spread on a snow covered field ran off into a neighbor's pond during snow melt	X		Medium	Mar-14
	Montgomery	Root			Reported that manure spread on a snow covered field ran off into a neighbor's pond during snow melt		X		Mar-14
	Montgomery	Palentine			Complaint of possible manure contamination of private well.		X		Mar-14
5	Clinton				Report of manure runoff from a field to a roadside ditch. No discharge to surface water or groundwater has been reported.		X		Mar-14
	Clinton	Beekmantown	Fessette Farm	NYA000313	Pt Au Roche Road, 1 well positive for bacterial contamination, other wells in the area were not impacted. Further investigation showed that the well had a surface connection with water infiltrating around the perimeter of casing	X		Medium	3/27/14
	Clinton	Champlain	Leduc's Green Acres	NYA000086	Reported manure spreading incident near Eden Lane. 6 wells were positive for bacterial contamination.	X		Medium	3/31/14
	Clinton	Champlain	Giroux's Poultry Farm	NYA000460	Same as above	X		Large	3/31/14
6	Oneida	Chadwicks	Collins Knoll Farm	NYA000063	Self reported manure runoff event. No water quality violation	X		Large	3/11/14
	Lewis	Harrisville	"Larry Atkin's Farm"		Complaint of manure runoff to surface water		X		12/27/13
	St. Lawrence	Hermon	Gebarten Acres	NYA001325	Complaint of manure runoff to surface water	X		Large	1/13/14
	Jefferson	Adams Center	Porterdale	NYA000038	Self reported manure runoff event. No water quality violation	X		Large	4/3/14
	Jefferson	Adams	Hy-Light	NYA001459	Complaint of manure runoff to surface water	X		Medium	4/1/14
	Jefferson	Clayton	Woods Farm	NYA000351	Complaint of manure runoff to surface water	X		Large	3/4/14
7	Onondaga	Marietta	Ralph Volles	NYA000548	Report of manure runoff into a neighbor's basement through a window.	X		Large	3/11/14
	Onondaga	Marietta	Ralph Volles	NYA000548	Report of an additional runoff event at this farm	X		Large	3/11/14
	Cayuga	Scipio	Allen Farms	NYA000323	Report of manure runoff and well contamination event including runoff to a tributary of Owasco Lake (drinking water source for the City of Auburn)	X		Large	3/11/14

	Cayuga	Locke	Pine Hollow Dairy	NYA00621	Cayuga County Health Department staff reported ponded manure-contaminated water approximately 100 ft from a private well.	X		Large	3/11/14
	Cayuga	Genoa			ECO observed foam and manure odor in Salmon Creek.		X		
	Cayuga	Venice	Willet Dairy	NYA000002	Reported manure spill from charging drag hose, most contained, some discharged to L. Salmon Ck.	X		Large	5/3/14
	Cortland	Homer	New Hope View Dairy	NYA000636	Reported manure spill during drag line start up due to frozen line. Most contained and cleaned up. Some material entered drainage ditch.	X		Large	3/17/14
	Cortland	Truxton	Whey Street Dairy	NYA000094	Report of manure runoff from frozen field onto neighboring property. Contained, diverted and cleaned up.	X		Medium	3/25/14
	Madison	Canastota	Springwater Farms	NYA000545	Madison County Soil and Water Conservation District responded to a manure runoff event. Runoff was contained. No discharge to surface water	X		Medium	03/20/14
8	Livingston	Caledonia	Stein Family Farms	NYA000241	Manure and septic contamination confirmed for 2 private wells.	X		Medium	2/24/14
	Livingston	Caledonia	D&D Dairy (Stein Family)	NYA000578	Complaint of possible contamination of shallow (26') well with no casing above the ground surface.	X		Medium	3/17/14
	Livingston	Leicester	Thornapple Farms	NYA000242	Reported manure runoff event. No discharge, berms in place to contain runoff.	X		Medium	3/12/14
	Ontario	Seneca Castle	Hemdale Farms	NYA000490	Reported manure runoff event. DER responded and contained	X		Large	3/7/14
	Genesee	Oakfield	Lamb Farms	NYA000123	Reported manure contamination of private wells on Batavia-Oakfield Townline Rd.	X		Large	3/14/14
	Genesee	Oakfield	Lamb Farms	NYA000123	Reported manure runoff incident with impact to a tributary of Oak Orchard Creek.	X		Large	3/7/14
	Monroe				Complaint of manure contamination of private well.				2/28/14
	Steuben	Bath	Leo Dickson and Sons	NYA000178	Discharge of manure from land application. ECO ticket issued to farm for contravention of water quality standards.	X		Medium	3/13/14
	Steuben	Bath	Wilkins Dairy	NYA001520	Complaint of over application of manure, stockpiling of solids and runoff.	X		Medium	12/13; 2/14
	Steuben	Prattsburg	Damin Farms	NYA000121	Complaint of well contamination	X		Large	3/11/14
	Steuben	Prattsburg	Damin Farms	NYA000121	Complaints of manure runoff into Keuka Lake.	X		Large	3/11/14

	Wayne	Wolcott	Merrell Farms	NYA000120	Complaint of manure runoff, manure flowed onto the property of a church, and may have impacted the basement. .	X		Large	3/31/14
9	Wyoming	Perry	Dueppengies ser Dairy Co	NYA000130	Report of manure discharge to Little Beards Creek.	X		Large	Mar-14
	Allegany	Scio			Non-CAFO farm that is not operating under a CNMP made a manure application on a frozen snow covered field, resulting in alleged manure runoff onto a neighboring yard and into their basement and possibly a nearby creek.		X		3/11/14
	Chautauqua	Ellington	Breeze Acres	NYA000248	Failure in manure transfer pipe resulted in discharge of approx. 6,000 gal. to road ditch. Manure was absorbed into snowpack with minimal impact to Clear Creek. Contaminated snow was collected and field applied.	X		Medium	3/12/14
	Cattaraugus	Freedom			Complaint of milkhouse waste runoff into creek		X		unknown
	Chautuauqa	French Creek			Alleged manure lagoon failure and discharge into trib. of French Creek		X		Apr-14

Appendix C

Summary of DEC's Winter and Spring 2015 CAFO Pollutant Discharge Investigations

Summary of DEC's Winter and Spring 2015 CAFO Pollutant Discharge Investigations

DEC Region	County	Town / City	Farm Name	SPDES ID	Incident Description	CAFO	Non-CAFO	Farm Size	Date of Incident
4	Montgomery	St. Johnsville	Damin Farm	N/A	Complaint of foam in river indicative of manure. CAFO had been spreading a "large amount" of manure in for appx. 3 weeks in "fields adjacent to the head waters of the stream" leading to neighbor's property. No violation found.	X		Small	5/18/15
	Montgomery	Amsterdam	Stony Brook, Inc.	NYA000144	NOV issued for discharge of 7,000-9,000 gallons of liquid manure caused by faulty valve to a ditch of a tributary to Schoharie Creek. DEC confirming that the faciltiy had not been inspected in years.	X		Medium	5/27/15
	Schenectady	Glenville	West Wind Acres	N/A	Complaint of poor manure management and possible impacts on wetlands and surface water that could feed private drinking water wells.		X		3/19/105
5	Clinton	Peru	Adirondack Farms	NYA000014	Complaint of water runoff on adjacent land following drainage rerouting and clearcutting.	X		Large	4/22/15
	Clinton	Cadyville	Duquette Farms	N/A - Crop	Complaint alleges well contamination from runoff. Also claims of discharge into Riley Brook. Contamination found to be caused by snowmelt. Put in touch with Clinton Cnty. SWCD.		X		3/25/15
	Washington	White Creek	Landview Farm	NYA001297	Runoff from manure that was daily spread onto frozen ground flowed into a ditch. "Visual contrast" was observed and impacts on species "unknown." Appx. 2,500 gallons. Farmer stated intent to build additional storage.	X		Large	3/14/15
6	Jefferson		Unknown		Report of manure in Ellisburg Creek.				5/10/15
	Lewis	Naumburg	Unknown		Complaint of disturbed lagoon embankment.				6/12/15
	Lewis	Unknown	Lyndaker (?)		Complaint of failing septic and milk house waste entering neighbor's property. NOV issued.				5/28/15
	Lewis	Copenhagen	Unknown		White substance in Deer River.				6/26/15
	Lewis	Lowville	Abbott Farm		"A lot" of manure in the road ditch. Referred to LC SWCD.		X		6/10/15
	Jefferson	Ellisburg	Unknown		Sewage/manure in yard.				7/3/15
	Jefferson	Cape Vincent	Unknown		Anonymous report of spill, likely from Wood Farms (300-cow operation).				4/29/15
	Oneida	Verona	Brabant Farm	NYA000340	Manure spreader fell into ditch and spilled appx. 300 gallons of frozen manure into snow-filled ditch. Spill was cleaned and spread onto field.	X		Medium	2/5/15
	Herkimer	West Winfield	Casler Farm	NYA000317	Following spreading from March 15-26 (at recommended rates, apparently) neighbor complained of contaminated, "yellow-ish" water in well. Referred to Herkimer County SWCD.	X		Medium	3/26/15
	St. Lawrence	Oswegatchie	Wilson Farm	N/A	Complaint of spreading of manure near a stream flowing into Blake Lake.		X		4/11/15
	Jefferson	Philadelphia	Galen Gockley	N/A	Complaint of potential manure in well. Jefferson County SWCD was contacted and took samples. SWCD drafted letter for Town of Champion Health Officer.				3/18/15
	St. Lawrence	Hermon	Gebarten Acres	NYA001325	Complaint of possible manure runoff into ditch. Field was apparently spread in February. Farmer observed no discharge.	X		Large	3/11/15
	St. Lawrence	Hermon	Gebarten Acres	NYA001325	Illegible other than "Consent Order Against Gerbarten Acres."	X		Large	4/17/15

	St. Lawrence	Gouverneur	Esther Goodelle		Complaint of liquid manure leaching from stored pile of manure into Oswegatchie River. Officer "located large puddles of rain water that were mixed with liquid manure" and leaching following rainfall.	X		Small	6/13/15
	Oneida	Kirkland	Champion Farm	N/A - Crop	Complaint of "probable" overapplication of liquid manure during period of rain and snowmelt, leading to visible contamination of creek leading to Oriskany Creek ("smells of manure" with "foam consistent with manure contamination"). Spreading done consistent with 50 foot setback requirement.		X		4/2/15
7	Cayuga	Throop	Allen Farms	NYA000323	Complaint alleges overapplication of manure on two new fields. Concerned about manure running into streams that would lead to Crane Brook.	X		Large	3/28/15
	Tompkins	Dryden	Cornell University	NYA000433	Manure runoff to Dryden Lake following heavy rainfall. Referred to ECO who would work with farm to revise CAFO plan.	X		Medium	4/5/15
	Onandaga	Skaneateles	Fesko's Farm	NYA000536	While applying manure through drag hose system, contractor for CAFO (Dairy Support Services) discharged appx. 500-1,000 gallons of manure into Tributary 28 of Skaneateles Lake and eventually into the lake. Advisories sent to not drink water. Cause was said to be equipment failure. Consent Order entered into July 2015.	X		Medium	4/25/15
	Broome	Lisle	Glezen Bros.	NYA000237	Farm tanker hauling liquid manure overturned, spilling 4,000-8,000 gallons onto drainage leading to Dudley Creek. Driver was operating out of class. "Small area within a wetland area impacted with raw manure." Forecast called for heavy rains in next 24 hours. Consent order for $250 entered into.	X		Medium	4/7/15
	Chenango	Greene	James L Savory (?)		Complaint of spreading of liquid manure being broadcast appx. 40-50 feet from a stream bank.		X		4/7/15
	Madison	Canstota	Springwater Farms	NYA000545	NOV for failure to apply manure and farm waste in accordance with CNMP (manure "ponding" and "flowing over land" towards private wells). DEC concluded that waste handling at the CAFO led to contamination of "at least two wells" and "suspected" to have caused two residents to become ill.	X		Medium	3/23/15
8	Schuyler	Odessa	Bergen Farms	NYA000279	Tanker truck flipped over, spilling appx. 8,000 gallons of liquid manure into soil and Cayuta Lake.	X		Large	1/8/15
	Genesee	East Bethany	Lor-Rob Dairy Farm	NYA000271	Complaint of spreading of liquid manure within 10 feet of property line, leading to "discolored and odorous" water from well. Confirmed contamination by Health Dept't. NOV and CO issued and new water treatment system installed.	X		Large	3/16/15
	Wayne	Wolcott	Merrell Farms	NYA000120	Complaint of manure spreading near a creek.	X		Large	1/27/15
	Genesee	Batavia	Offhaus Farms (likely)	N/A	Complaint of manure spreading within 50 feet of a well.		X		5/15/15
	Steuben	Cohocton	Unknown	N/A	Complaint of farm truck spreading manure onto saturated, flooded field.				4/14/15
9	Cattaraugus	Randolph	Beaver's Dairy Farm	NYA000105	Liquid manure in earthen lagoon was unable to be loaded onto truck due to frozen gravity outlet pipe. Warm weather led to snow melt which caused overflow into secondary containment and then, since the pipes were frozen, water and manure mixture overflowed into a ditch and possibly into Davis Brook.	X		Large	2/23/15

	Cattaraugus	Randolph	Beaver's Dairy Farm	NYA000105	Liquid manure flowing into Conawengo Creek along with snowmelt. "Small amount of tribitiy [sic]" observed in creek but no determination as to whether it was sediment from road or manure.	X		Large	3/12/15
	Cattaraugus	Randolph	Beaver's Dairy Farm	NYA000105	Complaint that trucks from Beaver's Farm are driving with uncovered loads and are spilling liquid manure onto the road and that "people refuse to drive or walk down the road for fear of contamination."	X		Large	5/28/15
	Seneca	Fayette	Keystone Mills Farm		Complaint of manure spreading on snow. Complainant stated that manure would reach lake upon melting.	X			3/15/15
	Wyoming	Sheldon	Perl Farm	NYA000410	Anonymous complaint that CAFO has been discharging manure into ponds or streams on and near the property. Case closed with no visible sign of discharge.	X		Medium	3/25/15
	Wyoming	Gainesville	Unknown	N/A	Manure found to have entered a creek downstream of a large wetland with noticeable foul odors. Snow made investigation difficult. Never resolved.				
	Livingston	Avon	Mulligan Farm	NYA000039	Malfunction of pumping system in sand lane led to appx. 5,000 gallons of overflow to adjacent watercourse, with redundant systems proving inadequate. Manure contaminated water observed appx. 2,000 feet from point of discharge into water.	X		Large	1/22/15

Appendix D

PowerPoint Presentation
prepared by Tetra Tech:

"Winter Manure Application and Water Quality; Overview of the Literature"

Oct. 30, 2014

Winter Manure Application and Water Quality

Overview of the Literature

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Overview of Briefing

- Define winter application and applicability
- Why winter application can occur
- Research findings on winter application water quality impacts and risks
- Management options
- Research needs
- Conclusions

Purpose of White Paper

Survey of existing research on winter manure application and water quality to support an informed discussion on winter application and potential options for mitigating the effects of unavoidable winter application.

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Process

All sources of research data, management recommendations, and other information concerning winter application of animal manure:

- SERA-17 bibliography http://www.sera17.ext.vt.edu/index.htm.
- On-line databases: NAL, Google Scholar
- JEQ, JSWC, Trans. ASABE, others
- Grey literature
- Extension publications

Complete list of references in appendix of this presentation

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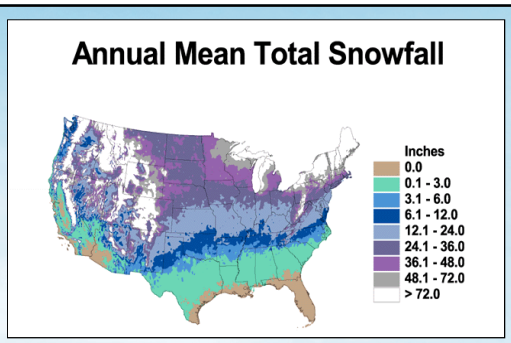
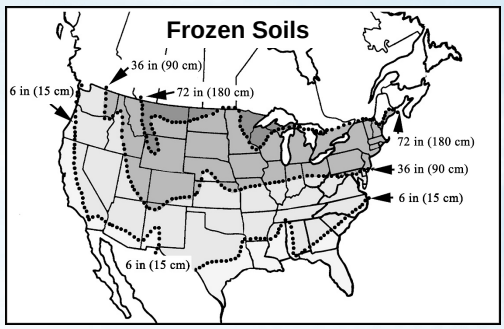
Definitions & Applicability

Regions that experience frozen and/or snow-covered soils face special constraints for good manure management.

Historical snowfall and soil frost data suggest that winter application practices warrant careful consideration in parts or all of U.S. states except Florida, Hawaii, Louisiana, and Mississippi.





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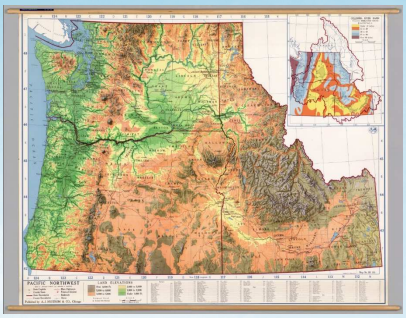
Definitions & Applicability

Land application of animal manure to snow-covered, ice-covered, or frozen soils.



Other situations outside the scope of the paper where risks also exist:

- "Warm winter" application during high precipitation periods
- Application to saturated soils at any time
- Others….

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Agronomic benefits of winter application?

The comprehensive literature review found no published research to support agronomic factors as a basis for recommending winter manure application:

- Prevention of soil compaction*
- Reduction of N volatilization*
- Providing crop nutrients for spring planting,
- Reduce risk of excessive manure application around a ban period

* Both have been documented as “positives” of winter application, but other factors outweigh the benefits

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Winter Application Impacts and Risks

Hydrologic factors

- **Frozen soils decrease infiltration and increase runoff**
  - Most (not all) frozen soils virtually impervious (Fleming and Fraser 2000)
  - 56% increase in runoff volume from frozen soils (Williams et al. 2012)
  - Catchments with frozen soils have greater water yield than unfrozen soils (Molnau and Cherry 1990)

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Winter Application Impacts and Risks

Hydrologic factors

- **Importance of snowmelt in annual discharge**
  - WI: 50% of annual ag runoff in snowmelt (Stuntebeck et al. 2011)
  - Alberta: 90% of annual runoff (Little et al. 2007)
  - Sask.: 85% of annual runoff and 50% of groundwater recharge (Maule and Elliott (2005a)

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Winter Application Impacts and Risks

Hydrologic factors

- **Critical characteristics**
  1. Structure of the frozen soil
  2. Depth of penetration of the frost
  3. Persistence of soil frost
  4. Areal extent of frozen soil. (Storey 1955)
- Freeze-thaw processes poorly understood (Storey 1955)
- Function of variable soil and climate characteristics, e.g., tillage, cover, moisture (Storey 1955, Willis et al. 1961)

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Winter Application Impacts and Risks

- Frozen soils and snowpack increase the risk of runoff from winter-applied manure.
- Dormant or absent crops provide no nutrient uptake
- Incorporation difficult or impossible
- Freezing does not reliably kill pathogens
- Loss of soluble nutrients and microorganisms

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Winter Application Impacts and Risks

Research data demonstrate that substantial potential exists for runoff losses of N and P and impacts to receiving waters if manure is applied to frozen soils or snow-covered ground.

- **Very high nutrient concentrations, e.g.,**
  - **TP 1.6 – 15.4 mg/L; TKN 24 – 1086 mg/L**
  - **TP increase165 – 224%; soluble P increase 246 – 1480%; 576% increase in NH_3-N in runoff following winter application of dairy manure**
- **Mass losses of up to 27% of applied P, 22% of applied N**

Thompson et al. 1979, Melvin and Lorimor 1996, Phillips et al. 1981,Clausen 1990, 1991, Midgeley and Dunklee 1945, Hensler et al. 1970, Phillips et al. 1975, Converse et al. 1976, Klausner et al. 1976, Young and Mutchler 1976

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Winter Application Impacts and Risks

The magnitude of nutrient losses from winter-applied manure appears to be controlled by a large number of factors whose relative influence is poorly understood, including:

- Effects of soil frost on infiltration and runoff generation;
- Timing, extent, and depth of snow cover relative to manure application;
- Soil temperature;
- Snowmelt and winter rainfall;
- Timing of manure application relative to snowfall, snowmelt, and runoff;
- The form of manure applied;
- Land use/land cover, including crop, crop residue, and tillage;
- Land slope;
- Existing conservation practices; and
- Weather and climate.

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Winter Application Impacts and Risks

Most of the major factors that appear to influence nutrient losses from winter-applied manure are highly variable and exceptionally difficult to predict with any certainty on a fine scale.

→ Even if all the processes governing nutrient losses from winter-applied manure are perfectly understood, fully avoiding adverse water quality impacts – or even reasonable estimation of the risk of significant water quality impacts – from winter manure application on a site-specific basis will continue to be extremely challenging.

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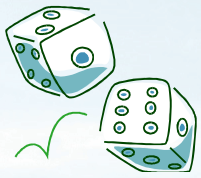
Winter Application Impacts and Risks

Although the potential for major nutrient losses is not always realized, there is ample evidence in the literature that runoff losses of N and P from winter-applied manure are often significant, both in terms of agronomic losses and potential water quality impacts.



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Management standards

Some states have adopted technical standards for CAFOs, but these are highly variable

Documented in Appendix to White Paper

State	Type of Restriction				Restriction Details	Mechanism and Source
	Ban	Based on Farm/Method	Exemption Based on Size? Only	Based on Location	None	
Pennsylvania				✓	Applicable to NPDES-permitted CAFOs: Winter Spreading: The permittee shall not spread manure during the winter [December 15 through February 28; or anytime the ground is frozen at least four (4) inches; or anytime that the ground is snow covered] ... except as authorized in the permittee's Nutrient Management Plan, or unless the permittee has fully complied with 25 Pa. Code § 83.372, and has obtained a plan amendment due to unforeseen circumstances ... The permittee shall notify DEP in writing within 7 days prior to land application of manure during the winter period. The permittee shall certify in the notification that: a. Consistent with the approved NMP, actions have been taken to maximize the available capacity in the manure storage facility prior to the winter period to prevent pollution of ground and surface water, b. The storage has been properly operated and maintained, and c. Manure spread during the winter shall be applied in an amount and a manner consistent with the approved NMP. The permittee may use the Department of Environmental Protection, Winter Period Application of Manure Notification form to provide the notification. 7. There shall be no winter application, 1) Within 100 feet of an above ground agricultural drain inlet where surface flow is toward the inlet, 2) Within 100 feet of a wetland on the National Wetland Inventory maps which is within the 100 year floodplain of an EV stream segment if surface flow is toward the wetland and 3) Unless the fields have 25% cover or an established cover crop... Applicable to all operations:	590 standard

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BMPs

Most cold-climate states and provinces recommend against winter manure application and consider winter spreading to be a last resort if storage is limited or if weather impairs recommended management

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BMPs

Some management measures may be required to mitigate emergency or unavoidable winter application

There is currently no body of standards and specifications supported by research data for BMPs or other management measures to specifically mitigate potential impacts of winter manure application.

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BMPs

Vegetation-based practices are largely dormant and less effective during critical mid-winter thaw and spring runoff periods when most nutrient loss occurs

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BMPs

Common sense recommendations like increased setbacks or reduced application rates may have some effect on reducing runoff losses of nutrients from winter-spread manure, but there is little documentation in the literature.

- Setbacks
- Avoid flood zones
- Slope criteria
- Proximity to water
- Residue cover
- Reduced application rate
- Incorporation/injection

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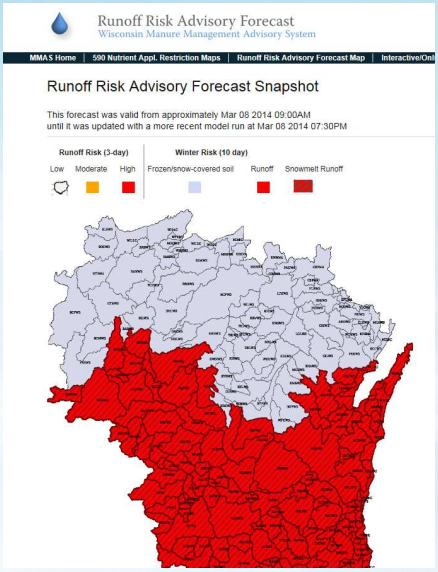
Risk-based approaches

- **Important assumptions must be communicated to users:**
  - *This is not meant to be the only tool for deciding when to spread*
  - *This approach will never produce perfect prediction*
    - One farm may have runoff, the next one may not
    - Rainfall patterns, snowpack conditions, field aspect, etc.
  - *Users must combine knowledge of local conditions with forecast*

http://www.manureadvisorysystem.wi.gov/



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Risk-based approaches

New York:

- Identify the lowest risk fields for spreading as a last resort (e.g., when storage is full)
- Evaluate runoff potential along with other management needs: soil wetness, weather forecast for rainfall or snowmelt, presence of diversions or field ditches and drainage tile, rate per acre, and total amount of manure to be applied.
- When conditions for runoff are high, consider delaying the application, reducing the rate, reducing the total amount applied, and/or applying smaller amounts of manure over a period of days rather than hours
- Avoid application when:
  - Significant rainfall or snowmelt is predicted within 24-48 hours.
  - Soil is frozen, snow covered or saturated
  - Tile drains are flowing from field drainage

Czymmek et al. (2005)

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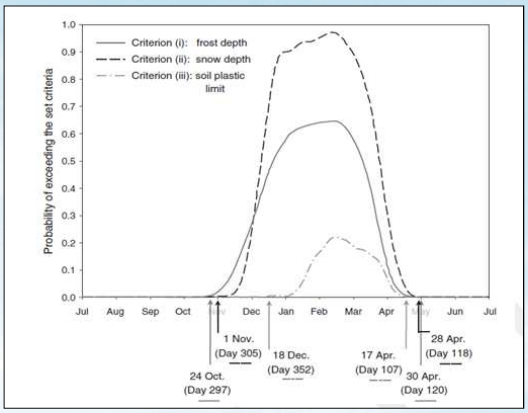
Risk-based approaches

Ontario:
Risk assessment of conditions unsuitable for manure application:

- Soil frost depth >0.05 m
- Snow accumulation > 0.05 m
- Soil volumetric water content ≥ plastic limit

Range of recommended dates for spring start and fall end of manure application based on probabilities of one or more of the limiting criteria



Fallow et al. (2007)

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Many unknowns about BMPs

- Research conflicting on effectiveness of slope restrictions or requirements for vegetative cover;
- Insufficient experience with winter manure incorporation or injection to recommend a BMP
- Runoff control measures may be effective, but trade-offs with leaching are unknown;
- Effectiveness of VFS or buffers in capturing or treating runoff from winter application is uncertain because snowmelt/runoff occurs when vegetative measures are essentially dormant.
- Net effect of risk-based procedures un-tested

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BMP Research needs

- Identify, quantify, and prioritize individual factors influencing nutrient and pathogen losses from winter-applied manure
- Assess the real risks of major nutrient losses when limited storage and winter manure application restrictions promote high manure applications during the time immediately before or after a ban period.
- Document the effectiveness of vegetative BMPs on delivery of nutrients from winter-manured fields to surface waters during the mid-winter thaw and spring snowmelt periods.
- Evaluate the effects of BMPs currently recommended by NRCS for year-round implementation to reduce surface runoff losses of nutrients and pathogens from winter manure application and on leaching losses, in particular through subsurface drainage.
- Field test and evaluate the practicality and effectiveness of agricultural implements designed to incorporate manure directly into frozen and/or snow-covered soils.

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Weight of Evidence

- Lack of agronomic benefit,
- Documented water quality impacts, and
- Absence of effective BMPs

Avoid winter manure application

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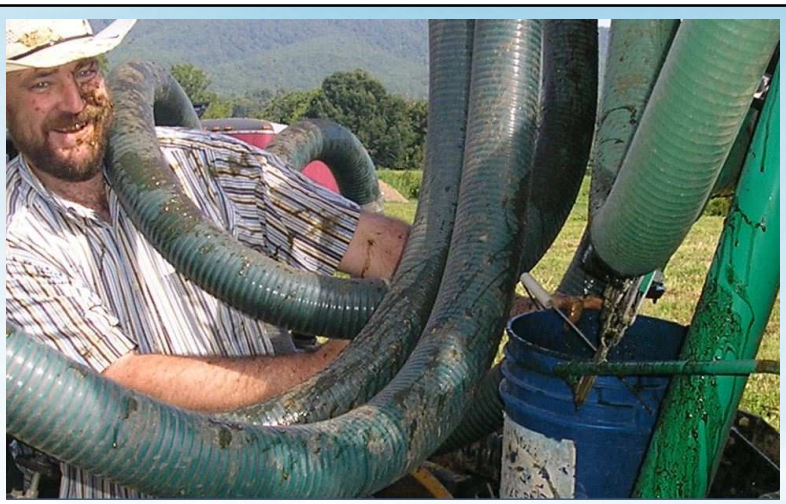

QUESTIONS?

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Appendix E

Memorandum from DEC Commissioner Joe Martens to Assistant Secretary for Energy and the Environment

2012

ANDREW M. CUOMO
GOVERNOR

JOE MARTENS
COMMISSIONER

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233-1010

MEMORANDUM

TO: Tom Congdon, Assistant Secretary for Energy and the Environment

FROM: Commissioner Martens

RE: New York Dairy Farm Expansion Transition Program

New York's dairy industry provides a strong foundation for the state's economy and is its largest agricultural industry, generating nearly $3 billion annually in farm gate revenue and upwards of $9 billion overall. According to Cornell University, new and expanded growth of New York dairy processing plants (e.g., Great Lakes Cheese, Chobani Yogurt, FAGE Yogurt, Alpina, etc.) will require 15% more milk to operate profitably. Cornell projects this will create approximately 3,400 new jobs on New York dairies, their supporting businesses and rural communities. Some have asserted that the Concentrated Animal Feeding Operation (CAFO) program is a barrier to meeting the expanding demands of the New York dairy processing plants and the associated economic development. As individual small and medium-sized farms consider expanding their herds to become medium or large-sized CAFOs it is important that the economic and environmental aspects be considered together. New York can meet this challenge through targeted use of the existing Agricultural Environmental Management (AEM) program and deployment of the Cornell PRO-DAIRY program specialists.

New York Dairy Farm Expansion Transition Program

Step 1. Provide increased funding for Cornell PRO-DAIRY to complete surveys of New York dairy farmers who have either successfully completed the expansion from small farm to medium CAFO or are considering such an expansion. The AEM status of each farm would also be recorded to understand how to encourage completion of all five AEM tiers.

Step 2. Use increased EPF funds in the Agricultural Waste Category for Cornell PRO-DAIRY to develop or update Comprehensive Nutrient Management Plans (CNMPs) on farms considering an expansion. Provide funds for completion of the Annual Compliance Report. The Cornell PRO-DAIRY specialists would then incorporate the CNMP into a farm-specific economic projection for expansion identifying the costs of CAFO compliance along with the other farm-specific costs of expansion.

Cost Estimate: $10,000 / farm

Step 3. Provide increased funding for Cornell PRO-DAIRY to provide manure applicator training and compliance assistance visits to small and medium farms to increase compliance and

develop the management capacity of these smaller farms.

Cost Estimate: $500 / event

Step 4. Direct increased EPF funds through the AEM Agricultural Nonpoint Source Abatement and Control program to provide cost-share grant assistance exclusively to expanding small and existing medium farms to complete the AEM process and to implement the structural practices necessary for full CAFO compliance (e.g., manure storage, feed waste handling, etc.).

Cost Estimate: $100,000 - $250,000+ / small farm (~100-150 farms)

Cost Estimate: $22M / existing medium CAFO (~240 farms)

Step 5. Use the current CAFO permit provisions to allow 6 months for transitioning CAFOs to develop a CNMP and implement the non-structural components. The CAFO permit also would provide until the end of the permit term (2014) for transitioning farms to achieve full implementation, including structural practices.

Step 6. Outreach and program rollout. Develop an outreach program in coordination with NY Farm Bureau and Cornell PRO-DAIRY to include:

Empire Farm Days – panel discussion and booth to allow for anonymous questions

Medium CAFO Roadshow – provide staff for on-farm educational opportunities

Webinars – work to provide web-based opportunities for farmers to ask questions and be given examples of how best to achieve compliance

Additional Benefits

Funding provided to transitioning farms to complete the AEM tiers and implement practices will be tracked and submitted for credit under the Chesapeake Bay and Lake Champlain TMDLs. Additional reductions from agriculture will lessen the burden and expense for other sectors including municipal wastewater treatment plants. The cost / pound reduction for agriculture is estimated to be between two and ten-fold less than for the equivalent wastewater treatment pound reductions.

Background

Cornell PRO-DAIRY specialists provide the predominant statewide expertise in farm-level economic development, environmental stewardship, on-farm renewable energy and work to develop the future leaders of the New York dairy industry. Their $822,000 annual budget provides critical support to many existing DEC programs including the Chesapeake Bay TMDL, CAFO program and renewable energy development. An increase in the PRO-DAIRY budget would position them to provide key leadership in this dairy transition program to integrate the elements of economic and environmental analysis to allow farms to meet the increased milk demands of New York State.

The AEM Program is:

- Administered by NYS Department of Agriculture and Markets
- Voluntary, incentive-based
- Coordinates technical assistance
- Five-tiered approach
    - Tier 1 Inventory environmental concerns
    - Tier 2 Document land stewardship; assess & prioritize
    - Tier 3 Conservation plan development
    - Tier 4 Implement

- Tier 5 Evaluation

A small farm that has completed the AEM process has the fundamental components for complying with the CAFO program. An increase in funding for the EPF Agricultural Nonpoint Source Abatement and Control program for the exclusive use in this dairy transition program would help meet the increased milk demands in an environmentally sustainable manner.

Why can't we align state CAFO rules with the federal rules? How did they separate to begin with and why?

The difference between state and federal rules lies in whether a discharge is needed in order for permit coverage to be required. The CWA under §122.23 (b)(6)(ii) defines when a discharge occurs and therefore when permit coverage is required. ECL Sec 17-0801 requires that point sources have a SPDES permit regardless of discharge.

In ECL 17-0505 and 17-0701, the creation of a point source must be permitted under the State Pollutant Discharge Elimination System (SPDES). ECL 17-0105 defines Concentrated Animal Feeding Operation (CAFO) as a point source under SPDES. Thus, since 1972, when the NYS Legislature defined a CAFO as a point source, and mandated the DEC to regulate CAFO operations under the terms of a SPDES permit, a CAFO is required to obtain a SPDES permit regardless of a discharge.

In 6 NYCRR Part 750-1.2(a) the definition of Concentrated Animal Feeding Operation is reserved. In Part 750-1.11(a) the provisions of each issued SPDES permit must comply with the requirements of 40 C.F.R. 122.23 for CAFOs, this is incorporated by reference (750-1.24(c)) such that the size threshold for a medium CAFO is defined as 200 to 699 mature dairy cows. This definition is specifically included in both of the CAFO permits.

It appears that the original federal definition of 300 animal units (equivalent to 200 mature dairy cows) and 1000 animal units (equivalent to 700 mature dairy cows) thresholds were based on an ACOE study completed in the mid-1960s that compared waste strength and waste production for purposes of treatment. The Army Corps of Engineers (ACOE) sought to normalize waste values to some standard and arrived at animal units. USEPA used this animal unit concept and threshold in the 1972 CWA. A key distinction of the 1972 Act from earlier water quality acts was that EPA made determinations of the level at which particular sources were more like point sources and subject to the technology-based requirements of the CWA rather than nonpoint sources and not subject to these requirements.

New York's SPDES program was approved by EPA in 1975 to be equivalent to the federal National Pollutant Discharge Elimination System (NPDES) program. In the Memorandum of Understanding (MOU) dated October 28, 1975 between EPA and DEC, EPA retains the oversight authority of the SPDES program and reserves its rights to object to, review and receive draft permit information pursuant to Section 402 (d) of the CWA. To comply with the Clean Water Act, any changes with the CAFO Permit or CAFO Regulations must be reviewed by EPA. EPA will object to de-regulate the medium CAFOs in New York because it is inconsistent with the current federal CAFO rule. ECL 17-0809 directs the Department to issue SPDES permits which include effluent limitations. The Department has been regulating medium-sized CAFOs under a SPDES permit for more than a decade and requiring medium-sized CAFOs to comply with the effluent limitations that are identified in a *Comprehensive Nutrient Management Plan Certification* (CNMP Certification). NYS law bars the Department from allowing a SPDES permit to be more lenient than a previous permit in antibacksliding provisions enacted in 1988 (ECL 17-0809(3). This conforms to provisions in the federal Clean Water Act. Releasing medium-sized CAFOs from the obligation to comply with the effluent limitations contained in the CAFO SPDES permit is backsliding and is a violation of ECL 17-0809(3) unless it is justified by material and substantial changes in circumstances or by new data.

Currently, DEC and Ag&Mkts are working to revise both of the CAFO permits. These revisions will address federal regulatory revisions, recent applicable federal court decisions and the recommendations of the CAFO workgroup[1].

[1] The CAFO workgroup was established in 1995 to address environmental regulation for New York farms. The workgroup consists of representatives from environmental and farm lobby groups, academic institutions, individual farmers, state and federal agency staff. This workgroup was originally tasked with deciding on a regulatory direction including regulation of medium CAFOs. The workgroup plays an advisory role to the Department and provides technical support on existing and emerging agricultural issues.