

## MEMORANDUM

TO: National League of Cities Energy, Environment and Natural Resources Steering Committee

FROM: Jon Groveman, VNRC Water Program Director

SUBJ: EPA Proposed NPDES Permit Requirements for Wastewater Treatment During Wet Weather Conditions

DATE: September 10, 2004

### **Introduction**

The Vermont Natural Resources Council (VNRC), founded in 1963, is a non-profit, tax-exempt environmental conservation organization with over 5,000 members in the state of Vermont. VNRC is also the Vermont affiliate of the National Wildlife Federation. As Vermont's leading statewide conservation organization, VNRC advocates the sustainable use and protection of Vermont's natural resources. VNRC thanks the National League of Cities Energy, Environment and Natural Resources (NLCEEN) Steering Committee for the opportunity to share its perspective on the Environmental Protection Agency's (EPA) proposed National Pollutant Discharge Elimination System (NPDES) permit requirements for wastewater treatment during wet weather conditions, also known as EPA's proposed "Blending Policy."

### **Blending Policy**

As the Committee is aware blending refers to the practice of wastewater treatment facilities bypassing secondary treatment when flows at facilities are increased during wet weather events and partially treated wastewater is blended in with fully treated wastewater prior to discharge. Currently blending occurs under EPA regulations that allow wastewater treatment facilities to bypass secondary treatment when certain conditions are met, including that the bypass is unavoidable to prevent loss of life, personal injury, or severe property damage, there are no feasible alternatives, and notice requirements are complied with. EPA is proposing to amend its NPDES permit requirements to no longer treat blending as a bypass and allow the practice of

blending as a matter of course as long as the wastewater treatment facility complies with certain conditions including that effluent be diluted to meet permit requirements based on secondary treatment at the point of measurement

### **VNRC's Position**

VNRC, other environmental organizations, public health advocates and some states<sup>1</sup> oppose EPA's proposal to no longer classify blending as a bypass and to institutionalize the practice of blending in specific NPDES permit conditions. The main reasons for VNRC's opposition to the proposal are:

- It makes within-plant diversions around secondary treatment routine and ignores feasible engineering alternatives that would allow wastewater treatment facilities to manage wet weather flows without resorting to bypass and removes the requirement that facilities conduct an alternatives analysis prior to being allowed to bypass secondary treatment.
- It creates incentives for municipalities not to maintain and upgrade their wastewater treatment facilities in order to accommodate increased flows and provide secondary treatment to all wastewater.
- It will have substantial adverse effects on public health and the environment because it will increase exposure to pathogens and, where disinfection is required, also increase exposure to carcinogenic disinfection byproducts.
- It will impose increased costs, including costs associated with greater incidence of waterborne disease, beach closings, shellfish contamination, and drinking water treatment, on affected communities.

Some of these issues are highlighted in more detail below.

### **Redefining Bypass to Lower Permit Requirements**

Whereas existing bypass regulations provide for within-plant diversions around the secondary treatment unit under very limited circumstances, the Proposed Blending

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<sup>1</sup> Environmental groups that are on record opposing the proposal include American Rivers, Coast Alliance, Clean water Action, Consumer Federation of America, Environmental Law and Policy Center of the Midwest, Izaak Walton League of America, Natural Resources Defense Council (NRDC), the Ocean Conservancy, Physicians for Social Responsibility, Sierra Club and U.S. PIRG. In addition, attached is a letter to former Governor Whitman of New Jersey that outlines the concerns regarding EPA's blending proposal raised by numerous environmental and public health advocacy groups and a publication issued by NRDC that includes states and organizations opposed to the blending policy.

Policy would make such diversions a routine phenomenon. The Proposed Blending Policy achieves this result by providing an interpretation that is contrary to existing regulations by allowing bypass to become routine and to avoid a “feasible alternative” analysis by asserting that there is no bypass of the “treatment facility” under specified conditions. Because the proposed interpretation is inconsistent with the plain language of the regulation, it is not subject to deference and instead is arbitrary and capricious.

Bypass is defined under current regulations as the “intentional diversion of waste streams from *any* portion of a treatment facility.”<sup>2</sup> This definition was promulgated by EPA in 1979, included by EPA in its Consolidated Permit Regulations May of 1980, and has remained unchanged since that time.<sup>3</sup> For more than 20 years, EPA and courts have interpreted the bypass regulation to apply to within-plant diversions of sewage around the secondary treatment unit.

The bypass rule, which is generally referenced in every NPDES permit, was designed for two purposes. “First, it excused certain unavoidable or justifiable violations of permit effluent limitations, provided the permittee could meet the bypass criteria. Second, it required that permittees operate control equipment at all times, thus obtaining maximum pollutant reductions consistent with technology-based requirements. *Without such a provision, dischargers could avoid appropriate technology-based control requirements.*”<sup>4</sup>

EPA elaborated upon this regulatory purpose in 1984, when EPA decided not to finalize a proposed change to the bypass rule that would have made the rule inapplicable to discharges that meet final effluent limitations despite having skipped some portion of the treatment process. In the preamble to the final rule, EPA specifically rejected industry’s argument that application of the bypass rule was unnecessary where final effluent limitations were met, stating:

EPA believes that the restriction on bypasses where permit limits are being met is necessary for several reasons. EPA's effluent limitations guidelines and standards-setting process are predicated upon the efficient operation and maintenance of removal systems. A number of the effluent limitations guidelines and standards upon which NPDES permits are based do not contain specific limitations for all of the pollutants of concern for the given industry ... The data available to EPA show that effective control of these pollutants can be obtained by controlling the discharge of the pollutants regulated by the standard (i.e., chromium, zinc, and aluminum) to levels achievable by the model treatment technology upon which the effluent guideline limits are based ... If bypass of treatment equipment is allowed,

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<sup>2</sup> 40 C.F.R. §122.41(m)(1)(i)(2003)(emphasis added).

<sup>3</sup> 44 Fed. Reg. 32854, 32905 (June 7, 1979); 45 Fed. Reg 33290, 33448 (May 19, 1980).

<sup>4</sup> 49 Fed. Reg. 37998, 38036 (Sept. 26, 1984)(emphasis added).

there is no assurance that these unlimited pollutants will be controlled, even though those specifically limited still meet permit limitations.<sup>5</sup>

EPA concluded in this context that allowing bypasses of treatment equipment would result in pollutant discharges above what was anticipated and retained the existing bypass regulations to ensure “effective removal of pollutants of concern which may not be specifically limited in the permit, but which are intended to be controlled.”<sup>6</sup> EPA’s historical position has thus been that bypass regulations are necessary, as in the present situation, to remove pollutants that can only be removed through the entire treatment process as designed and specified in the NPDES permit. The proposed Blending Policy is completely contradicts EPA’s previously conservative position and will lead to discharges of pollutants that will adversely effect public health and the environment.

### **Adverse Effects on Public Health and the Environment**

*The Proposed Blending Policy will result in an increase in pathogens in effluent from sewage treatment plants, and, where disinfection is required, disinfection byproducts with potentially severe health effects. Blending allows the discharge of water that has not been effectively treated for disease causing pathogens. Pathogens are disease-producing microorganisms that are naturally present in all human wastes. They consist of bacteria, viruses, protozoa and helminth worms, and can cause illnesses ranging from cholera, gastroenteritis, and respiratory infections to giardiasis, cryptosporidiosis and dysentery.*<sup>7</sup> These diseases “may be contracted by contact with or by consumption of wastewater contaminated water supplies (i.e., potable and/or recreational).”<sup>8</sup>

Based on modeling, experts estimate that there are 7.1 million cases of mild to moderate and 560,000 cases of moderate to severe infectious waterborne disease in the U.S. annually.<sup>9</sup> Researchers from the CDC estimate that 940,000 Americans become ill and 900 die from waterborne infections each year.<sup>10</sup> Additionally, certain populations, such as children, the elderly, and immuno-compromised, which make

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<sup>5</sup> 49 Fed. Reg. 37998, 38036-38037 (Sept. 26, 1984).

<sup>6</sup> *Id.* at 38037.

<sup>7</sup> U.S. EPA, *Design Manual: Municipal Wastewater Disinfection* p. 5 (1986).

<sup>8</sup> *Id.*

<sup>9</sup> Reichard, E., G. Zapponi, “Assessing and Managing Health Risks from Drinking Water Contamination,” Proceeding of International Symposium in Rome, Italy, (Sept. 13-17, 1994).

<sup>10</sup> J. Bennett, et al., *Infectious and parasitic diseases*, in *Closing the gap: the burden of unnecessary illness* 102 (Robert Amler & H. Bruce Dull eds., Oxford University Press (1987)).

up 20-25% of the U.S. population, are highly susceptible to outbreaks of pathogens such as *Giardia* and *Cryptosporidium*<sup>11</sup>

*Secondary treatment in addition to disinfection is needed to effectively remove pathogens from wastewater.* Although primary treatment plus disinfection successfully removes some bacteria, it is not particularly effective at removing viruses or parasites and requires exceptionally high doses of chlorine even to remove bacteria from effluent that has not received secondary treatment. *Conventional secondary treatment processes, such as activated sludge treatment, uses microorganisms that can remove up to 99% of viruses from wastewater.*<sup>12</sup> This result is critical because viruses are estimated to cause 50%-90% of all gastrointestinal illnesses.<sup>13</sup>

*Secondary treatment is even more critical during wet weather because waterborne disease outbreaks are often preceded by wet weather events.*<sup>14</sup> In fact, public health studies have documented that more than half of all waterborne disease outbreaks in the U.S. in the past fifty years were preceded by heavy rainfall. A risk model for a blending scenario based on levels in primary treated effluent showed that more than 99% of the loading of pathogenic viruses and parasites come from the untreated portion of the flow, and the risks of swimming in waters receiving blended effluent are “100 times greater than if the wastewater had been completely treated.”<sup>15</sup>

The nation is already experiencing an excessive discharge of poorly treated sewage. In 2000, for example, there were 40,000 discharges of inadequately treated sewage carrying bacteria, viruses, and fecal matter into basements, streets, playgrounds, and waterways across the country.<sup>16</sup> Additionally, the incidence of disease associated with recreational and drinking waters has been increasing over the last several

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<sup>11</sup> Gerba, C.P., J.P. Rose, C.N. Hass, “Sensitive Populations: Who is at the Greatest Risk?” *Int. Journal of Food Microbiology* 30: 113-23 (1996).

<sup>12</sup> U.S. EPA, EPA, *Design Manual: Municipal Wastewater Disinfection* p. 6 (1986) (shows primary removal rate for viruses of less than 10 percent and secondary removal rate of between 76 and 99%).

<sup>13</sup> See generally Gunther F. Craun, *Statistics of Waterborne Outbreaks in the U.S. (1920-1980)* in *Waterborne Diseases in the United States* 108, 110-112 (Gunther F. Craun, ed., CRC Press, Inc. 1986); see also R. Katonak & J.B. Rose, *Public Health Risks Associated with Wastewater Blending*, Department of Fisheries and Wildlife, Michigan State University at 18 (Nov. 17, 2003) (attached) (“Adenoviruses, Calciviruses, Piconaviruses, and Rotaviruses cause 100,000’s of cases per year.”)

<sup>14</sup> Frank Curriero, Jonathan Patz, Joan Rose & Subhash Lele, *The Association Between Extreme Precipitation and Waterborne Disease Outbreaks in the United States, 1948-1994*, in 91 *American Journal of Public Health* 1194 (August 2001).

<sup>15</sup> Katonak & Rose, at 40.

<sup>16</sup> U.S. EPA, Notice of Proposed Rulemaking, National Pollutant Discharge Elimination System (NPDES) Permit Requirements for Municipal Sanitary Sewer Collection Systems, Municipal Collection Systems, and Sanitary Sewer Overflows (Jan. 4, 2001).

years.<sup>17</sup> *The U.S. does not have a program to monitor for pathogens in sewage discharge,<sup>18</sup> nor is there any requirement to do so in the Proposed Blending Policy.<sup>19</sup> Moreover, limits for pathogens such as Giardia and Cryptosporidium are not typically included in NPDES permits. Accordingly, even facilities are required to meet effluent limits in NPDES permits, this will not do anything to prevent the increase of pathogens as a result of blending.*

Permitting blending and bypassing during wet weather events is a poor policy choice for human health and the environment because it will increase the amount of inadequately treated sewage entering waterways, only exacerbating disease outbreaks and environmental harm. Instead, existing bypass regulations and secondary treatment requirements should be *maintained* to minimize pathogen discharge and exposure.

### **Feasible Engineering Alternatives**

There are a variety of feasible engineering alternatives that have been employed and are continuing to be employed by wastewater treatment facilities that are providing secondary treatment to all of their wastewater, including during wet weather conditions. Some of these practices are used in combined sewer systems, some in separate sanitary sewer systems, some in both. These practices include better maintenance of collection systems, expanded treatment capacity, flow equalization basins, real time control, etc. There are numerous technical manuals that describe the range of approaches available to address wet weather flows.<sup>20</sup>

*The Proposed Blending Policy discourages wastewater treatment facilities from addressing the real cause of wet weather peak flow, namely inflow and rainfall-induced infiltration, and instead turns to bypass as a routine solution.<sup>21</sup> A 1990 EPA study describes rainfall-induced infiltration (RII) as one of the major factors limiting wastewater treatment facilities ability to meet CWA goals.<sup>22</sup> It is estimated*

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<sup>17</sup> Katonak and Rose, at 6.

<sup>18</sup> Katonak and Rose, at 12.

<sup>19</sup> 68 Fed. Reg. 63042, 63050 (Nov. 7, 2003). The Proposed Blending Policy states that the permittee “should” develop monitoring programs for a number of parameters, including pathogens, but does not limit its proposed exemption from the bypass rule to facilities that monitor for pathogens, except as required to demonstrate compliance with an existing permit limit.

<sup>20</sup> See, e.g., The American Society of Civil Engineers and the Water Environment Federation, *Design of Wastewater Treatment Plants* (1992).

<sup>21</sup> See Comments of Public Health & Environmental Services, Pasadena, TX to Docket ID No. OW-2003-0025 (“We believe that by further empowering owner/operators of wastewater treatment facilities to use blending as a tool will minimize their willingness to adopt enhanced controls within their system(s) during periods of peak flow.”)

<sup>22</sup> U.S. EPA, *Rain Induced Infiltration Into Sewer Systems: Report to Congress*, at ii 430/09-90-005 (August 1990).

that RII contributes from 60 to 90% of the wet weather flows during wet weather periods.<sup>23</sup> RII is mainly caused by the seepage of percolating rainwater into defective pipes occurring during and immediately after wet weather.<sup>24</sup> Factors that contribute to RII include system design flaws, construction flaws, geology of the area, and the degree of maintenance.<sup>25</sup> RII can be controlled through physical rehabilitation of the system, improved design standards, improved construction practices, periodic flow monitoring, and preventive maintenance.<sup>26</sup>

RII control is a prime example of an area where improvements can alleviate the need to resort to blending. More aggressive control of I/I can be a cost effective as well as environmentally beneficial means of managing peak wet-weather flows.<sup>27</sup> *The Proposed Blending Policy, however, would discourage wastewater treatment facilities from addressing these issues because it will no longer be necessary for these plants to look to alternatives for handling the peak wet weather flow problems.*<sup>28</sup>

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<sup>23</sup> *Id.*

<sup>24</sup> *Id.* at vi. RII resembles inflow because it causes a rapid increase inflow, mirroring the rainfall event, and decreases as the rain stops.

<sup>25</sup> *Id.* at 2-9.

<sup>26</sup> *Id.* at iii-v.

<sup>27</sup> Deferring infiltration and inflow controls “will gradually lead to serious deterioration of the system so that ultimately it will have to be replaced at great expense to the citizens of the township” and “will significantly raise the annual cost of operating and maintaining a sewer system.” Lyon, Walter A., “Report Concerning Lower Paxton Township v. Commonwealth of Pennsylvania Department of Environmental Protection” (June 27, 2001) (attached).

<sup>28</sup> See, e.g., Letter from Georgia Department of Natural Resources to Water Docket (Jan. 9, 2004) (Allowing blending will take the pressure off the systems with the greatest amount of infiltration problems to upgrade and maintain their collection systems).