TEXAS
COMMISSION
ON ENVIRONMENTAL
QUALITY

2007 JUL 27 AM 10: 22

CHIEF CLERKS OFFICE

LOWERRE & FREDERICK
ATTORNEYS AT LAW
44 East Avenue, Suite 100
Austin, Texas 78701
(512) 469-6000 • (512) 482-9346 (facsimile)
Mail@LF-LawFirm.com

July 26, 2007

Via facsimile and first-class mail

Ms. LaDonna Castañuela
Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711

Re: In the matter of the *Application by Synagro of Texas-CDR, Inc., for TCEQ Permit No. WQ0004671000*, before the State Office of Administrative Hearings, SOAH Docket No. 582-05-5610, TCEQ Docket No. 2005-0180-SLG

Dear Ms. Castañuela,

Enclosed please find an original and eleven copies of Protestant's Exceptions to the Proposal for Decision. Please call if you have any questions.

Sincerely,

Eric Allmon

Eric Allmon
LOWERRE & FREDERICK
Attorneys for Bret and Phyllis Hudman

Enclosure
cc: The Honorable Judge Carol Wood
Service List

TEXAS
COMMISSION
ON ENVIRONMENTAL
QUALITY

2007 JUL 27 AM 10: 22

CHIEF CLERKS OFFICE

TCEQ Docket No. 2005-0180-SLG
SOAH Docket No. 582-05-5610

APPLICATION BY SYNAGRO OF TEXSAS-CDR, INC., FOR TCEQ PERMIT NO. WQ0004671000	§ § § §	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

PROTESTANTS' EXCEPTIONS TO PROPOSAL FOR DECISION

TO THE HONORABLE COMMISSION:

In the case of the application by Synagro of Texas-CDR, Inc., for TCEQ Permit No. WQ004671000, Protestants Brett and Phyllis Hudman (Protestants) file this, their Exceptions to the Proposal for Decision (PFD) issued by the Administrative Law Judge (ALJ).

I. Summary

In 2003, Synagro of Texas-CDR, Inc. (Synagro or Appplicant) filed an application for a permit authorizing the land application of wastewater treatment plant sludge on 1,134.94 acres in Wharton County at a rate not to exceed 6.18 dry tons perh acre per year; that application was protested and went through the contested case hearing process at the State Office of Administrative Hearings (SOAH) in October of 2005. After the issuance of the PDF, it was made clear that the Applicant had failed to appropriately calculate the agronomic load rates, and thus put in jeopardy an analysis of the potential impacts of the operation on fishing and wildlife ponds on adjacent property owned by Protestants. This was, in fact, a failure on the part of Applicant to meet its burden of proof, and should have resulted in a denial of the application. At the request of the Applicant, however, in April, 2006, the Commission remanded the application back to SOAH,

"for additional evidence on the new agronomic loading rate calculations, and the

impact, if any, of the new calculations and agronomic rates on the surface quality issue previously referred to SOAH, that is, whether surface water runoff from Applicant's facility will impact or affect fishing and wildlife ponds on adjacent property."

Applicant submitted amendments to its application (including a decrease in acreage to 1,073.92, at a rate not to exceed 4.66 dry tons/acre/year), significantly altering the project composition and attendant calculations so as to be substantially different from the original application. The original application submitted contained significant gaps in information, corrected only with the final submission of the application amendment of June 8, 2006. The application was thus administratively complete June 8, 2006, but was not processed under rules in effect at that time.

The contested case hearing conducted on this amended application took place January 22 - January 24, 2007, but was limited in its analysis to the issues referred by the Commission. The proposal for decision determined that the Applicant properly calculated its new agronomic loading rates and that they indicate that there was no adverse impact on Protestants' fishing and wildlife ponds from surface water runoff from Applicant's facility.

Protestants' exceptions to the proposal for decision are, broadly, that 1) Applicant's amended application should not have been processed under the old rules; 2) Applicant failed to properly calculate its agronomic loading rates; and 3) A proper calculation of the agronomic loading rates, as well as an appropriate analysis of the potential for surface water runoff to Protestants' ponds, show that the ponds will be adversely impacted by surface water runoff from the proposed operation.

II. The Application Now Before the Commission Should be Subject to TCEQ Rules as Effective in June of 2006

The ALJ did not apply the proper law to the application. The Commission should reverse the ALJ's decision to grandfather the current application to statutory requirements in effect prior to September 1, 2003. A closer look at the facts in the case reveal that the Applicant failed, from the very beginning of its application process, to submit an administratively complete application: the application form submitted by Synagro on August 21, 2003, its first submission for this project, had significant information missing from Appendix A of that form. Texas Health & Safety Code § 361.068 specifies that, "A permit application is administratively complete when a complete application form and the report and fees required to be submitted with a permit application have been submitted to the commission." As of September 1, 2003, the date that new statutory standards for sludge applications came into effect, significant portions of the application simply remained blank; if properly applying the law in effect, the Commission should not find that Synagro submitted a completed application form prior to September 1, 2003. Thus, Synagro's application should not be considered administratively complete as of August 29, 2003. Not until June 8, 2006, did Synagro submit an application form including the information required by Appendix A. Thus, it was not until June 8, 2006 that the application was administratively complete.

House Bill 2546 of the 78th Texas Legislature, which came into effect on September 1, 2003, imposed new requirements on sludge facilities, and new requirements for Class B Sludge permit applications.[1] This act imposed new application requirements such as the demonstration

---

[1] 2003 Tex. Gen. Laws Chapter 681.

that a nutrient management plan has been developed for the facility by a certified nutrient management specialist; this plan is able to be reviewed during the permitting process.[2] With regard to applicability, the Act specified that the requirements of Tex. Health & Safety Code §§ 361.121(c) & (h) applied to any application filed after September 1, 2003, or to any application filed prior to September 1, 2003 but not found to be administratively complete prior to that date.

It is important to note that the application resulting from the materials submitted June of 2006 differed dramatically from the application submitted in 2003. This second submission included:

(1) A reversal of the prior application with regard to the incorporation of sludge. The new application said that sludge would *not* be incorporated. Up to that point, Synagro had represented that sludge *would* be incorporated.[3]
(2) New testing data for incoming sludge, resulting in new assumed concentrations of the following constituents in the applied sludge:

i. Total Nitrogen;
ii. Total Phosphorus;
iii. Ammonium (NH4-N);
iv. Nitrate (NH3-N);
v. Total Potassium;
vi. Total Arsenic;
vii. Total Cadmium;
viii. Total Chromium;
ix. Total Copper;
x. Total Lead;
xi. Total Mercury;
xii. Total Molybdenum;
xiii. Total Nickel;
xiv. Total Selenium; and
xv. Total Zinc.

---

[2] Tex. Health & Safety Code § 361.121(h)(4).

[3] Compare Tr. Sept. 20, 2005, p. 17, l. 3-5 ("In this case, we've also proposed incorporation of the material into the soil to keep the material on site.")(Matt Bochat) and proposed Finding of Fact 19 a & b to Tr. Jan. 22, 2007, p, 31, l. 18-22.

(3) Omission of plant-specific sludge concentration data that was previously provided, preventing TCEQ or Protestants to determine the accuracy of the averages or the variance in values from one plant to another;

(4) New soil sample data based on new soil samples taken at new sampling locations;

(5) New pH values for each field;

(6) 50% Increases in proposed yield goals from 4 tons annually to 6 tons annually;

(7) New field management scheme now include shredding;

(8) New assumed crop nutrient requirements;

(9) A new method of calculating nutrient requirements;

(10) A new Sludge application schedule;

(11) A new Water Balance calculation;

(12) New Evapotranspiration data and calculations;

(13) New erosion calculations;

(14) New range production information; and

(15) Changed buffer zones;

Notably, Synagro's reversed position on sludge incorporation itself prevents a comparison of the protectiveness of the first application to the second. These changes to the application went far beyond the intended purpose for remand: for Synagro to correct its initial erroneous calculation of agronomic rates, and to consider the impact that would result from application at these recalculated agronomic rates.

The extent of these changes is reflected in the necessity for the ED to issue an entirely

new Technical Summary and ED's Preliminary Decision, as well as a new Draft Permit.[4] Also reflecting the radical nature of the changes, witnesses for the Executive Director repeatedly reference the new materials as a permit "amendment."[5]

For these reasons, the application now before the Commission that resulted from Synagro's materials submitted in June of 2006, and the application declared administratively complete prior to September 1, 2003, simply cannot be considered the same application. The application now before the commission was not administratively complete until June of 2006, and should be evaluated under the rules in effect on that date.

Applicant has claimed that its initial failure to complete the application form is somehow a technical error that went undiscovered until immediately prior to the consideration of the application by the Commission in April of 2006 - but such a claim is disingenuous. To the contrary, the blank spaces in the application form were self-evident from the date the application was submitted, and Protestants repeatedly called Synagro's attention to the error of this omission throughout the comment period and the initial hearing on the application. Discovery of this blatant error was hardly an epiphany for Synagro.

In reality, Synagro chose to quickly assemble an application in 2003, and submitted that application shortly before it knew more stringent requirements would apply. That 2003 application was insufficient, and what is now before the Commission is essentially a new application formulated by Synagro in June of 2006. It should be judged by the rules applicable in

---

[4] Ex. ED-12, ED-11.

[5] See Ex. ED-1 (Chadwick), p. 4, l. 19-21; ED-3 (Askenasy), p. 15, l. 15-17 & p. 16, l. 8-12; ED-5 (Sierant) p. 5, l. 7-9, 18-21 & p. 6, l. 7-9.

2006. The current and applicable rules include the requirement that an applicant provide a certified nutrient management plan. Synagro provided no such plan. Thus, under the properly applicable rules, Synagro's application should be denied. Regardless, even applying the old rules, this application fails to meet its burden of proof and should be denied, as explained below.

III. TCEQ Has Employed An Application Form that Defies the Laws of Chemistry, Rendering Issuance of the Permit Arbitrary and Capricious

Calculations of the quantity of organic nitrogen per ton in the sludge to be applied are fundamentally flawed; results from such calculations under-calculate the organic nitrogen content and should not be relied upon by the Applicant, Commission, or the ALJ, when conducting an analysis therefrom.

The Application form provided in Appendix A, at Step 3A, sets forth the following formula:

$$\text{Organic Nitrogen} = \text{Total N} - (\text{NH4-N}) - (\text{NO3-N})$$

If "Total Nitrogen" is used as an input, this formula yields a correct result. The Executive Director, however, through a parenthetical on the application form, has interpreted "Total N" in this scientific formula to be equivalent to Total Kjehdahl Nitrogen (TKN). Quite simply, it is uncontroverted in the record evidence that this interpretation is wrong.

As a simple matter of scientific definition, this formula is scientifically invalid if TKN is substituted for Total Nitrogen. Protestants' expert Bruce Wiland, a certified nutrient management specialist, dared to note that the emperor had no clothes, and called attention to this error.[6] ED staff testifying on Applicant's behalf simply stated that they had to follow the form

---

[6] Unlike Mr. Wiland, Applicant's witness Ken High is *not* a certified nutrient management specialist.

and could not consider any technical flaws that were inherent to the form itself.[7] Applicant's witnesses did not challenge Mr. Wiland's conclusion regarding the technical flaws in this formula. Applicant's witnesses simply professed that they were only required to follow the ED's application form, without regard to whether the form itself is inherently flawed.

The formula set forth in the application form is not ordained by rule, but is only a practice of the ED in evaluating permits. For TCEQ to treat it as a binding requirement would be to elevate this requirement to the same status as a rule, and thus violate the APA requirements for a rulemaking. The public was never provided an opportunity to review or comment on the application form. Moreover, for TCEQ to make a decision based on scientific principles contained in this form that TCEQ knows to be wrong is not only a violation of the rulemaking requirements of the Administrative Procedures Act, but is also arbitrary and capricious. This is a an error not subject to scientific uncertainty or debate, which results in material miscalculations; adherence to this method renders the subsequent calculations and evaluations unreliable. The ALJ's recommendation that the Commission ignore this error should be reversed; calculations using the appropriate Total Nitrogen would demonstrate that the Nitrogen loading at the rates proposed by Applicant is too high, thus, the permit should be denied.

IV. The Proposed Agronomic Rates are Excessive

If sludge is applied at the rate proposed by Applicant, nutrients will accumulate in the soil as a result of over-application. The overapplication of nutrients will increase the likelihood that nutrients will leave the site. Sufficient and credible evidence in the record demonstrates this and should be reconsidered by the Commission.

---

[7] Testimony of Paul Askenasy, p. 427, l. 13 - 19.

A. Nitrogen

First, the error in the chemical formula described above results in an overestimation of the amount of sludge that can properly be applied. This error is compounded by a calculation error regarding the amount of nitrogen that will remain in the fields.

1. Nitrogen Will Return to the Fields as Manure and Urine that Synagro Has Ignored

Applicant has not considered nitrogen returned to the fields as a result of grazing. Synagro has predicted that the grasses will be grazed by the animals from a height of 18 inches to a height of 6 inches, and assuming that thereby 66% of the nitrogen in the crop will be removed through grazing.[8] Mr. High conceded that he had not considered the return of nitrogen as manure to the soil in making this assumption:

Q(Allmon):	[H]ow do you know 66 percent of the nitrogen is removed from the field if you don't know how much of the nitrogen the cow retains?
A(High):	The only thing I'm looking at is how much of the nitrogen or forage is removed from the field by the number of cattle in the time that they're grazing on the field.
Q:	Did you consider how that nitrogen removed being eaten from the cow might be offset by the nitrogen returned to the field through manure or urine?
A:	**No.**[9]

Applicant asserts that it has accounted for the nitrogen returned to the fields because it considers nitrogen in the soil samples taken after *last year's* crop cycle in computing the nitrogen to be applied in the *next year*. Obviously, this results in ignoring any of the nitrogen returned to the fields that ***has run off*** or leached into the groundwater, which is precisely what Synagro

---

[8] Tr. p. 100, l. 2-11.

[9] Tr. p. 524, l. 8-20. (Emphasis added.)

should be planning to prevent. Synagro's calculation method assures nothing other than the creation of a cycle of repeated over-application.

2. The Crop will not Be Harvested.

Synagro's planned use of the application fields involves the grazing of 1 animal unit per 4 acres.[10] As noted by Bruce Wiland, the Natural Resource Conservation Service data suggests that a nitrogen demand of 140- lb/acre/year is reasonable for this use.[11] Synagro has proposed to apply nitrogen at rates in the range of 220-240 lb/acre/year. Texas A&M Agricultural Extension Service has noted:

> Commercial fertilizers, plant residues, animal manures and sewage are the most common sources of nitrogen addition to soils. Rates of application vary widely. Single application rates *may be as high as 150 pounds of nitrogen equivalent per acre* for crops such as coastal bermudagrass. However, *such high application rates* should be limited to soils with a low potential for erosion and runoff.[12]

In this fashion, available information indicates that even a requirement of 150 lbs of nitrogen per acre would be considered so high as to require special justification, much less an application rate of 241 lbs/acre/year.

Exhibit A-55 relied upon by applicant to justify a higher nitrogen demand is based on a cropping scheme that includes *harvesting* the crop.[13] This spreadsheet simply identifies the percent of the grass that is nitrogen. In order for this number to be relevant, the grass must be

---

[10] Ex. P-5, p. 4.

[11] Ex. P-2C, Ex. P-2, p. 7, l. 44 - p. 8, l. 18.

[12] Hudman Ex. 3 of original hearing; Transcript of Hearing, Sept. 20, 2005, p. 95, l. 18 - p. 96, l. 1. (Emphasis added.)

[13] See Ex. A-55 ("Plant nutrient uptake by specified crop and removed *in the harvested part* of the crop).

removed from the site, thus removing the nitrogen. This is not the case where grazing is occurring. Grazing is part of a closed cycle where nitrogen is not only removed, but is also returned, to the fields. Thus, the 1.88% nitrogen content number that the ALJ references is not relevant in this case.

3. Shredding Will not Remove Nitrogen

Applicant has assumed that simply shredding the grass will remove nitrogen. No nutrients leave the field as a result of shredding, and certainly not the quantity that Applicant assumes.

B. Phosphorus

Synagro has not considered phosphorus at all in calculating the proposed application rates. Moreover, phosphorus impacts will not be considered even in any annual recalculation of rates that may occur:

Q (Allmon):	Do you see, under XIV.A, the sentence that reads 'Agronomic loading rates shall be calculated on an annual basis to ensure that nutrient balances are not exceeded'?
A (Sierant):	Yes.
Q:	Do you understand agronomic loading rates to include consideration of phosphorus?
A:	No. We look for the nitrogen as far as our calculation goes.
Q:	So these recalculations would not consider phosphorus?
A:	**No.**[14]

Yet, even Mr. High admitted that if sludge is limited only in consideration of Nitrogen, then phosphorus would build up in the soil:

Q(Allmon): If application is limited only based on nitrogen, could phosphorus

---

[14] Tr. p. 444, l. 8-20. See also testimony of Askenasy at Tr. p. 429, l. 5-23. (Emphasis added.)

build up in the soil?

A(High): **I'm sure it would.**

Q: And would this build- up of phosphorus increase the likelihood that phosphorus would run off of the site?

A: Possibly, if erosion occurred.[15]

As noted by Bruce Wiland, the accumulation of phosphorus in the soil will increase the quantity of runoff leaving the site:

> In addition to the phosphorus in soil particles that will leave the site through entrainment in the runoff, some of the phosphorus will dissolve in the runoff and also leave the site. The concentration of this dissolved phosphorus increases as the concentration in the soil increases.[16]

Because phosphorus was not considered in the calculated application rates, the application of sludge at those rates will result in elevated levels of Phosphorus leaving the site in runoff.

V. Excessive Nutrients on the Site Resulting From Overapplication Will Leave the Site

The overapplication of nutrients will increase the likelihood that nutrients will leave the site. To compound that likelihood, the proposed buffer zones will not adequately prevent the migration of nutrients off-site, and the impermeability of the soils present will only enhance the likelihood of off-site migration of nutrients and other contaminants. For these reasons, Protestants take exception to the finding of the ALJ that the agronomic rates will not result in surface water runoff that adversely impacts Protestants' fishing and wildlife ponds.

A. Buffer Zones

Even though the Natural Resource Conservation Service has stated that even filter strips

---

[15] Tr. p. 537, l. 23-25. (Emphasis added.)

[16] Ex. P-2, p. 23, l. 1-4.

should generally not be relied upon as a stand-alone practice,[17] Synagro relies heavily on the existence of a buffer between the application fields and Gum Tree Branch to remove contaminants that would impact the wildlife ponds on the Hudman property. The buffer zones will not adequately serve this purpose, however.

1. Inundation of Buffer Zones Will Impair Their Effectiveness

First, during times of rainfall, the buffer zones will be underwater. As noted by Raymond Slade:

> [T]he buffer zone boundary is comparable to that of the 100-year flood plain. When runoff occurs from the application area, the creek usually will be higher than base flow stage due to runoff from the watershed upstream from the application area. Therefore, the buffer zone will contain minimal width and that width will decrease with increasing stages of the creek.[18]

This was further confirmed by Ken High:

Q: [A]re these buffer zones these areas where you're not going to apply because of floodplain, so that area taken out is coextensive with the 100-year floodplain? Is that correct?
A: That is correct.
Q: So this would allow application up to the border of the 100-year floodplain?
A: Correct.[19]

Moreover, a comparison of the buffer area shown in Photograph No. 2 taken by Mr. High, and Bret Hudman's picture of the same area after a rainfall event, led Mr. High to comment that at least the entire 200 foot buffer was shown to be under water in the picture taken by Mr.

---

[17] Ex. P-16.

[18] Ex. P-3, p. 5, l. 24-28.

[19] Tr. p. 73, l. 19 - p. 74, l. 2.

Hudman.[20]

While underwater, the buffer zones will not effectively filter contaminants. Synagro had has the burden of proof, but did not consider the impact of inundation of the buffer zone:

Q(Allmon):	[H]ow would the fact that that buffer area is under water impact the efficiency of that buffer in attenuating the contaminants?
A(High):	I have not studied or analyzed that.[21]

TCEQ staff member Michael Chadwick conceded that the saturation of the buffer zone would impact its effectiveness:

Q(Allmon):	So if a buffer zone is inundated by water, does that impact its effectiveness in attenuating contaminants?
A(Chadwick):	It can.
Q:	How can it?
A:	If you consider the contaminants that are either solubilized or can float, then it would be ineffective as removing those particular materials.
Q:	What about contaminants that are suspended?
A:	If they're already suspended in water, as it passes over, then it would be ineffectual in inhibiting them moving off site.

Sludge particles can be re-suspended during a flood.[22] Inundation of the buffer zones simply increases the depth of water over the area to the point where the vegetation does not as effectively serve its purpose as a filter. As noted in the Agricultural Waste Management Handbook with regard to filter strips, "hydraulic loading *must* be carefully controlled to maintain desired depth of flow."[23] Reflecting only one of many respects in which the proposed buffer

---

[20] Tr. p. 515, l. 12 - p. 516, l. 21.

[21] Tr. p. 75, l. 18-21.

[22] Tr. Hearing on Merits September 20, 2005, p. 80, l. 25 - p. 81, l. 4. (Mike Chadwick).

[23] Ex. P-16 (emphasis added).

zones do not qualify as "filter strips," Synagro has not shown how hydraulic loading of the buffer zone areas will be carefully controlled, nor how the efficiency of the buffer zones will not be significantly impaired by inundation during times of flooding.

2. Buffer Zones May Reduce Contaminants, But Will Not Eliminate Them

Raymond Slade's analysis of water quality impacts is premised on only 1.9% of the applied sludge washing off of the site. Filter Strips, which must meet much higher standards than those applied to the proposed buffer zones, still allow 20 % to 40 % of the suspended solids and attached constituents in the run-on water to pass through, and achieve only minimal removal of soluble constituents.[24]

3. Grazing *Will* Occur in Buffer Areas

To maintain the filtering function of vegetation, grazing must not be permitted on that vegetation.[25] Yet, Applicant has proposed no control measures to keep grazing animals outside of the buffer zones. No fences exist, or are proposed, at the border of the buffer zone and the application areas. Not only will this result in degradation of the filtering capability of the buffer zones, but it will also result in the deposition in the form of manure and urine of nutrients directly into the buffer zones by roving animals.

B. Impermeable Soils Will Increase Likelihood of Runoff

TCEQ rules require specific consideration of the permeability of soils present at a site. The ALJ has essentially applied a standard for "impermeable" that would require the soils to be absolutely impervious to water. TCEQ should not adopt this interpretation. The purpose of the

---

[24] Ex. P-16.

[25] Ex. ED-10, p. 393-5.

regulations that prohibit application over areas with "impermeable" soils is to avoid a situation that will foster increased runoff. Water will simply accumulate on the surface instead of migrating into the soil.

All soils at this site have the most limited permeability rating possible from the NRCS.[26] The NRCS does not have a rating of "impermeable." Thus, it is impossible for a soil to exist that would meet the standard the ALJ has established for the meaning of the term "impermeable." Since no soil can be considered absolutely "impermeable," the ALJ's position renders the TCEQ requirement that sludge not be applied in areas where impermeable soils are present within two feet of the surface meaningless. Protestants urge the Commission to reject this meaningless standard and evaluate the application in light of the very low permeability of the soils in the area, and the resultant increase in surface water runoff.

VI. High Levels of Contaminants will Enter The Wildlife Ponds on Protestants' Property

For the reasons discussed below, the analysis of Dr. Espey, Applicant's expert, has been shown to be significantly flawed. The ALJ takes misplaced comfort in the correlation between Dr. Espey's calculations and the FEMA floodplain. The FEMA floodplain did not account for the existence of Mr. Hudman's wildlife ponds. These ponds are present within the floodplain, and are separated from the creek by berms and dykes. Because these ponds occupy a portion of the floodplain, the resulting water levels should be higher than the FEMA floodplain if Dr. Espey had correctly calculated the flood level.

Dr. Espey committed numerous flaws in his analysis that explain why his predicted water levels are wrong:

---

[26] Tr. p. 79, l. 24 - p. 81, l. 2.

Applicant presented Dr. William Espey to challenge the analysis performed by Raymond Slade. Importantly, Dr. Espey evaluated only the *quantity* of water he expected to enter the ponds, and his opinion that no water quality impact will occur is based entirely on his opinion that no water will enter the ponds from Gum Tree Branch Creek.[27] Even Dr. Espey's own analysis shows that water from the creek will enter the pond at any flood exceeding the 50-year flood, however.[28] Synagro has not demonstrated why flood events of a quantity greater than the 50-year flood do not warrant consideration.

Dr. Espey's conclusion that the wildlife ponds do not flood unless the flood event exceeds the 50-year flood is flawed for several reasons. First, Dr. Espey assumes that the elevation of the stream must meet a height of 145 feet, or the height of the levy, before flooding occurs.[29] However, the evidence suggests that the height water must reach to enter the ponds is lower than this height:

Q(Townsend):	[I] asked if that levee we observed and walked around and on top of had any scouring or flood damage, and your answer was no, correct?
A(Slade):	No. The answer was on the levee, yes, but at the end of the levee, at the upstream end, there is a small impoundment that I would call a part of the levee, but it's at the western end of the pond, and that's where that area was lower than the levee, and that appeared it might have been due to scour. I can't say for certain.

Applicant's modeling is thus flawed because it only modeled what height of water would overtop the levee, not what height of water would be needed to flood the duck ponds.

---

[27] Tr. p. 277, l. 23 - p. 278, l. 2.

[28] Tr. p. 260, l. 17-21.

[29] See, e.g, Exhibits P-46 - P-49.

Doctor Espey also did not properly normalize the data from the Redgate Gage to Gum Tree Branch Creek. He simply assumed that the flow rates would be related by the same ratio as the relative drainage areas, or 14.1/17.3.[30] This is how he obtained the theoretical data presented in Exhibit A-43.[31] Flow rate data is not actually related in this linear fashion, however, because the correct exponential relationship of areas is less than 1.[32] If a proper correlation had been used, the predicted frequency of floods overtopping the wildlife ponds would have been more frequent.[33]

Furthermore, Dr. Espey's analysis assumed that the culverts between the application fields and the Hudman property would be at least partially clogged.[34] This, of course, reduces the predicted flow quantity. If the culverts are not clogged, an increased volume of water can be expected in Gum Tree Branch Creek during times of flooding, and Dr. Espey has underestimated the frequency of flood events.

Dr. Espey also did not apply the proper skew coefficient in his calculations. Dr. Espey used a skew coeeficient of -.4321.[35] This was simply the skew adopted from the nearby Redgate Gage. A weighted combination of the station skew and the generalized skew for the area is more

---

[30] Tr. p. 247, l. 1 - 17.

[31] Tr. p. 248, l. 14-23.

[32] Tr. p. 307, l. 3-5 (Espey); Ex. P-13, p. 65.

[33] Tr. p. 311, l. 9-16.

[34] Ex. P-47.

[35] Ex. P-10, p. 2.

appropriate to be used.[36] Had Dr. Espey used such a proper skew coefficient, his predicted frequency of flooding would have been more often.[37] Moreover, the regional skew for the area is 0.[38] Use of this value would have resulted in a prediction of more frequent flooding of the wildlife ponds, but Dr. Espey could not say how much more frequent.[39] Considering that the station used is approximately 20 miles from the actual site,[40] Applicant has not shown why the skew calculated at that location is more appropriate to use than the regional skew for the area.

Espey's analysis is also flawed because his model assumes one-dimensional flow, when two-dimensional flow will be actually occurring. The HEC-RAS model only considers one dimensional flow.[41] If a stream is moving outside of its normal banks, then two-dimensional flow begins to occur.[42] In this case, Gum Tree Branch Creek moves outside of its banks during periods of flooding.[43] Dr. Espey did not know how improperly assuming one-dimensional flow would affect the accuracy of his results.

Dr. Espey's opinions are also based on data lacking adequate specificity, which was improperly gathered. Each of his measurements was rounded in the field to the nearest foot, and

---

[36] Ex. P-11, p. 12, paragraph 4.

[37] Tr. p. 295, l. 6-7.

[38] Ex. P-12, p. 7; Tr. p. 296, l. 21-25.

[39] Tr. p. 297, l. 1-9.

[40] Tr. p. 317, l. 6-8.

[41] Tr. p. 299, l. 10-15.

[42] Tr. p. 298, l. 16 - p. 299, l. 9.

[43] Tr. p. 152, l. 19-21; Exhibits P-1C, P-1D, P-1E.

yet were charted as if this measurement were exact. Furthermore, the formal site visit to the Hudman property, and the only occasion on which Bret Hudman granted Applicant permission to enter his property, was in November of 2006. Yet, the date on the field notes relied upon by Dr. Espey is December 21, 2006.[44] Assuming that no trespass occurred in the gathering of this data, the elevations and heights presented in these notes were merely estimated from up to 100 feet away.

The ALJ terms these errors as matters of judgment, based on reference to the FEMA maps. As noted, the existence of Mr. Hudman's ponds renders the FEMA maps outdated and inaccurate. Considering the presence of Protestant's ponds that are not considered on the FEMA maps, the only thing that can be known for sure about the predicted flood level on these maps is that they are lower than can actually be expected.

Raymond Slade, a hydrologist of equal stature to Dr. Espey, performed an analysis of how the overflow of Gum Tree Branch Creek into Protestant's wildlife ponds would impact the water quality in those ponds. This analysis assumed that only 1.9% of the material applied on the application fields would enter Gum Tree Branch Creek. Considering that even well designed and maintained filter strips will only remove 60 to 80 percent of the suspended solids and constituents in run-on,[45] this value may well underestimate the quantity of material leaving the site. In considering the quantity of flow that would occur during a flood event that would enter the duck ponds, Mr. Slade found that phosphorus levels in the duck ponds would be 78 *times* the EPA criteria for the protection of aquatic life.

---

[44] Ex. P-9.

[45] Ex. P-16.

In performing his frequency analysis, Mr. Slade examined the 15 highest rainfall events in the past 10 years according to a nearby gaging station, knowing that the occasions when area streams were at their highest would be the occasions that flooding was most likely. Even though Mr. Hudman believes that flooding has actually occurred more than 15 times, Mr. Slade made the assumption that only 15 flood events with water entering the wildlife ponds have occurred in the past 10 years. By examining the difference in flow quantities between the 15th largest flood, and the 16th largest flood, he was able to determine that the threshold flow quantity for flooding of the ponds was is 199 cubic feet per second (cfs) after normalizing the data to Gum Tree Branch Creek. If the actual number of floods has been more than 15, then this threshold is actually lower.[46] With 199 cfs as the base flow in the stream that would not enter the wildlife ponds, Mr. Slade could examine when the flow exceeded this quantity, and determine the amount of flow from the stream that would consequently enter the wildlife ponds. This analysis is presented in Exhibit P-3C.

Knowing the quantity of runoff exceeding the threshold for the flooding of the ponds, Mr. Slade was able to determine how much runoff from the application sites would enter the wildlife ponds during the Spring and Fall.[47] This revealed that a spring runoff event would displace 47 percent of the water in the duck ponds, and a fall event would displace 100% of the water in the

---

[46] Ex. P-3, p. 7, l. 17-22.

[47] Ex. P-3C, B.2.c & B.4.

ponds.[48] Knowing this quantity of displacement for each season, he was able to evaluate what the resulting water quality of the ponds would be as a result of this displacement.[49]

VII. CONCLUSION AND PRAYER

The record evidence demonstrates that, contrary to the ALJ's findings, the Applicant's agronomic rate load calculations under-calculate the Total Nitrogen loading, and fail entirely to calculate phosophorus, a nutrient that has known significant adverse impacts on aquatic systems. Further, Protestants demonstrated by substantial record evidence that there is a significant chance of adverse impacts on Protestants' ponds by surface water runoff from the operation. For the reasons given above, Protestants Bret and Phyllis Hudman respectfully pray that the Commission reject the ALJ's proposal for decision and deny the application of Synagro of Texas-CDR, Inc., for sludge application permit No. WQ0004671000.

Respectfully Submitted,

Lowerre & Frederick
Attorneys at Law
44 East Ave., Suite 100
Austin, Texas 78701
(512) 469-6000 phone
(512) 482-9346 fax

By Eric Allmon by em
Eric Allmon
State Bar No. 24031819
Counsel for Bret and Phyllis Hudman

---

[48] Ex. P-3C, B.2.c & B.4.

[49] Ex. P-3D & P-3E.

Certificate of Service

By my signature above, I, Eric Allmon, hereby certify that a true and correct copy of the foregoing Protestants' Exceptions to the Proposal for Decision was delivered on this day, the 26th of July, by faxsimile transmission and first class mail to the individuals listed below.

For the Applicant Synagro of Texas-CDR (via fax and mail):
Mr. Chesley Blevins
Mr. Lambeth Townsend
Lloyd Gosselink Blevins
Rochelle & Townsend, P.C.
Attorneys at Law
111 Congress Avenue, Suite 1800
Austin, Texas 78701
512/322-5800
512/472-0532 (fax)

For OPIC (via fax and mail):
Mr. Scott Humphrey
Office of Public Interest Counsel
Texas Commission on Environmental Quality, MC-103
P.O. Box 13087
Austin, Texas 78711
512/239-3300
512/239-3311 (fax)

For the Executive Director, TCEQ (via fax and mail):
Mr. John Williams, Staff Attorney
Mr. Scott Shoemaker, Staff Attorney
Texas Commission on Environmental Quality
MC-175
P.O. Box 13087
Austin, Texas 78711-3087
512/239-0600
512/239-3434