BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
WATER QUALITY STANDARDS AND	)	R08-9
EFFLUENT LIMITATIONS FOR THE	)	(Rulemaking - Water)
CHICAGO AREA WATERWAY SYSTEM	)	
AND THE LOWER DES PLAINES RIVER:	)	Subdockets A & B
PROPOSED AMENDMENTS TO 35 Ill.	)	
Adm. Code Parts 301, 302, 303 and 304	)	

NOTICE OF FILING

To: ALL COUNSEL OF RECORD
      (Service List Attached)

PLEASE TAKE NOTICE that on the 20th day of September, 2010, I, on behalf of the

Metropolitan Water Reclamation District of Greater Chicago, electronically filed the Errata for

CHEERS Final Report, dated August 31, 2010, with the Office of the Clerk of the Illinois

Pollution Control Board. The attached Errata are being filed to revise the CHEERS Report that

was filed on August 31, 2010. The electronic file of a more complete version of the CHEERS

Report became corrupted just prior to the filing deadline, and an earlier version of the Report

was submitted instead. That earlier version had several sections that had not yet been completed.

The Errata complete those portions of the report, generally at locations that, in the earlier

version, had been left blank or contained notes indicating that in "Version 3.0" text or other

information would be added. In addition, several corrections in spelling, wording, or document

compilation have been made.

None of the revisions in the Errata alter the substance of the CHEERS Report. Rather,

they provide further details about the research methods and results in the Report.

[This filing submitted on recycled paper as defined in 35 Ill. Adm. Code 101.202]

Dated: September 20, 2010

<div align="center">

**METROPOLITAN WATER RECLAMATION
DISTRICT OF GREATER CHICAGO**

</div>

By: */s/ Fredric P. Andes*
                                    One of Its Attorneys

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PROOF OF SERVICE

The undersigned, a non-attorney, certifies, under penalties of perjury pursuant to 735 ILCS 5/1-109, that I caused a copy of the forgoing, **Notice of Filing** and **Errata for CHEERS Final Report, dated August 31, 2010**, to be served via First Class Mail, postage prepaid, from One North Wacker Drive, Chicago, Illinois, on the 20th day of September, 2010, upon the attorneys of record on the attached Service List.

/s/ Barbara E. Szynalik
Barbara E. Szynalik

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Errata

Frequently Asked Questions, page ix, second paragraph from the bottom
Change "…the use prescription..." to "…the use of prescription…"

Frequently Asked Questions, page ix, last paragraph
Change "Only 10% of the people...." to "Only 10% of these people…"

Abstract, page iii, first paragraph
Change "The most type of microbe..." to "The type of microbe…"

Executive Summary, page xxiv, end of first paragraph
Change "…Chicago River contributes…" to "…Chicago River receives…"

Executive Summary, page xxix, last paragraph
Delete redundant text from "These differences did not..." through "…compared to the unexposed group."

Executive Summary, page xl, middle of first paragraph
Change "particiapants" to "participants"

Executive Summary, page xli, heading
Change "Conclusion" to "Conclusions"

Executive Summary, page xli, fifth bullet point
Change "Pathogen" to "Pathogens"

Pages xlii through xlviii
Delete all text, as the "Frequently Asked Questions" already appeared on page iv-x

Table of Contents,
    v, Chapter III Page number errors II-1 listed should be III-1
    viii, Section 7.08 Delete text under (a) Summary
List of Tables
    xi, TABLE III-1 through III-16, Page number errors, Change II to III
    xii, TABLE III-17 through III-22, Page number errors, Change II to III
List of Figures
    xx, FIGURE III-1, Page number error, change II-6 to III-6

Ch II, page II-79, beginning of second paragraph:
Change "Highest MPN was.." to "Among the highest MPN values using the BGM cell line was that …"

Ch III Page numbers listed as II-1 should be corrected to III-1

Ch IV, page IV-9, 4.03 (a) Survival Analysis
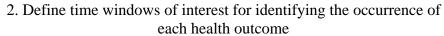*Insert as first sentence in first paragraph:*
Survival analysis estimates survival probability, S(t) = Pr[T > t], where T is the time of illness (or censoring).
Insert as third sentence in first paragraph:

The K-M estimator of survival is as follows: $\hat{S}(t) = \prod_{t_i < t} \frac{n_i - d_i}{n_i}$, where n_i is t, he number

at risk just prior to time t_i and d_i is the number of illnesses at time t_i.

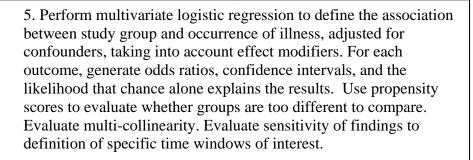**Ch IV, page IV-7 Figure IV_1 is missing. Please insert the figure below.**

1. Develop conceptual models, that identify variables potentially on the causal pathway, as well as sensitive subgroups, and variables the lead to non-causal associations. Generate lists of predictor variables, confounders, and effect modifiers based on the conceptual model. Illness and other variables

2. Define time windows of interest for identifying the occurrence of each health outcome
- Survival analysis
- Review of incubation periods

3. Conduct bivariate analyses, looking for variables that are associated with study group and/or exposure. Conduct stratified analyses where effect modification is suspected.

4. Define the unadjusted risk of illness during the time window, for each study group. Evaluate assumptions of incidence density and cumulative incidence

5. Perform multivariate logistic regression to define the association between study group and occurrence of illness, adjusted for confounders, taking into account effect modifiers. For each outcome, generate odds ratios, confidence intervals, and the likelihood that chance alone explains the results. Use propensity scores to evaluate whether groups are too different to compare. Evaluate multi-collinearity. Evaluate sensitivity of findings to definition of specific time windows of interest.

6. Attributable cases: calculate the estimated number of cases of illness that would be expected to occur for every 1,000 uses of the CAWS. As a reference, perform the same calculation for the recreation in waters where full-contact recreation is permitted.

Ch IV, page IV-10, 4.03 (b) Multivariate Logistic Regression
Replace the first sentence of the first full paragraph with:
Logistic regression models, or simple presence/absence illness models, were run, using study group (CAWS, GUW vs. UNX) to predict the occurrence of illness during a given time window, adjusting for covariates. Logistic regression models are of the form $f(z) = \dfrac{1}{1 + e^{-z}}$, where $z = B_0 + B_1 x_1 + \ldots + B_k x_k$, or the sum of covariates and their estimated parameters.

Ch IV page V-10, 4.03 (c) Propensity Scores
Insert as third sentence of the second paragraph:
Logits are given by $p/(1-p)$, where p is the predicted probability obtained from the logistic regression model.

Ch IV, page IV-11, 4.03 (d) Causal attributable risk difference
Delete text in second paragraph, (WILL ADD REFERENCES TO VERSION 3.0).
Replace with:
In order to interpret these as actual estimates of the mean of the corresponding counterfactual distributions, one must make several identifiability assumptions, including no unmeasured confounding, random group assignment, and that the prediction model is specified correctly.

Ch IV, page IV-12, 4.03 (d) Causal attributable risk difference
Replace the last sentence of the first paragraph (continued from the previous page) with:
The distribution of 1,000 bootstrap risk differences was assessed for normality, and then a bias-corrected 95% confidence interval around these 1,000 parameter estimates was calculated. Bias is defined as the difference between the risk difference we observed in our initial regression and the mean of the 1,000 risk difference values from the bootstrap samples. Since the mean of the bootstrap risk differences is assumed to be an unbiased estimate of the true risk difference, we can correct for the difference between the observed and mean bootstrap risk difference in our confidence interval. We used the bias-corrected bootstrap confidence interval method laid out in *Microeconomics Using Stata* by Cameron and Trivedi as described on UCLA's Academic Technology Services SAS FAQ website (http://www.ats.ucla.edu/stat/sas/faq/bootstrap.htm). We note than even though the model was not known *a priori* (and a data-adaptive procedure was used) we kept the model fixed for the bootstrap runs for simplicity. Thus, this should be considered only approximate statistical inference.

ChV, page Table V-5
Insert reference year for Fleisher et al, 2010, and for Sinigaliano et al, also 2010.

Chapter 5 page numbering
After page V-4, page numbering reverted back to V-1. From that point forward (beginning with the page with Table V-5), page numbers should be increased by 4.

Ch V, page V-18, 5.05 (c) Non-random allocation of participants to study groups
Insert after second sentence of first paragraph:
The propensity score model and its comparison logistic model include the covariates year and season that are not in the conceptual model since the method of propensity scores used was to include any covariate that might be a confounder of group in the score itself and in subsequent models to reduce variability.

Ch VI, page VI-20, 6.05 (c) Evaluation of Assumptions
Insert the following sub-section before (1) Sensitivity…:
Non-random allocation of participants to study groups

Propensity score analysis was done for ARI as described in analysis methods in Chapter IV and in detail with regard to AGI in Chapter V to confirm that characteristics of group could be adjusted for in the ARI logistic model. In the propensity score model, the main effects for CAWS and GUW, respectively, were odds ratios of 0.94 (0.643, 1.377) and 1.069 (0.734, 1.558). The corresponding logistic model without propensity scores had main effects 0.938 (0.643, 1.368) and 1.080 (0.744, 1.568). Thus we concluded that since there is no apparent difference between the two models, differences in group were able to be adjusted for in the multivariate logistic illness model using covariates from the conceptual model for ARI.

ChVII, page VII-1, first paragraph last sentence
Change to "…were summarized in Chapter V."

ChVII, page VII-6 (b) Incubation period, First paragraph, last sentence.
Replace "CROSS REF" with "Table VII-4."

Ch VII, page VII-16, 7.05 (c) Evaluation of Assumptions
1) Non-random allocation of participants to study groups
Insert the following text in this sub-section:
Propensity score analysis was done for AES as described in analysis methods in Chapter IV and in detail with regard to AGI in Chapter V to confirm that characteristics of group could be adjusted for in the AES logistic model. In the propensity score model, the main effects for CAWS and GUW, respectively, were odds ratios 1.238 (0.788, 1.944) and 1.156 (0.720, 1.857). The corresponding logistic model without propensity scores had main effects 1.227 (0.782, 1.924) and 1.144 (0.713, 1.835). Thus we concluded that since there is no apparent difference between the two models, differences in group were able to be adjusted for in the multivariate logistic illness model using covariates from the conceptual model for AES.
(2) Sensitivity…
Insert the following text in this sub-section above the table:
We can see from the Table below that neither CAWS nor GUW has a significantly different rate of AES than the UNX group for any of the illness time windows considered.

Moreover, the confidence intervals are similar for each time interval, indicating that the model for AES was not sensitive to the time window chosen.

(3) Multicollinearity…

Insert the following text in this sub-section:

A review of variance inflation factors showed no evidence of multi-collinearity in multivariate models of AES.

Ch VIII, page numbering

That chapter should have begun with page VIII-1 rather than VIII-28.

Ch VIII, page VIII-1, first paragraph last sentence

Change to "…were summarized in Chapter V."

Ch VIII, page VIII-21, 8.01(a) Conceptual model

In the last sentence of the first paragraph of the section, replace "XREF" with the following:

Figure VIII-1

Ch VIII, page VIII-26

Delete Table VIII-29. This table appears again in correct position on page VIII-34.

Ch VIII, page VIII-29, 8.02(a) Dietary Exposures

Insert the following text above Table VIII-12:

Diet, namely consumption of sushi or raw shellfish, was considered a potential confounder for skin rash since allergic reactions might have been misreported as skin rash caused by recreation. Eating sushi or raw shellfish in the 48 hours prior to recruitment was not significantly associated with development of skin rash.

Ch VIII, page VIII-35, Section 8.05 Step 5:

First paragraph last sentence, Change Table VIII-29 to VIII-30

ChVIII, page VIII-36, (a) Non-water…. First paragraph, first sentence

Change "None of the variables listed in Table VIII-3" to "Table VIII-2."

Ch VIII, page VIII-38, 8.05 (c) Evaluation of Assumptions
1) Non-random allocation of participants to study groups

Insert the following text in this sub-section:

Propensity score analysis was done for skin rash as described in analysis methods in Chapter IV and in detail with regard to AGI in Chapter V to confirm that characteristics of group could be adjusted for in the skin rash logistic model. In the propensity score model, the main effects for CAWS and GUW, respectively, were odds ratios 0.891 (0.699, 1.136) and 0.753 (0.580, 0.979). The corresponding logistic model without propensity scores had main effects 0.873 (0.686, 1.110) and 0.749 (0.578, 0.971). Thus we concluded that since there is no apparent difference between the two models, differences

in group were able to be adjusted for in the multivariate logistic illness model using covariates from the conceptual model for skin rash.

2) Sensitivity of the group-rash association to the definition of the time window of interest

Insert the following text above the table:

We can see from the table below that the odds ratio estimates for group as a predictor of skin rash were fairly consistent for various time windows of illness incidence considered. Thus the decision to limit cases of skin rash to those reported in the first three days following recreation did not produce different results than a broader time window would have.

Insert the following values in the table:

	Rash Yes	Rash No	Missing	Incidence
Time window	n	n	n	%
Day 0-3	446	10590	261	4.04
Day 0-4	491	10536	270	4.45
Day 0-5	519	10281	497	4. 81
Day 0-6	546	10254	497	5.06
Day 0-7	576	10224	4971	5.33
Overall	**850**	**10442**	**5**	**7.53**

Ch VIII, page VIII-39, 8.05 (c) Evaluation of Assumptions
3) Multi-collinearity among predictors of skin rash

Insert the following text in this sub-section:

A review of variance inflation factors showed no evidence of multi-collinearity in multivariate models of skin rash.

Ch VIII, page VIII-39, Table VIII-33

Delete highlighting, page shading

Chapter IX,

Page numbering should begin with IX-1 rather than IX-43.

Chapter IX, page IX-43.

Insert after the first sentence:

Eye symptoms may have been due to infection, chemical irritation, injury, or allergy. In this chapter the terms "eye symptoms" and "eye infection" are both used. Because infection as a cause of symptoms was not confirmed through laboratory testing, "eye symptoms" is the more accurate term.

Ch IX, page IX-43, Section 9.01 Step 1: Identify…. (a) Conceptual model, second paragraph, Line 1,

Change Figure V-1 to Figure IX-1.

Ch IX, page IX-47, Section 9.02 Step 2: Define time…. (a) Survival curve, First paragraph, Line 4,
Change Figure VII-2 to Figure IX-2.

Ch IX, page IX-58 – IX-59, 9.05 (c) Evaluation of Assumptions
Insert the following sub-section:
(0) Non-random allocation of participants to study groups
Propensity score analysis was done for eye symptoms as described in analysis methods in Chapter 4 and in detail with regard to AGI in Chapter 5 to confirm that characteristics of group could be adjusted for in the eye symptoms logistic model. In the propensity score model, the main effects for CAWS and GUW, respectively, were odds ratios 1.546 (1.187, 2.015) and 1.206 (0.903, 1.611). The corresponding logistic model without propensity scores had main effects 1.526 (1.174, 1.983) and 1.185 (0.889, 1.578). Thus we concluded that since there is no apparent difference between the two models, differences in group were able to be adjusted for in the multivariate logistic illness model using covariates from the conceptual model for eye symptoms.

(1) Sensitivity…
Insert the following text in this sub-section above the Table We can see from the table below that the time window considered for incident symptoms does not change the effect of group on development of eye infection. CAWS have significantly greater odds of infection than UNX in all time windows considered, and GUW is not significantly different from UNX in any window. Thus, modeling the day 0-3 time window did not yield different results than a larger illness window may have.
(2) Multicollinearity…
Insert the following text in this sub-section:
A review of variance inflation factors showed no evidence of multi-collinearity in multivariate models of eye infection.

Ch X, page X-2, 10.01
Replace the following text at the end of the first paragraph:
Replace "Error! Reference source not found" with "Figure X-1"

Ch X, page X-15, 10.05
(d) Medical Factors
Replace the following text at the end of the first paragraph of the sub-section:
Replace "Error! Reference source not found" with "Table X-40"

Ch X, page X-23, First Paragraph, Line 8,
Insert Reference Year, CDC, 2008,

Ch X1, page X1-2, Section 11.02, Methods… First paragraph, Line 4
Change *desbried* to "described"

XI References, XI-6
Add year to Singalliano CD reference (2010) .

Respectfully submitted,

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