

actually include the maximum potential effluent concentration of the pollutant of concern. In addition, the NPDES regulations at § 122.44(d)(1)(ii) require that permit writers consider the variability of the pollutant in the effluent when determining the need for WQBELs". At any time between 2002 and today, the permittee could have collected additional data if there was a concern that the available data was not representative of the discharges. See Response IS General. Instead, the permittee has chosen simply to claim that EPA lacks sufficient data regarding its discharge. Much of the data that is available had to be required through EPA's authority under Section 308 of the Clean Water Act. A permittee is not in a position to complain that a permitting agency is not basing its decision on sufficient data when the permittee itself declines to provide any more data. Whether Invensys has simply declined to collect further data, or has collected more data but has declined to provide it to EPA, the fact remains that the data that EPA has obtained supports a finding that pollutant concentrations in storm water/contaminated groundwater discharges have a reasonable potential to cause or contribute to water quality standards violations, and Invensys has had ample opportunity to submit data rebutting this point. The determination that the available data supports a conclusion that there a reasonable potential to cause or contribute to water quality standards violations is not inconsistent with the notion that the discharges would be better characterized for compliance purposes with more frequent sampling.

Where there is a reasonable potential for a discharge to cause or contribute to a water quality criteria violation, EPA is required to establish a water quality based limit that ensures attainment of the criteria. While available pollutant discharge data is an important consideration in determining reasonable potential, it was not utilized in the next step which is the establishment the necessary water quality based limits that will ensure that the discharges will result in attainment of applicable water quality criteria. Comments related to ecological risk assessment and the use of site specific criteria are addressed in Response IS #3 below.

The Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits does not preclude the imposition of numeric limits where appropriate. The policy states that "[i]n cases where adequate information exists to develop more specific conditions or limitations to meet water quality standards, these conditions or limitations are to be incorporated into storm water permits, as necessary and appropriate." Furthermore, these discharges do not consist of storm water only but rather storm water commingled with contaminated groundwater and building sump discharges.

The simple fact that discharge concentrations vary does not preclude or prevent the establishment of limits necessary to ensure attainment of water quality criteria. The vast majority of discharges experience significant variability in discharge quality but are still subject to numeric limitations as necessary to ensure attainment of water quality criteria. Variability, particularly in cases where the discharge is diluted with the receiving water, can make it more difficult to determine reasonable potential and to establish protective limits. In this case, where there is no significant dilution in the receiving water, determining reasonable potential can be made by comparing discharge concentrations to applicable water quality criteria. These analyses are clearly documented in the Fact Sheet and where there is a reasonable potential to exceed the criteria, water quality based limits are included in the permit as required by the regulations at 40 CFR 122.44 (d).

The establishment of longer term average limits based on the chronic criteria and maximum daily limits based on the acute criteria is appropriate and addresses the issue that the discharges are intermittent and of limited duration when storm water dominates. Thus, intermittent discharges of limited duration are only required to comply with the higher criteria protecting against lethal effects while the longer term average limits protect against the chronic growth and reproduction effects of the continuous discharge of contaminated groundwater that is at times commingled with storm water and building sump discharges.

As indicated by the commenter, many actions and management practices have been implemented over a twenty year period to control sources and operations. Despite these efforts, the discharges still demonstrate clear potential to cause or contribute to an exceedance of water quality criteria. As stated in the Fact Sheet, EPA does not believe it reasonable to expect that the imposition of yet another round of BMPs will be sufficient to attain water quality criteria. The permittee has not identified BMPs that, if designed and constructed, would assure water quality criteria will be met.

40 CFR Section 122.44(k) addresses the inclusion of BMPs in permits. EPA concurs that BMPs are sometimes appropriate to include in permits and EPA has included BMPs in this permit. Under some circumstances, BMPs can be imposed in lieu of numeric limits including when numeric effluent limits are infeasible. For the reasons cited above, EPA believes that numeric limits are appropriate and feasible in this case. The decision to include numeric limits is made on a case by case basis after reviewing all relevant information.

The permittee also appears to proceed under a misapprehension regarding BMPs for water quality based requirements. Specifically, the permittee appears to assume that BMPs would mean that its discharge would not need to meet water quality standards. To the contrary, once it has been found that a pollutant is or may be discharged at a level which will have the reasonable potential to cause or contribute to an excursion above water quality standards, the permit must contain requirements that assure compliance with water quality standards. The mechanism for these requirements may be BMPs or it may be end-of-pipe numeric effluent limits, but in either case the permit requirement must assure compliance with water quality standards. The permit does not dictate how the criteria are to be met and does not preclude the use of additional BMPs (as opposed to treatment or other methods) for achieving the effluent limits. That said, EPA notes that the commenter also does not believe that BMPs will be sufficient to ensure attainment of criteria given the extensive discussions provided (see Invensys comment III.B.2.c.) as to the cost of treatment facilities that will be required as a result of the permit limits. If Invensys believed that BMPs could achieve the same results, it could have so stated.

Instead, Invensys offers that “[s]hould the Agency agree that the use of BMPs in lieu of numeric limitations is appropriate, Invensys is willing to retain a third-party consultant to undertake an assessment of BMPs that could be implemented at the Facility and their likely effectiveness. Invensys would agree to provide EPA and MassDEP with a report within six months of completion of the assessment which summarizes the results of such assessment and identifies a list of BMPs Invensys proposes to undertake at the Facility. . . . Invensys’ proposal in this regard is dependent on the Agency agreeing to the use of BMPs in lieu of numeric effluent limits.” In

other words, Invensys proposes that, *first* EPA should agree to the use of BMPs before EPA, or indeed Invensys itself, has any idea what BMPs would be involved, or whether they would be effective, and *then* Invensys would propose specific BMPs and whether they would work. This is precisely backwards. The Clean Water Act does not require EPA to commit in advance to a BMP-based permit absent any evidence that BMPs will actually succeed in meeting water quality standards. Of course, if Invensys can identify BMPs that will result in its discharge meeting the numeric water quality based effluent limits, then it is free to comply with the effluent limits in the permit by means of such BMPs; nothing in the permit requires treatment as a means of achieving compliance.

In a March 15, 2002 letter from Invensys, responding to EPA's March 7, 2002 monitoring requirement under Section 308 of the Clean Water Act, Invensys argued that sampling manhole #26 was not representative of the discharges from the facility because a facility drain line from manhole #39 entered the drainage system below manhole #26, along with storm water from the Town. Invensys further argued that the sampling should be conducted at the point on the East side of Neponset Avenue where the drain line leading from manhole #26 surfaces and Robinson Brook becomes visible. Now, Invensys is suggesting (comment III.A, note 31) that only manhole #26 should be sampled. Since sampling at manhole #26 would not be inclusive of all discharges from the facility EPA has clarified the final permit to indicate that all sampling for the Robinson Brook discharges shall consist of a flow weighted composite from manhole #26 and manhole #39.

While the June 15, 2001 sample referenced was collected downstream of town storm water sources, it was collected during dry weather. The September 25, 2001 sample is the only sample downstream of town storm water that may have been influenced by off-site storm water. Given the high level of metals coming from the site during both dry weather and wet weather, including high levels of copper, lead and cadmium measured in sumps as well as the history of contamination at the site, it is reasonable to conclude that even for the September 25, 2001 sample, there is a significant contribution from the site of metals that have the potential to exceed criteria.

Wet weather data collected on July 23, 2002 that reflects a flow weighted composite of manhole #26 and manhole #39, thereby excluding the storm water contributions from Town property, indicated very high levels of copper, lead, cadmium and zinc (see Fact Sheet Attachment C.1). Data collected on July 2, 2002 at the same location indicated that copper and lead were also high during dry weather. Given that the data indicate levels of metals that are at times much higher than chronic criteria and, in some cases, much higher than acute criteria, the limits established for individual metals as well as the whole effluent acute and chronic toxicity limits are justified.

Invensys states that EPA "ignore[d] [the 2003 post-cleanout data] for purposes of calculating limits." This statement again conflates a reasonable potential analysis with calculation of effluent limits. For the reasonable potential analysis, EPA most certainly did not ignore the data collected post cleanout. EPA explicitly noted that levels appear to have improved, at least under the discharge conditions associated with this limited sampling, but that values still exceed criteria. See Fact Sheet at 13 n.5. The mere possibility that things may have further improved does not lead one to conclude that there is no reasonable potential to exceed criteria. To the

contrary, the 2003 data shows continued exceedances after the cleanout. Specifically, Attachment C.7-B shows post-drain cleaning levels exceeding standards for cadmium, copper, lead, zinc, and iron. In some cases, levels at the final post-drain-cleaning sampling event (11/14/03) are barely different from those at the pre-drain-cleaning event (10/22/02). For example, during that year (with drain cleaning intervening), cadmium levels at MH 39 declined from 0.6 to 0.57 ug/l (as compared to an acute criterion of 1.05 and a chronic criterion of 0.16) – with an intervening measurement on 2/28/03 that is actually higher (1.1) than before drain cleaning. As another example, zinc levels declined from 800 ug/l to 530 ug/l a year after drain cleaning, which is certainly an improvement, but the standard is 66.6 ug/l and thus the post-drain-cleaning results are nearly ten times higher than the standard. As to the permittee’s claim that “levels of various constituents did not decrease immediately following the cleanout at outfall 001, but rather took several years to stabilize at the lower levels,” it was within the permittee’s ability to collect further samples at any point after 11/14/03 and submit the data to EPA, if such data showed that pollutant levels in its discharge would meet water quality standards.

Invensys discusses numerous unrelated NPDES permits at various facilities across the Commonwealth of Massachusetts. Each NPDES permit is a case-specific adjudication based on the particular facts and circumstance of the facility’s discharge, receiving water, and other relevant site-specific factors. EPA is not required to justify, in a permit proceeding for Facility A, why it did or did not impose a certain requirement on Facility B. *See In re City of Port St. Joe*, 7 E.A.D. 275, 305 n.44 (EAB 1997); *accord In re City of Attleboro*, 14 E.A.D. \_\_\_, NPDES Appeal No. 08-08, slip op. at 36, 41 (EAB Sept. 15, 2009). Notwithstanding the preceding, EPA offers brief responses to the major examples offered in the body of Invensys’s comment.

The Wyman Gordon facilities are storm water only as opposed to storm water commingled with contaminated groundwater and specific BMPs were identified which have sufficient potential to attain the criteria. These BMPs were identified and required as part of the permit.

Similarly, in the General Electric Pittsfield permit EPA determined that there were specific BMPs which have sufficient potential to attain water quality criteria in the receiving waters and these BMPs were identified and required as part of the permit.

The Logan Airport permit addresses storm water, some of which is likely contaminated with illicit connections. In this case, specific BMPs are identified and required to be implemented in order to address any potential impairments associated with the discharges.

**Comment IS #2:** In the 2011 Draft Permit, the Agency has once again established numeric effluent limits for metals based on the application of the National Recommended Water Quality Criteria, which do not consider the site-specific characteristics and species of the receiving waters. The application of the NRWQC in this case results in effluent limits which are far more stringent than necessary for the protection of human health and the environment and will be exceedingly costly to achieve, if they can indeed be achieved. As Invensys stated in its 2003 Comments and has argued on numerous occasions in the past with respect to proposed permit limits for the discharges, in light of the strong available evidence demonstrating that the regulated discharges do not present a risk to human health or the environment, as demonstrated by the ecological risk assessment conducted as part of the Phase II, the use of the NRWQC to

derive permit limits is inappropriate. Rather, effluent limits for the subject discharges should be based on SSWQC reflective of the unique physical, chemical and biological characteristics of the receiving waters. As a result, Invensys is, contemporaneously with the submittal of these Comments, submitting a formal request to MassDEP for the development of SSWQC for the Outfall 001 and Outfall 002 receiving waters. If EPA continues to believe that numeric effluent limits are necessary, it should delay finalization of the 2011 Draft Permit until appropriate SSWQC, on which to base such limits, can be adopted.<sup>50</sup>

### 1. The Development of SSWQC is Authorized by Relevant Regulations

The NRWQC are developed based on the laboratory protocols and species ranking procedures set forth in EPA's 1985 Guidelines for Deriving Numerical National Aquatic Life Criteria for Protection of Aquatic Organisms and Their Uses,<sup>51</sup> and they do not take into account local and regional water quality conditions or biota. As a result, in certain cases, effluent limitations based on such criteria do not accurately reflect the potential toxicity represented by a specific concentration of the pollutant in the receiving water. In such cases, the development of SSWQC is necessary.

Pursuant to both federal and state regulations and guidelines, the development of permit limits based on site-specific criteria is permissible and would be appropriate in the present case. Specifically, federal regulations expressly allow states to develop permit limits based on numeric criteria that have been "modified to reflect site-specific conditions."<sup>52</sup> Massachusetts water quality standards, in turn, provide that the development of site specific criteria for toxic pollutants is permissible where EPA recommended criteria are "invalid due to site specific physical, chemical or biological considerations."<sup>53</sup> The federal Water Quality Standards Handbook acknowledges that site-specific limits are appropriate when "the species at the site are more or less sensitive than those included in the national criteria data set" or "physical and/or chemical characteristics of the site alter the biological availability and/or toxicity of the chemical".<sup>54</sup> Similarly, MassDEP policy provides that site-specific limits are appropriate when

---

<sup>50</sup> As noted above, Invensys continues to believe that the use of BMPs in lieu of numeric limits is appropriate in this case. Should SSWQC be developed for the receiving waters, Invensys does not concede that any effluent limitations based on such criteria must be numeric effluent limitations. Rather, the use of BMPs may be determined to be an appropriate means of achieving compliance with SSWQC.

<sup>51</sup> Guidelines for Deriving Numerical National Aquatic Life Criteria for Protection of Aquatic Organisms and Their Uses (EPA, 1985), updated in 2010 on-line version, available at <http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/upload/85guidelines.pdf> (last visited October 31, 2011).

<sup>52</sup> 40 C.F.R. 131.11(b)(1)(ii).

<sup>53</sup> See 314 C.M.R. 4.05(5)(e)(1).

<sup>54</sup> Water Quality Standards Handbook: Second Edition (EPA, August 15, 1994), p. 3-39.

local conditions differ from those used to develop the recommended limit or to reflect the presence or absence of particular water uses.<sup>55</sup>

The MassDEP has acknowledged the appropriateness of the use of SSWQC to develop permit limits by revising its water quality standards to incorporate site-specific criteria for certain waters. Specifically, in January 2007, revisions to the state water quality standards to incorporate site-specific criteria for certain waters became effective. The revised regulation included site-specific criteria for copper in 23 specified streams and stream segments, resulting in the replacement of the NRWQC in determining NPDES permit limits for approximately 30 facilities. In 2009, an additional seven river segments were added to the site-specific copper list. The adoption of site-specific criteria was necessitated by the fact that many NPDES permits had “very stringent compliance limits for copper based on EPA national criteria that are difficult for most facilities to achieve, in many cases lower than is necessary to protect water quality.”<sup>56</sup> Therefore, site-specific criteria were developed to “continue to protect water quality without requiring unwarranted levels of investment by regulated entities in an attempt to achieve the limits.”<sup>57</sup> In fact, EPA recently revised the NRWQC for copper such that they no longer provide default numeric criteria but instead recommend that site specific water quality information be used in conjunction with the Biotic Ligand Model (“BLM”) to derive SSWQC.<sup>58</sup> Further, Invensys understands that the MassDEP is in the process of adopting site-specific criteria for additional waters, including site-specific criteria for zinc in the lower Squannacook River near the Hollingsworth & Vose Company’s West Groton facility.

**Response IS #2:** See Response IS #1 relative to the need for numeric limits. These limits are based on the current applicable water quality criteria as required by federal permitting regulations.

The federally-approved Massachusetts Surface Water Quality Standards at 314 CMR 4.05(5)(e) state: “All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife. For pollutants not otherwise listed in 314 CMR 4.00, the National Recommended Water Quality Criteria: 2002, EPA 822R-02-047, November 2002 published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the

---

<sup>55</sup> See Implementation Policy for the Control of Toxic Pollutants in Surface Waters (MassDEP, February 23, 1990), available from <http://www.mass.gov/dep/water/laws/policies.htm#npdes> (last visited October 31, 2011), pp. 2-3.

<sup>56</sup> See Clean Water: Control Pollution from Point Sources – Surface Water Discharge Compliance (MassDEP, October 2005), available at [www.mass.gov/dep/water/priorities/ppa06sum.doc](http://www.mass.gov/dep/water/priorities/ppa06sum.doc) (last visited October 31, 2011), p. 35.

<sup>57</sup> Id.

<sup>58</sup> See EPA’s National Recommended Water Quality Criteria (“NRWQC”)(EPA Office of Water and the Office of Science and Technology, 2009), available at, <http://water.epa.gov/scitech/swguidance/standards/current/upload/nrwqc-2009.pdf> (last visited October 31, 2011), p. 2 (“Freshwater criteria calculated using the BLM”, and referencing Aquatic Life Ambient Freshwater Quality Criteria - Copper: 2007 Revision (EPA, February 2007), available at [http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/pollutants/copper/upload/2009\\_04\\_27\\_criteria\\_copper\\_2007\\_criteria-full.pdf](http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/pollutants/copper/upload/2009_04_27_criteria_copper_2007_criteria-full.pdf) (last visited October 31, 2011)). The 2011 Draft Permit cites the outdated version of the NRWQC, rather than the current version adopted by the Agency in 2009.

allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher.” The Massachusetts Surface Water Quality Standards also provide: “Where EPA recommended criteria for a specific pollutant are not available or where the Department determines that they are invalid due to site specific physical, chemical or biological considerations, the Department shall use a site specific criterion as the allowable receiving water concentration for the affected waters. In all cases, at a minimum, site specific criteria shall not exceed safe exposure levels determined by toxicity testing using methods approved by the Department. The Department will adopt any such site specific criteria as revisions to 314 CMR 4.00 in accordance with M.G.L. c. 30A.” *Id.* § 4.05(5)(e)(1).

In short, the federally approved Massachusetts Surface Water Quality Standards for pollutants not otherwise listed in 314 CMR 4.00 are the 2002 National Recommended Water Quality Criteria unless and until MassDEP revises 314 CMR 4.00 to include site-specific criteria. That has not occurred for the pollutants and water bodies at issue here. *Cf. City of Attleboro*, slip op. at 80-81 (addressing similar issue under same regulation).

The permittee’s request for MassDEP to issue SSWQC is a separate proceeding under Chapter 30A of the Massachusetts General Laws, and it is not cognizable in an EPA NPDES permit proceeding. Consequently, no further response is necessary in this permit decision to that portion of the comment requesting development of SSWQC. That said, EPA does provide some additional responses below.

SSWQC would have to be developed consistent with appropriate procedures identified in EPA water quality standards guidance documents. While Invensys has conducted an ecological risk assessment of the Neponset Reservoir downstream of Gudgeon Brook under the frame work of the Massachusetts waste site cleanup program, no demonstration has been made that this analysis supports the adoption of alternative criteria, consistent with federally approved methodologies for developing site specific criteria, that will be protective of all biota in Gudgeon Brook and Robinson Brook. Any proposed criteria change would have to be submitted to Massachusetts for approval and then formally adopted into the state standards, subject to EPA review and approval, before they can be used in establishing permit limits.

As to the comment’s request that EPA delay permit issuance until SSWQC can be developed, EPA denies that request for several reasons. First, this permit has already been long delayed, and the permittee has had the ability to pursue this option with the State of Massachusetts at any time over the past decade. EPA notes that the supporting documentation provided with the comments indicate that Invensys has requested that MassDEP work with them on developing site specific criteria but that this request was not made until the final day of the comment period for the draft permit. Second, while the desire for site specific criteria is not sufficient reason to delay the application of permit limits required by current water quality criteria, EPA notes that, for various reasons, over three years have passed from the close of the comment period (and Invensys’s request for MassDEP to develop SSWQC) to issuance of this final permit. In other words, although EPA has not agreed to delay permit issuance pending MassDEP’s review of Invensys’s submission, in fact Invensys has gained the benefit of over three years as if EPA had agreed to a delay for that reason.

Finally, development and approval of site specific criteria can form the basis for revised permit limits in future permit actions.

**Comment IS #3:** Invensys has time and again provided Region 1 with extensive evidence indicating that further reductions in the levels of constituents cannot be justified on the basis of risk to human health or the environment. The available evidence points to the fact that the discharges are not acutely toxic and do not appear to have an adverse impact on the ecological receptors of concern in Gudgeon Brook or the Reservoir, based on the results of acute toxicity bioassays conducted pursuant to the current NPDES Permit and subchronic and chronic toxicity bioassays conducted under the Phase II.

Specifically, as part of the current NPDES Permit requirements, Invensys has routinely collected effluent water samples for the purposes of whole effluent toxicity (WET) testing on two species: *Ceriodaphnia dubia* and *Pimephales promelas*. Such tests have been performed quarterly for over 17 years, resulting in a data set of 140 separate tests. The results of these WET tests overwhelmingly demonstrate that the effluent is not toxic – in the 13 years since the drain line cleanout, all WET tests for both species have showed 100% survival, except for a single test conducted in the 1st quarter of 2002, where *C. dubia* showed 83% survival.

In the Fact Sheet, EPA acknowledges that the “testing has shown that the discharge routinely meets its LC50 limit of 100 percent effluent”.<sup>59</sup> However, while acknowledging that WET testing has demonstrated that the effluent does not cause acute toxicity, the Region indicates that it “believes there is a reasonable potential for the discharge to cause chronic toxicity in the receiving water.”<sup>60</sup> Region 1 cites to no evidence to support this assertion. The Agency must rely on factual information contained in the administrative record rather than mere speculation.<sup>61</sup>

Although the currently required effluent WET testing is limited to evaluating acute toxicity, site-specific data from the Phase II indicate that the levels of constituents are also not causing chronic toxicity. Had the Region considered the available evidence, it would have determined that, contrary to its unsupported assertions, the discharge has not been demonstrated to cause chronic toxicity in the receiving waters. Specifically, data collected during the ongoing assessment activities in the Neponset Reservoir demonstrate that the historical discharge of higher concentrations of metals has not had an adverse impact on the ecological receptors of concern within the Reservoir. As discussed in Section I, *supra*, the Phase II findings demonstrate, among other things, that:

- The Reservoir reflects an active, diverse and abundant ecological setting.

---

<sup>59</sup> Fact Sheet, p. 12.

<sup>60</sup> *Id.* at pp. 12 & 15.

<sup>61</sup> See 40 CFR § 124.9 (the provisions of a draft permit “shall be based on the administrative record”); Edison Electric Institute, 2 F.3d at 446; Corrosion Proof Fittings, 947 F.2d at 1227 (“Musings and conjecture are ‘not the stuff of which substantial evidence is made.’”).



- There is no evidence of stressed biota attributable to the release at the Reservoir.
- There is no evidence of significant biological harm to invertebrates (e.g., worms), plankton, fish, birds or other wildlife. While some individual measures of effect evaluated in the Phase II showed slight impairment, the effects were small and were not correlated with constituent concentrations in the surface water.
- Based on the 23 lines of evidence used to assess the environmental risk in the Reservoir, adverse effects of COCs in the Reservoir – to the extent that there are any effects – are minimal/negligible and collectively provide no evidence of a significant risk of harm to the environment.

The Massachusetts Department of Fish and Wildlife agreed with the Phase II's conclusion that the Reservoir supports a diverse and productive fauna, concluding that, "[the Phase II] study does show that fish metrics are within normative ranges, and that the Neponset Reservoir species composition is essentially the same as it was in 1958."<sup>62</sup> Indeed, the findings of the Phase II are consistent with an earlier MassDEP investigation of the Reservoir. Specifically, in 1986 the Massachusetts Department of Environmental Quality Engineering undertook a study of conditions in the Reservoir. Based on the study findings it was concluded that "the reservoir contains a healthy population of fish. None of the fish captured appeared to be stressed by conditions in the reservoir. Analysis of the fish tissue indicated levels which are safe and common for fish from this type of environment."<sup>63</sup>

The results of the Phase II environmental risk characterization suggest that the low levels of constituents occurring in the current discharges will not negatively impact the ecological communities of species present in the receiving waters. Further, specifically with respect to subchronic and chronic toxicity bioassays conducted under the Phase II, as part of the ecological risk characterization, sediment and surface water bioassays were conducted on several aquatic species. Results of the tests, which represented subchronic to chronic exposures, indicated that while toxicity was observed at certain individual sample stations, toxicity was neither consistently observed nor strongly correlated with concentrations of heavy metals in aquatic media, suggesting that the limited observed toxicity was related to factors other than the presence of metals in the surface water or sediment. Indeed, it is important to note that the concentrations of cadmium in samples used to conduct Phase II toxicity tests, in which no statistically significant chronic toxicity was observed, were *higher* than those characteristic of recent effluent

---

<sup>62</sup> See Response to Comments on Phase II, Sept. 15, 2003, citing to August 28, 2001 written correspondence from Richard Kellar, Massachusetts Department of Fish and Wildlife, to Jonathan Hobill, MassDEP Bureau of Waste Site Cleanup. See also 2003 Comments, p. 10.

<sup>63</sup> 1987 Permit Fact Sheet (June 30, 1987), p. 3 (Attachment 3 hereto).

samples from Outfall 001.<sup>64</sup> Overall, bioassay results did not show strong evidence of chronic or subchronic toxicity to fish or macroinvertebrates.

Given the available data, and the fact that the discharges do not appear to be causing toxicity in the receiving waters, if the Agency continues to believe that numeric limits are necessary, it should allow for the development of SSWQC in order to provide a more accurate measure of the levels of metals that would be protective of the relevant species present in the receiving waters.

**Response #IS 3:** The permit contains both whole effluent toxicity (WET) and chemical specific limits consistent with EPA guidance for establishing water quality based limits for controlling toxicity. Chemical specific limits are established to ensure that each individual chemical discharges is not discharged at a level that will cause toxicity. WET limits are established to determine if there is a cumulative or synergistic toxicity effect associated with a combined discharge that contains multiple individual chemicals. Only one or two species are tested, consistent with national guidelines, as part of WET testing. The national guidelines specify the species to be tested, and these species may or may not be the most sensitive species for a given contaminant (see Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, October 2002, United States Environmental Protection Agency, Office of Water, Washington, D.C., EPA 821-R-02-013). WET limits are not designed to protect all aquatic life in the receiving water and, by themselves, are not sufficient to ensure attainment of water quality standards. WET limits and chemical specific limits are intended to be complementary limits. See also *City of Attleboro*, slip op. at 79-80 (addressing similar issue).

The previous permit only required acute WET testing. The lack of acute toxicity does not mean that there is no chronic toxicity effect from a discharge. The chemical specific criteria exceedances in the discharges and lack of dilution are sufficient reason to conclude that the discharges have a reasonable potential to cause or contribute to chronic toxicity. Due to the evidence that the discharges to Gudgeon Brook are not acutely toxic, the final permit contains only a chronic limit and a chronic monitoring requirement.

The individual metals limits in the permit are established consistent with the regulatory requirement to establish limits that ensure attainment of acute and chronic water quality criteria wherever there is shown to be a reasonable potential to exceed the criteria. The reasonable potential demonstration and the calculation of the required permit limits are clearly documented in the Fact Sheet.

The commenter draws broad conclusions based on an ecological (“eco”) risk assessment and a finding of “no significant impact” under a state hazardous waste cleanup law (Massachusetts General Laws Chapter 21E). This phrase is a term of art under Chapter 21E and reflects factual and legal conclusions drawn under that distinct framework, which differs from the legal requirements and factors to be considered in NPDES permit issuance. While EPA does not

---

<sup>64</sup> See Attachment 4 hereto, showing detected dissolved cadmium concentrations measured at five locations in the Reservoir on two dates (March 1999 and January 2000) and corresponding toxicity results, and compare to Attachment 1 hereto, summarizing historical Outfall 001 cadmium data.

necessarily agree with the broad conclusions drawn under the Chapter 21E analysis (see discussion below), EPA's role here is not to review the Chapter 21E analysis. For purposes of the NPDES permit, it suffices to note that the permittee's discharge contains pollutants at levels that have a reasonable potential to cause or contribute to excursions above water quality standards. Furthermore, a Chapter 21E analysis is not an approved site specific criteria development method and does not negate the need for complementary limits for whole effluent toxicity and individual toxic pollutants. Until such time as a site specific analysis is completed and criteria are modified by MassDEP and approved by USEPA, permits necessarily must be based on current criteria.

That said, to the extent (if any) that the Chapter 21E "Phase II" study is relevant, EPA offers the following observations.

Sublethal impacts of heavy metals on the growth and reproduction (chronic impacts) of aquatic organisms is a significant concern associated with the discharges from Invensys. Three of the water column bioassay tests conducted for the Phase II environmental risk characterization (eco risk assessment) indicated significant chronic impacts. While cadmium is not the only heavy metal of concern, in all three tests cadmium exceeded the chronic criteria value. While some tests did not indicate significant chronic effects, there are many factors that can affect the test organisms response to metals levels and the fact that concentrations of cadmium that exceed the criteria only impact the organisms some of the time does little to alleviate the concern that the discharges may be negatively impacting the aquatic community.

Three of the sediment toxicity testing stations conducted for the eco risk assessment exhibited toxic impacts. Station #6 and #7 exhibited significant growth differences relative to the control station for *Chironomus Tentans*. Both of these stations are in the vicinity of the discharge. Additionally, station #6 and #12 exhibited significantly lower survival rates relative to the control station for *Hyaella Azteca*.

Metals levels measured at the mouth of Gudgeon Brook during a wet weather event in 1998 indicated high levels for copper (36 ug/l), zinc (130 ug/l), lead (4.6 ug/l), and cadmium (1.1 ug/l). All exceed the respective ambient criteria values. Additional data collected at the mouth of Gudgeon Brook indicate that copper ranged from 2 - 36 ug/l, zinc ranged from 18 - 130 ug/l, lead ranged from <0.5 - 4.6 ug/l, and cadmium ranged from 0.4 - 1.5 ug/l.

At the outlet to the Neponset reservoir, cadmium was measured as high as 0.8 ug/l, exceeding the ambient criteria value of 0.16 ug/l. Cadmium levels of over 1.0 ug/l were also measured at several other stations in the Neponset Reservoir.

The eco risk assessment indicates a general gradient of metals concentrations in the sediment from the highest values at the stations closest to the Gudgeon Brook discharge to the lowest values at the stations furthest from the Gudgeon Brook discharge. Additionally, while the study concludes that there is no significant impact to the macroinvertebrate community, there is a clear gradient relative to taxonomic richness with the least number of taxa seen at the stations nearest to the Gudgeon Brook discharge and the most number of taxa seen at the stations furthest from the Gudgeon Brook discharge.

Metals related toxicity in a system like the Neponset Reservoir is affected by many variables, and this is supported by Attachment 4 included with the comment. While at times, no toxicity is exhibited with relatively high values of cadmium (>1.0 ug/l), at other times toxicity is exhibited with cadmium values ranging from 2.0 ug/l down to as low as 0.5 ug/l. Toxicity measured at cadmium levels as low as 0.5 ug/l included both acute (survival) and chronic (reproduction) effects.

**Comment IS #4:** It is also clear that the use of site-specific criteria is appropriate based on the species present in the receiving waters and the “uses” that are being achieved in those waters. Both Gudgeon Brook and Robinson Brook are classified as “Class B” waters, and, as such, “are designated as habitat for fish, other aquatic life, and wildlife . . . and for primary and secondary contact recreation.”<sup>65</sup> However, as the result of extremely low flows, neither Gudgeon Brook nor Robinson Brook support these uses. Gudgeon Brook is an approximately 200 foot long man-made channel with a flow that is highly variable and directly proportional with precipitation events<sup>66</sup> and, according to the Massachusetts Geographical Information System (“MassGIS”), is intermittent in its nature.<sup>67</sup> Given its limited reach, variable water levels and intermittent nature, Gudgeon Brook is not likely to be a suitable habitat for fish. Similarly, and as discussed in further detail in Section IV.B, *infra*, Robinson Brook is an intermittent stream, with no flow present during certain time periods during the year. As such, it has limited habitat value and no potential for recreational uses. The fact that the characteristics of Gudgeon Brook and Robinson Brook do not support a use of fish habitat, and therefore do not support many of the species used to develop the federal numerical criteria, demonstrates that site-specific criteria are appropriate.<sup>68</sup>

Even if the Neponset Reservoir, which does serve as a habitat for certain species of warm-water fish, is considered as the receiving water, the development of SSWQC is appropriate in order to take into account the fish communities that actually inhabit the Reservoir.<sup>69</sup> For example, as Invensys noted in its 2003 Comments, the basis of the derivation of the NRWQC for cadmium includes data on salmonids (trout-type species that inhabit cold-water systems). However, salmonids are not native to, or present in, the Neponset Reservoir or, if there were any doubt, either Gudgeon Brook or Robinson Brook. The inclusion of data from certain sensitive species not present in the Reservoir or the brooks in the derivation of the NRWQC has likely resulted in numerical criteria that are overly conservative for those waters.

---

<sup>65</sup> 314 C.M.R. 4.05(3)(b).

<sup>66</sup> MACTEC, Final Phase II Comprehensive Site Assessment Report, Release Tracking No. 4-11387, Neponset Reservoir (September 2003).

<sup>67</sup> MassGIS, MassDEP Hydrography Layer (1:25,000), available at <http://www.mass.gov/mgis/hd.htm> (last visited October 31, 2011).

<sup>68</sup> As noted in the 2003 Comments, Invensys would be eligible for a variance from water quality standards based on the facts of this case. *See* 2003 Comments, pp. 11-12.

<sup>69</sup> As discussed in further detail in Section IV.A, *infra*, EPA has failed to explain why it has focused Gudgeon Brook, rather than the Neponset Reservoir, as the receiving water. If Gudgeon Brook is the receiving water, the relevant biotic community would be that present in Gudgeon Brook.

**Response IS #4:** Intermittent streams can support a diversity of aquatic life and are critical to the health of downstream waters (see: <http://cwt33.ecology.uga.edu/publications/3060.pdf>).

To the extent Invensys believes it can make a case that the species expected to be present in headwater streams are not impacted by higher concentrations of metals, it needs to make this demonstration to MassDEP (see response IS #2 above on site specific criteria) and also document that additional species that would be expected to be present downstream will also be protected at these higher levels of metals. While differing species is a reason why site specific criteria may be pursued, EPA notes that salmonids are not the only species that tested sensitive to cadmium.

**Comment IS #5:** Another factor favoring the development of site-specific limits is the extraordinarily high cost of complying with limits derived from the NRWQC. In adopting SSWQC for copper in certain waters in the Commonwealth, MassDEP acknowledged that such criteria would protect water quality “without requiring unwarranted levels of investment by regulated entities” in order to comply with limits based on the federal criteria.<sup>70</sup> In this case, the estimated costs of achieving compliance with the proposed limits are wholly out of proportion to any environmental benefits that would result from compliance. Further, even if costly treatment technologies are implemented, it is not known whether such treatment technologies will be able to achieve compliance with the stringent limits proposed in the 2011 Draft Permit.

Invensys’ consultant, Woodard & Curran, has evaluated a number of options that could be used to achieve compliance with the proposed limits.<sup>71</sup> These options include treatment of the discharge and/or rehabilitation or replacement of the drain lines to eliminate groundwater infiltration. All of the engineering options are costly – ranging from \$6 million to \$17 million in capital costs, plus \$300,000 to \$900,000 in annual operation and maintenance costs – *and none have even been proven to achieve the discharge limits* proposed in the 2011 Draft Permit.

Due to the extremely stringent permit limits and the potential high volumes of storm water flow that would be treated, treatment of wet weather discharge would be complex and costly. Due to the high flow rate, two million gallons of equalization capacity, provided by three aboveground cylindrical storage tanks, each with a diameter of 55 feet and height of 40 feet, would be required. The treatment would require multiple processes to treat the water for metals, pH, E. coli and VOCs, with costly treatment technologies including a combination of ultrafiltration, reverse osmosis and ion exchange being used to meet the low limits for metals. The wet weather treatment option is expected to cost approximately \$17 million in capital costs and have annual operation and maintenance costs of approximately \$900,000. While the treatment technologies are theoretically expected to achieve the discharge limits proposed in the 2011 Draft Permit, Woodard & Curran and vendors with whom they have consulted have been unable to identify any treatment systems which have been constructed and are operating that achieve the discharge limits proposed in the 2011 Draft Permit. Therefore additional assessment of the technologies is

---

<sup>70</sup> See MassDEP’s “Clean Water: Control Pollution from Point Sources – Surface Water Discharge Compliance” (October 2005), *supra*, at p. 35.

<sup>71</sup> A copy of Woodard & Curran’s report, Engineering Analysis of Options to Achieve Compliance with Draft 2011 NPDES Permit, is attached hereto as Attachment 5.

necessary to determine whether achieving compliance with the proposed limits is even technologically feasible.

Even options involving rehabilitation or replacement of the drain lines, which assume only treatment of dry weather or sump discharge, would still be exceedingly costly. Such options include replacement of the storm water drainage systems or sliplining or pipe bursting the existing drainage systems. Such options would require the same non-conventional treatment technologies required for a wet weather treatment system to treat groundwater infiltration and groundwater inflow to the building sumps, and therefore are subject to the same concerns related to feasibility. Further, some sections of the drain line are likely inaccessible and therefore not candidates for rehabilitation. The estimated costs of such options range from \$6 million to \$13 million in capital costs and would require annual operation and maintenance costs ranging from approximately \$280,000 to \$500,000.

The extremely high costs of achieving compliance with the proposed numeric effluent limits – if compliance with such limits is even technologically feasible – far outweigh any environmental benefits that could be obtained. Indeed, the abundance of overwhelming scientific evidence indicating that the discharges do not appear to be causing toxicity in the receiving waters calls into question whether compliance with the proposed limits would result in any material benefits whatsoever. Especially in light of the extreme imbalance in the costs and benefits, to the extent that numeric limits are to be included in the permit, such limits should be based on site-specific criteria.

**Response IS #5:** The Clean Water Act requires that water quality based limits be established at levels necessary to attain water quality criteria and that cost is not to be factored into that analysis. See *Upper Blackstone Water Pollution Abatement Dist. v. EPA*, 690 F.3d 9, 33 (1st Cir. 2012); *In re City of Moscow*, 10 E.A.D. 135, 168 (EAB 2001); *In re City of Fayetteville, Ark.*, 2 E.A.D. 594, 600-601 (CJO 1988) (Section 301(b)(1)(C) “requires unequivocal compliance with applicable water quality standards, and does not make any exceptions for cost or technological feasibility.”). Cost is a consideration relative to implementation of the permit limits and can be a factor in development of compliance schedules where a determination is made that immediate attainment of water quality based limits is not possible. See Response IS #16 regarding compliance schedules.

Cost could also be part of the basis for modifying receiving water use designations if MassDEP were to develop, and EPA approve, a Use Attainability Analysis consistent with federal regulations at 40 C.F.R. 131.10(g). However, MassDEP has not developed and submitted such a UAA to EPA for review.

**Comment IS #6:** The possibility of establishing SSWQC for the subject receiving waters has been discussed with the Agency and MassDEP previously. At least as early as October 2001, Invensys proposed in written comments on a pre-draft version of the renewal permit that it and the Agency work cooperatively to develop appropriate site-specific discharge limits. Invensys also submitted detailed comments objecting to the Agency’s interpretation and application of the

NRWQC in the pre-draft permit.<sup>72</sup> Subsequently, in January 2002, the Agency met with Invensys and discussed additional data that could be collected to support the development of effluent limits that would take into account site-specific conditions. In that meeting, the Agency agreed to review a scope of work (“SOW”) for additional data collection. Dr. Charles Menzie, one of Invensys’ former consultants, later met with an Agency representative to discuss the most effective means for responding to the Agency’s questions. A scope of work was submitted to Region 1 in April 2003, along with Invensys’ comments on the 2003 Draft Permit. The SOW noted that the estimated schedule for completing the work outlined in the scope of work was contingent upon the Agency’s and MassDEP’s review and approval of the SOW. Unfortunately, the agencies never responded to the proposal.

Contemporaneously with the submittal of these Comments, Invensys is submitting a written request to MassDEP requesting the development of SSWQC for the Outfall 001 and Outfall 002 receiving waters and seeking an opportunity to meet with MassDEP to present a work plan containing a detailed technical approach for a SSWQC determination.<sup>73</sup> In light of the demonstrated need for the development of SSWQC in this case and the absence of environmental harm caused by the discharges, a decision by the Agency to proceed with the proposed limits would be arbitrary and capricious. Accordingly, Invensys requests that the proposed permit limits be set aside and that the Agency defer issuance of a revised draft until site-specific criteria can be developed and approved for the receiving waters.

**Response IS #6:** MassDEP is the appropriate agency for Invensys to work with on development and implementation of a scope of work that might result in a modification of MassDEP’s water quality criteria. MassDEP will determine what, if any, coordination is necessary with EPA relative to the scope of work. Any subsequent water quality criteria modification is subject to EPA review and approval. For purposes of this present proceeding, EPA simply notes that no SSWQC have been developed for the relevant receiving waters and pollutants at issue here. Indeed, MassDEP’s most recent promulgation of site-specific criteria (adopted December 6, 2013 but not yet approved by EPA) included many site-specific metals criteria, but none applicable to this site. *See* 310 C.M.R. 4.06, Table 28 (Site Specific Criteria), *available at* <http://www.mass.gov/eea/docs/dep/water/laws/i-thru-z/tblfig.pdf>.

In the meantime, this permit (which expired in 1996) is long overdue for reissuance, and the currently-approved Massachusetts Surface Water Quality Standards are clear as to which criteria apply.

**Comment IS #7:** The Agency asserts in the Fact Sheet that the limits it has established are necessary because the effluent has “the reasonable potential” to cause or contribute to exceedances of the NRWQC, based on the Agency’s review of certain data.<sup>74</sup> The Agency is correct that 40 CFR §122.44, which it cites throughout the relevant pages of the Fact Sheet in support of the numeric limits in the 2011 Draft Permit, requires the imposition of effluent

---

<sup>72</sup> *See* October 30, 2001 Letter from Paul Ahearn to Janet Labonte, pp. 1-5.

<sup>73</sup> *See* Attachment 6 hereto.

<sup>74</sup> *See* Fact Sheet, pp. 10-15.

limitations when a “reasonable potential” for exceedances has been found.<sup>75</sup> However, the regulations require EPA to perform a “reasonable potential analysis” in making such a determination. Indeed, 40 CFR §122.44(d)(1)(ii) *requires* the permitting authority to “use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.”

EPA’s recently revised NPDES Permit Writer’s Manual (the “Manual”) establishes that a proper reasonable potential analysis involves “us[ing] any available effluent and receiving water data as well as other information pertaining to the discharge and receiving water (e.g., type of history, industry, existing TBELs, compliance history, stream surveys), as the basis for a decision” of whether a water quality-based effluent limit is necessary.<sup>76</sup> Moreover, when the reasonable potential analysis is being conducted with data, which EPA clearly purports to have done here,<sup>77</sup> the Manual lays out at page 6-23 four steps that must be followed:

1. Determine the appropriate water quality model;
2. Determine the expected receiving water concentration under critical conditions;
3. Determine whether there is reasonable potential; and
4. Document the reasonable potential determination in the fact sheet.

Nothing in the Fact Sheet or record indicates that the Agency ever engaged in such an analysis. This lack of documentation is itself a failure to properly conduct the analysis, given the final required step. As the Manual mandates at page 6-30:

As a final step, permit writers need to document the *details* of the reasonable potential analysis in the NPDES permit fact sheet. The permit writer should clearly identify the information and procedures used to determine the need for the WQBELs. The goal of that documentation is to provide the NPDES permit applicant and the public a transparent, reproducible, and defensible description of how each pollutant was evaluated, including the basis (i.e., reasonable potential analysis) for including or not including a WQBEL for any pollutant of concern.

(Emphasis added.) The Agency has plainly not satisfied this requirement in preparing the 2011 Draft Permit. As the Environmental Board has made clear, the lack of a documented reasonable potential analysis is “clear error and grounds for a remand.”<sup>78</sup> The Agency’s failure to properly

---

<sup>75</sup> As discussed in further detail in Section III.A, *supra*, such effluent limitations need not be numeric effluent limitations.

<sup>76</sup> NPDES Permit Writer’s Manual (EPA, September 2010), p. 6-23.

<sup>77</sup> See Fact Sheet, pp. 10-15, all referencing data as bases for the numeric limits included in the 2011 Draft Permit.

<sup>78</sup> In re Wash. Aqueduct Water Supply Sys., 11 E.A.D. 565, 585 n.22 (EAB 2004).



conduct a reasonable potential analysis fails to follow procedures required by law and is unlawful, arbitrary and capricious.<sup>79</sup>

**Response IS #7:** Water quality models are seldom available for analyzing the effects of a discharge on receiving water quality. In this case, no water quality model is available (nor has Invensys proposed to develop one during the many years this permit proceeding was pending) for Gudgeon Brook, Robinson Brook, or the Neponset Reservoir. Reasonable potential analyses are routinely conducted using dilution calculations and the guidance (NPDES Permit Writers' Manual) recommends conducting such analyses under worst case conditions.

For each pollutant of concern, measured discharge values were compared to ambient criteria values to determine if the discharge might cause or contribute to an exceedance of water quality criteria. This is an appropriate comparison considering that there is no effective dilution at either discharge location. This same reasonable potential analysis was used to conclude that limits were not necessary for certain pollutants found in the discharge(s). In other words, if the measured discharge values (in Attachments A and C of the Fact Sheet) exceeded criteria, EPA found a reasonable potential, and where measured discharge values did not exceed criteria, EPA did not find a reasonable potential (e.g., arsenic, chromium, and nickel).

As part of this analysis, EPA evaluated all available data (including post-drain-cleanout data), including the variability within the data, compared it to the applicable instream criteria, and documented the analyses in the Fact Sheet. The Fact Sheet at pp. 9-15 clearly identifies the information used in the analyses and the procedure for determining reasonable potential.

Finally, even if the discharge were considered to be to the Neponset Reservoir, the limits would be the same since the evidence of water column toxicity, sediment toxicity, and high levels of metals measured at the mouth of Gudgeon Brook (see Response IS #3) indicate that the water in the reservoir is not able to effectively dilute the discharge.

**Comment IS #8:** Similarly, if EPA continues to insist upon the inclusion in the permit of numeric limits based on the NRWQC, it must revise those limits based on a hardness calculation that is reasonable given the actual data available and the Agency's past practice regarding hardness values.

In the 2011 Draft Permit, EPA uses a water hardness value of 50 mg CaCO<sub>3</sub>/l as the basis for deriving the numeric criteria for the metals for which the NRWQC are hardness-dependent (i.e., copper, lead, zinc, and cadmium). EPA asserts that, for Gudgeon Brook, "[t]he hardness value of 50 mg/l was chosen as a reasonably protective value based on a review of the past three years

---

<sup>79</sup> The Agency's failure is particularly striking with respect to Outfall 001. As discussed in further detail in Section IV.A, *infra*, the Agency has failed to clearly identify, let alone characterize, the appropriate receiving water for Outfall 001. To the extent the Agency purports to have considered the reasonable potential of the Outfall 001 discharge to cause or contribute to a violation of water quality standards, such consideration appears to be based on Gudgeon Brook as the receiving water. However, as explained in Section IV.A, prior permits covering Outfall 001 listed Neponset Reservoir as the receiving water. The Agency has failed to provide any explanation for focusing on Gudgeon Brook in the 2011 Draft Permit. Until it provides an adequate explanation for this change, any analysis of potential to exceed water quality standards should be based on the Neponset Reservoir as the receiving water.

of data submitted by the permittee.”<sup>80</sup> For Robinson Brook, “the hardness was assumed to be similar to Gudgeon Brook” due to a lack of hardness data.<sup>81</sup>

In actuality, EPA’s chosen hardness value is unreasonably conservative, and it artificially lowers the numeric water quality-based limits contained in the permit. The value the Agency has chosen to use, 50 mg/l, is *lower* than the lowest observed hardness recorded in the relevant Outfall 001 effluent samples. This is clear even from the Fact Sheet itself, in which EPA states: “The range of hardness values over the past three years (fourth quarter 2006 through third quarter 2010[]) is from 52.4 mg/l to 83.2 mg/l”.<sup>82</sup> When effluent samples collected through the second quarter of 2011 are also considered, that range is actually 52.4 mg/l to 86 mg/l.<sup>83</sup> Moreover, the fact that the effluent periodically reflected a hardness value in the low 50 mg/l range does not mean that such values represent the norm or average. Indeed, the average annual hardness of the effluent ranged in 2006-2011 from 61 to 86 mg/l, producing an overall average of 70 mg/l.<sup>84</sup> When the data is limited to the last three years – which EPA’s current version of the Fact Sheet indicates is the appropriate method<sup>85</sup> – the overall average is 78 mg/l.<sup>86</sup> Thus, EPA’s hardness value of 50 mg/l does not reflect typical hardness levels in the Outfall 001 discharge and is therefore extremely – and excessively – conservative.<sup>87</sup> This fact is supported by other Region 1 permits, in which EPA has used a hardness value equaling the *average* recorded hardness of the effluent<sup>88</sup> – not a value lower than the lowest value – in deriving effluent limitations.

This argument is important because the use of hardness levels more representative of the levels actually observed in the Outfall 001 effluent would result in less stringent (*i.e.*, higher) numeric water quality-based limitations for copper, lead, zinc and cadmium. Specifically, if the average

---

<sup>80</sup> Fact Sheet, p. 10.

<sup>81</sup> *Id.* at p. 13.

<sup>82</sup> *Id.* at p. 10 (emphasis added), citing Attachment A.2 (providing hardness data collected for Outfall 001 for WET tests).

<sup>83</sup> *See* Attachment 7 hereto, providing more recent hardness data for Outfall 001.

<sup>84</sup> *See id.*

<sup>85</sup> *See* Fact Sheet, p. 10.

<sup>86</sup> *See* Attachment 7 hereto.

<sup>87</sup> The historical hardness concentrations may have been lower (*e.g.*, for 1992 and 1993), but those levels – from before the drain line cleanout – are not representative of the current reality. EPA apparently concedes this, focusing its own analysis only on data from 2006 and after.

<sup>88</sup> *E.g.*, EPA’s 2006 Responses to Comments on the Wyman Gordon Permit, *supra*, at p. 7 (“EPA determined that the hardness factor to be used in setting an effluent limit for hardness-dependent metals would be the average hardness of the effluent . . . reported in the WET reports,” even where the receiving water “tends to be dominated by the facility’s effluent.”); *see also* NPDES Permit No. MA0032212 issued to Pine Brook Country Club in Weston, available at <http://www.epa.gov/region1/npdes/permits/2010/finalma0032212permit.pdf> (last visited October 31, 2011), Fact Sheet, p. 8 (using the average effluent and ambient hardness data from WET tests from June 2007 to September 2008).

hardness, using a value close to the minimum concentration expected provides for a greater level of assurance that criteria will be met under all conditions.

As documented in the Fact Sheet, hardness values in the Gudgeon Brook discharge ranged from 52.4 - 83.2 mg/l from 4th quarter 2006 through third quarter 2010. The value of 50 is a reasonably conservative value given this data set, as well as an expanded data set. For example, the value immediately before the period cited (i.e., Q3 2006) was 52.5 mg/l, and there were other values within the cited period that were only slightly higher (e.g., 55 mg/l in Q1 2007). If the full data set is reviewed, even focusing on post-drain-cleanout data, there is a value recorded *well below* 50 mg/l: 26 mg/l in Q2 2005. Additionally, as a general statistical matter, it is unlikely that a sampling of data four times per year will completely limit the range of actual values. A review of the more recent data from January, 2012 through July, 2013 indicates a hardness range of 43 - 73 mg/l.

Given these hardness values, the documented concerns with the accumulation of toxic metals in the Neponset Reservoir sediments, and the need to ensure that discharge limits will attain water quality standards under all receiving water conditions, the use of a conservative hardness value is appropriate and does not result in unreasonably conservative effluent limits.

Regarding other EPA-issued permits that used average effluent hardness data, as indicated in Response IS #1, each NPDES permit is a case-specific adjudication based on the particular facts and circumstance of the facility's discharge, receiving water, and other relevant site-specific factors. Permit writers are required to use their judgment in establishing reasonable worst case conditions in determining the need for water quality based limits, and in establishing water quality based limits. EPA is not required to justify, in a permit proceeding for Facility A, why it did or did not impose a certain requirement on Facility B. Each of the facilities cited incorporate a variety of other conservative assumptions and none of these facilities discharge immediately upstream of a reservoir with sediments already contaminated with heavy metals.

Given the lack of hardness data for Robinson Brook and the proximity of the two water bodies, it is a reasonable assumption that the hardness levels will be similar.

**Comment IS #9:** Outfall 001 has been subject to a NPDES permit since 1974, and it has discharged to the same place throughout that entire period. In all prior iterations of the permit<sup>91</sup> Outfall 001 is described as discharging "to receiving waters named Neponset Reservoir."<sup>92</sup> None of the five prior versions mentioned "Gudgeon Brook" in the description of the receiving waters into which Outfall 001 discharges. Indeed, even the current Fact Sheet illustrates that the prior iterations of this permit covered a discharge to the Reservoir: "The current permit for the Neponset Facility, issued in 1991, authorizes the discharge of noncontact cooling water (since eliminated) and storm water to the Neponset Reservoir."<sup>93</sup>

---

<sup>91</sup> Many of these prior versions are not included in the administrative record.

<sup>92</sup> 1974 Permit (October 8, 1974), p. 1/1 (Attachment 8 hereto); 1984 Permit (June 29, 1984), p. 1/7 (Attachment 9 hereto); 1987 Permit (November 16, 1987) (Attachment 10 hereto); 1991 Permit (September 30, 1991), p. 1/7.

<sup>93</sup> Fact Sheet, p. 3 (emphasis added).

effluent hardness data from the last three years of sampling is used,<sup>89</sup> the average effluent hardness is 78 mg/l, the application of which would alter the numeric limits as follows:

Metal	Average Monthly	Maximum Daily
Copper	5.2 → 7.5 ug/l	7.3 → 11.1 ug/l
Lead	1.3 → 2.3 ug/l	33.8 → 59.5 ug/l
Zinc	66.5 → 97.1 ug/l	66.5 → 97.1 ug/l
Cadmium	0.16 → 0.23 ug/l	1.05 → 1.66 ug/l

It is unreasonable and scientifically unsupportable for EPA to impose numeric water quality-based effluent limits on the Outfall 001 discharge based on a hardness value that is inconsistent with, and far lower than, recent data collected from that discharge;<sup>90</sup> and it is unjustifiable for EPA to assume for Outfall 002 the same excessively conservative hardness it has unreasonably applied to Outfall 001. Accordingly, Invensys requests that, to the extent the final permit contains numeric limits based on the NRWQC, such limits be calculated based on a hardness value of 78 mg/l.

**Response IS #8:** The use of conservative, or worst case, assumptions is an appropriate means for ensuring that calculated NPDES permit limits ensure attainment of water quality standards under all receiving water conditions. Numeric water quality criteria contain a duration and frequency component in addition to a magnitude component. For example, the chronic metals criteria are not to be exceeded for more than a four day average once every three years and the acute metals criteria are not to be exceeded for more than a one hour average more than once every three years. Establishing limits using assumptions of average conditions will not ensure that criteria are attained under all receiving water conditions. As indicated in the NPDES Permit Writers’ Manual (pg. 6-16), “In the majority of situations, and in all of the examples provided in this manual, permit writers will use a steady-state water quality model to assess the impact of a discharge on its receiving water. Steady-state means that the model projects the impact of the effluent on the receiving water under a single or *steady* set of design conditions. Because the model is run under a single set of conditions, those conditions generally are set at *critical conditions* for protection of receiving water quality”. Additionally, relative to characterizing effluent concentrations, the NPDES Permit Writers Manual (pg. 6-17) indicates that “[p]ermit writers can determine the critical effluent concentration of the pollutant of concern (designated Cd) by gathering effluent data representative of the discharge. To establish the critical effluent pollutant concentration from the available data, EPA has recommended considering a concentration that represents something close to the maximum concentration of the pollutant that would be expected over time. In most cases, permit writers have a limited effluent data set and, therefore, would not have a high degree of certainty that the limited data would actually include the maximum potential effluent concentration of the pollutant of concern”. In the case of

<sup>89</sup> See Fact Sheet, p. 10 (indicating that past three years of sampling data are relevant.

<sup>90</sup> It is also unreasonable for EPA to use a hardness value that is lower than the equivalent values applied by EPA in other permits.

In the Fact Sheet for the 1987 Permit, the Agency made clear that it understood Outfall 001 to be discharging to the Neponset Reservoir by not only expressly naming the receiving water “Neponset Reservoir”<sup>94</sup> and noting that the prior permit was “to discharge treated process wastewater and noncontact cooling water in to the Neponset Reservoir”<sup>95</sup> but also describing the substantial analyses of *the Reservoir* it had undertaken to determine what needed to be included in the NPDES permit for Outfall 001.<sup>96</sup> In finalizing the permit in November 1987, the Agency again noted that NPDES permit MA0004120 was “developed for the Foxboro Corporation for the discharge of noncontact cooling water and treated process wastewater to the *Neponset Reservoir*”<sup>97</sup> and reiterated that the purpose of the permit was to “protect the water quality standards in the *reservoir*” by “minimiz[ing] the discharge of pollutants to the *reservoir*.”<sup>98</sup> Likewise, in the Fact Sheet for the 1991 Permit – which the present draft is to replace – the Agency listed the receiving water as “Neponset Reservoir”<sup>99</sup> and described the uses of the reservoir (“The reservoir is used for primary and secondary recreation, as well as warm water fishery, and is in close proximity to public and private drinking water supply wells”<sup>100</sup>). In additional documents contained in the record, EPA and MassDEP have periodically reiterated that they understand the permit being renewed to relates to the Reservoir.<sup>101,102</sup> Despite its extensive history of treating Outfall 001 as discharging to the Neponset Reservoir, EPA has in the 2011 Draft Permit shifted its focus to “Gudgeon Brook/Neponset Reservoir” with

---

<sup>94</sup> 1987 Permit Fact Sheet, *supra*, at p. 1 (Attachment 3 hereto).

<sup>95</sup> *Id.* at p. 2.

<sup>96</sup> *Id.* at p. 2 (“In June of 1986, the Massachusetts DEQE performed a water quality survey to assess the quality of the *Neponset Reservoir* and its assimilative capacity for the discharge from the Foxboro Company.”).

<sup>97</sup> EPA’s Response to Comments Received During Public Notice on the June 30, 1987 Draft Permit (November 17, 1987), p. 1 (emphasis added) (Attachment 11 hereto).

<sup>98</sup> *Id.* at pp. 1-2 (emphasis added).

<sup>99</sup> 1991 Permit Fact Sheet (September 30, 1991), p. 1.

<sup>100</sup> *Id.* at p. 3.

<sup>101</sup> *E.g.*, July 29, 1997 Letter from EPA to I. Cook of the Neponset River Watershed Association (treating this permit as relating to the Neponset Watershed); Public Notice on 1997 Draft Permit and additional draft permits (June 22, 1997) (“Receiving Water: All to Neponset River [sic]”); NPDES Permit Rating Work Sheet (August 15, 2000) (“Receiving Water: Neponset Reservoir”). See also MassDEP approval of plan to continue operation of dry-weather treatment system to “remove volatile organic compounds (VOC’s) from groundwater and storm water prior to its discharge to the Neponset Reservoir” (April 8, 1997) (Attachment 12 hereto); EPA/MassDEP approval of RAM Plan to cleanout the Outfall 001 drain lines (June 18, 1997) (“The RAM Plan proposes to eliminate or minimize any discharge of contaminants...to the Neponset Reservoir.”).

<sup>102</sup> It is worth noting that the Town of Foxborough has a municipal storm water outfall that discharges into the same location. The company noted this fact in its first application for a NPDES permit to cover Outfall 001 and reiterated it in 2003, and EPA concedes it in the current Fact Sheet. Like Outfall 001, Foxborough’s discharge point is covered under a NPDES permit and, like all the prior iterations of the present permit, that NPDES permit that also lists the Neponset Reservoir – *not* Gudgeon Brook – as the receiving water.

no explanation for why it is doing so. This is a violation of the basic tenant of administrative law that, because “[t]he law demands a certain orderliness,” an administrative agency that decides “to depart significantly from its own precedent . . . must confront the issue squarely and explain why the departure is reasonable.”<sup>103</sup> It is impermissible for EPA to “depart *sub silentio* from its usual rules of decision to reach a different, unexplained result in a single case . . . . An inadequately explained departure solely for the purposes of a particular case, or the creation of conflicting lines of precedent governing the identical situation, is not to be tolerated.”<sup>104</sup>

EPA not only fails to provide an explanation for its change; it also seems unclear itself about the identity of the receiving water. In a number of respects the Fact Sheet suggests that Outfall 001 should be considered as discharging to the Reservoir. For instance, the Fact Sheet discusses the Reservoir and its characteristics and classification in the “Receiving Waters” section,<sup>105</sup> and it focuses entirely on the effect that the Outfall 001 discharge allegedly has on the ability of the Neponset Reservoir to support various uses, offering no discussion whatsoever of the effect of

---

<sup>103</sup> Davila-Bardales v. INS, 27 F.3d 1, 5 (1st Cir. 1994) (also holding that remand is appropriate where an agency has “blazed a new trail that veers significantly from its own prior precedent” but “has failed to explain why it is changing directions (or even to acknowledge in the later decision that it is detouring from a beaten path)”); see also, e.g., Atchison, Topeka & Santa Fe Ry. Co. v. Wichita Bd. of Trade, 412 U.S. 800, 808 (1973) (an agency has a “duty to explain its departure from prior norms. . . . Whatever the ground for the departure . . . it must be clearly set forth so that the reviewing court may understand the basis of the agency’s action and so may judge the consistency of that action with the agency’s mandate.”); Secretary of Agriculture v. United States, 347 U.S. 645, 653-54 (1954) (an agency must “adequately explain[] its departure from prior norms . . . with the simplicity and clearness through which a halting impression ripens into reasonable certitude”; it cannot leave others to “spell out, to argue, to choose between conflicting inferences. Something more precise is requisite in the quasi-judicial findings of an administrative agency.”) (citations omitted); Shaws Supermarkets Inc. v. NLRB, 884 F.2d 34, 36 (1st Cir. 1989) (“The problem in this case for the Board, however, is that (a) it is not writing on a blank slate, but has written on the subject often in the past; (b) the Board has not said that it wishes to depart from its several prior cases on the subject; yet (c) . . . the prior cases dictate a result [contrary to the Board’s decision in the instant case]. The law that governs an agency’s significant departure from its own prior precedent is clear. The agency cannot do so without explicitly recognizing that it is doing so and explaining why.”); Massachusetts Dep’t of Ed. v. United States Dep’t of Ed., 837 F.2d 536, 544-45 (1st Cir. 1988) (once an agency “builds a body of precedent . . . it cannot thereafter lightly disregard” that precedent, but must “follow, distinguish, or overrule” it); National Black Media Coalition v. FCC, 775 F.2d 342, 355 (D.C. Cir. 1985) (“it is also a clear tenant of administrative law that if the agency wishes to depart from its consistent precedent it must provide a principled explanation for its change of direction. . . . We have steadfastly held that an agency changing its course must apply a reasoned analysis indicating that prior policies and standards are being deliberately changed, not casually ignored.”) (citations omitted); Baltimore Gas & Electric Co. v. Heintz, 760 F.2d 1408, 1418 (4th Cir. 1985) (“It is a well-settled proposition of administrative law that when an agency deviates from established precedent, it must provide a reasoned explanation for its failure to follow its own precedents . . . when an agency treats two similar transactions differently, an explanation for the agency’s actions must be forthcoming.”) (citations omitted); Democratic Union Organizing Committee v. NLRB, 603 F.2d 862, 871-72 (D.C. Cir. 1978) (when an agency “fails to distinguish contradictory decisions rendered in similar cases,” it forfeits “the deference we would otherwise show to its very considerable expertise” in the matters of its competence); Greyhound Corp. v. ICC, 551 F.2d 414, 416 (D.C. Cir. 1977) (per curiam) (“This court emphatically requires that administrative agencies adhere to their own precedents or explain any deviations from them.”); K. Davis, Administrative Law Treatise § 11.5 at 206 (1994) (“The dominant law clearly is that an agency must either follow its own precedents or explain why it departs from them.”).

<sup>104</sup> NLRB v. International Union of Operating Engineers, Local 925, 460 F.2d 589, 604 (5th Cir. 1972) (citations omitted).

<sup>105</sup> Fact Sheet, p. 2.

the discharge on the biology of Gudgeon Brook or the uses attributed to Gudgeon Brook as a Class B water.<sup>106</sup> However, for purposes of dilution, EPA assumes that Gudgeon Brook alone is the receiving water into which Outfall 001 discharges.<sup>107</sup> The Agency's shift between focusing on Gudgeon Brook and on the Reservoir is inconsistent and biases the permit towards extremely stringent limits by maximizing the uses and species at issue while at the same time minimizing dilution. The Agency must focus on the Reservoir or Gudgeon Brook, but cannot have it both ways. The shift is also confusing, and EPA has ignored Invensys' requests for clarification on this point.<sup>108</sup>

Furthermore, EPA's lack of clarity regarding what the receiving water actually is demonstrates yet again that EPA has not properly derived the numeric water quality-based effluent limitations it seeks to impose for Outfall 001. As the Agency's own guidance establishes, the proper derivation of such limits requires, among other things, "an adequate receiving water exposure assessment".<sup>109</sup> The Agency cautions against implementing numeric criteria when such an assessment has not been conducted because doing so "may result in the imposition of inappropriate numeric limitations on a discharge" including "the imposition of numeric water quality criteria as end-of-pipe limitations without properly accounting for receiving water assimilation of the pollutant" which "could lead to overly stringent permit requirements, and excessive and expensive controls on storm water discharges, not necessary to provide for attainment of WQS."<sup>110</sup> Because EPA has failed to clearly establish the receiving water at issue, let alone conduct a receiving water exposure assessment, it cannot properly impose the numeric water quality-based effluent limitations for Outfall 001 that are included in the 2011 Draft Permit.

**Response IS #9:** Gudgeon Brook is the correct receiving water for the outfall 001 discharge and is consistent with the information, including maps, provided to EPA by Invensys on August 16, 2002 in response to a section 308 information request and on March 15, 2002 in a letter to EPA relating to the information request. Additionally, EPA staff have verified the discharge location during site visits to the facility. Previous permits were incorrect to the extent that they identified the Neponset Reservoir as the immediate receiving water. Furthermore, this comment provides no basis for disputing the determination that the receiving water for outfall 001 is Gudgeon Brook besides the fact that previous permits identified it otherwise. In other words, Invensys has not provided any photographs, maps, or other evidence that could lead to the conclusion that

---

<sup>106</sup> See Fact Sheet, p. 2.

<sup>107</sup> See Fact Sheet, p. 9 ("The available dilution for the facility's discharge[] to Gudgeon Brook (Outfall 001)... was determined to be zero. [This] determination[ was] based on the fact that [the] discharge location[ is] at the headwaters of [a] small stream[] and so ha[s] little or no flow upstream of the discharge location.").

<sup>108</sup> 2003 Comments, Table 1, p. 1, No. 2 ("No justification or explanation as to exactly which water body (Gudgeon Brook or Neponset Reservoir) is the designated 'receiving water' for the Outfall 001 discharge."); see also 2003 Comments, p. 11 ("EPA nonetheless calculates the draft permit limits as if Gudgeon Brook is the receiving water, making no allowance for any dilution potential that exists in the Reservoir.").

<sup>109</sup> Interim Approach, p. 4.

<sup>110</sup> Id. at p. 4.

outfall 001 in fact discharges directly to the Neponset Reservoir. Rather, it simply rests on the fact that previous permits were erroneous and objects to the correction of a past error. Water quality criteria are required to be met both in the immediate receiving water (Gudgeon Brook) and in the downstream receiving water (Neponset Reservoir).

**Comment IS #10:** As Invensys noted in 2003, Robinson Brook is “is an intermittent stream, with limited habitat value and no potential for recreational, agricultural or industrial uses.”<sup>111</sup> This characterization is confirmed by Massachusetts law,<sup>112</sup> under which the portion of Robinson Brook presently at issue<sup>113</sup> is understood to be an intermittent stream because it is listed as intermittent by MassGIS<sup>114</sup> and has a watershed of only 0.18 square mile.<sup>115</sup> Moreover, during the period August 2001 to March 2002 Invensys monitored the flow in Robinson Brook, making frequent observations regarding its contents.<sup>116</sup> On most days – including many stretches of four or more consecutive days<sup>117</sup> – little to no flow was observed in the Brook at the monitoring point, buttressing the conclusion that the relevant portion of the stream is intermittent.<sup>118</sup>

---

<sup>111</sup> 2003 Comments, p. 11. The comment continued: “The first actual water body that might support any type of biotic community is located a significant distance away and EPA has identified no evidence suggesting that this community is actually affected by Invensys’ discharge.”

<sup>112</sup> 310 CMR 10.58(2)(a)(1)(c) (“A stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Department, that has a watershed size of less than one square mile, is intermittent”).

<sup>113</sup> The appropriate discussion for present purposes is whether the segment of Robinson Brook located in the vicinity of the plant is intermittent, not whether the Brook is intermittent along its entire length. 310 CMR 10.58(2)(a)(1):

Intermittent streams are not rivers . . . because surface water does not flow within them throughout the year. When surface water is not flowing within an intermittent stream, it may remain in isolated pools or it may be absent. When surface water is present in contiguous and connected pool/riffle systems, it shall be determined to be flowing. Rivers begin at the point an intermittent stream becomes perennial or at the point a perennial stream flows from a spring, pond, or lake . . . Upstream of the first point of perennial flow, a stream is normally intermittent.

<sup>114</sup> MassGIS, MassDEP Hydrography Layer (1:25,000), available at <http://www.mass.gov/mgis/hd.htm> (last visited October 31, 2011). This information, compiled in March 2010, is the “more recent map provided by the Department” than the current United States Geological Service (“USGS”) map (available at <http://viewer.nationalmap.gov/viewer/>), which is from 1987. See also MassDEP Priority Resource (21E) Map in the MassGIS (2011), available at <http://maps.massgis.state.ma.us/21E/viewer.htm> (last visited October 31, 2011).

<sup>115</sup> See Attachment 13 hereto, providing USGS StreamStats Output on the Drainage Basin Characteristics for the Subject Portion of Robinson Brook.

<sup>116</sup> A table summarizing those observations is attached hereto as Attachment 14.

<sup>117</sup> See 310 CMR 10.58(2)(a)(1)(d) (establishing that, even where the requirements of 310 CMR 10.58(2)(a)(1)(c) are not satisfied – which they are in this case – “the issuing authority shall find that any stream is intermittent based upon a documented field observation that the stream is not flowing...at least once per day, over four days in any consecutive 12 month period”).

<sup>118</sup> As is apparent from Attachment 14, Robinson Brook was observed to be dry or with no observable flow for 33 consecutive days in August-September 2001, 21 consecutive days in September-October 2001, 14 additional consecutive days in October 2001, 13 consecutive days in November 2001, 11 additional consecutive days in November-December 2001, 20 consecutive days in February 2002, and at least 5 consecutive days in March 2002.