UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION
OFFICE OF THE ADMINISTRATIVE LAW JUDGES
Washington, D.C.

ORIGINAL

In the Matter of **ECM BioFilms, Inc.,** **a corporation, also d/b/a** **Enviroplastics International,** **Respondent.**	**Docket No. 9358** **PUBLIC**

RESPONDENT ECM BIOFILMS' REPLY TO COMPLAINT COUNSEL'S PROPOSED FINDINGS OF FACT

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GENERAL RESPONSE TO COMPLAINT COUNSEL'S PROPOSED FINDINGS OF FACT:

Complaint Counsel's Proposed Findings of Fact ("CCPFF") are replete with objectionable content for which we, in each specific instance, move to strike. Many of Complaint Counsels' Proposed Findings constitute legal conclusions, are argumentative or irrelevant, and are not supported by cited evidence or with specific citations. Those Proposed Findings are legally untenable and should therefore be disregarded. *See Nichols v. Nat'l Union Fire Ins. Co. of Pittsburgh, PA*, 509 F. Supp. 2d 752, 754 (W.D. Wisc. 2007) ("disregard[ing] those proposed findings of fact and responses that constituted legal conclusions, were argumentative or irrelevant, were not supported by the cited evidence or were not supported by citations specific enough to alert the court to the source of the proposal"). Similarly, many of Complaint Counsel's Proposed Findings violate this Court's September 3, 2014 Order regarding Post-Trial Briefs, and those Proposed Findings should therefore likewise be disregarded. *See Van Eck v. C.I.R.*, 70 T.C.M. (CCH) 1455, at *3 (Tax Ct. 1995) (disregarding the petitioner's proposed findings because they violated the court's rules). While ECM categorizes a number of errors found throughout CCPFF in this General Response, there are additional errors further explained in ECM's Specific Response to CCPFF below.

Throughout the CCPFF, Complaint Counsel cite to page numbers and documents that do not stand for the proposition cited. For example, in Proposed Finding No. 251, Complaint Counsel stated that "Dr. Stewart's report apparently references Google's study, and dismisses it solely on the grounds that Google has an interest in promoting its product. (RX-856 at 17)." However, Page 17 of RX 856 (Dr. Stewart's report) discusses the sampling frame and sampling method Dr. Stewart used in his survey, and says nothing of the Google study.[1] Similarly,

[1] RX 856 (Stewart, Rep. at 17).

Complaint Counsel erroneously misquoted documents.[2] As noted throughout ECM's specific responses below, those specific findings predicated on misquotes should be disregarded because they are not "supported by specific references to the evidentiary record," as required by this Court's September 3, 2014 Order.[3] ECM hereby makes a running objection to, and motion to strike, all such Proposed Facts as identified in ECM's specific responses *infra.*

Complaint Counsel also violated this Court's September 3, 2014 Order in at least three additional ways. First, Complaint Counsel improperly cited evidence that has limited admissibility for purposes other than the theory under which it was admitted.[4] Second, Complaint Counsel cited expert testimony to support factual propositions that should be established by fact witnesses or documents.[5] Third, Complaint Counsel cited testimony elicited in an offer of proof.[6] Therefore, all of the CCPFF which violate this Court's September 3, 2014 order should be disregarded and stricken as set forth below. *See Van Eck*, 70 T.C.M. (CCH) 1455, at *3.

Another common error in the CCPFF is Complaint Counsel's insertion of whole sections of their Post-Trial Brief pasted directly into the CCPFF.[7] By merely pasting paragraphs of their Post-Trial Brief into their Proposed Findings of Fact, the CCPFF inevitably contains argumentative and editorial comments that are not appropriate for proposed findings of fact.[8] Those specific findings should therefore be disregarded and stricken as argumentative and not

[2] *See, e.g., infra*, ECM's Response to Finding No. 229.
[3] September 3, 2014 Order on Post-Trial Briefs.
[4] *See, e.g., infra*, ECM's Response to Finding 103.
[5] *See, e.g., infra*, ECM's Response to Finding 15.
[6] *See, e.g., infra*, ECM's Response to Finding 198.
[7] *Compare, e.g.*, CCPFF No. 358 *with* the second sentence in the first complete paragraph on Page 49 of Complaint Counsel's Post-Trial Brief (they are identical).
[8] *Compare, e.g.*, CCPFF No. 70 *with* the last sentence on Pages 20–21 of Complaint Counsel's Post-Trial Brief (they are identical except for the term "for example").

proper submission of fact. *See In the Matter of Curtis Publ'g Co.*, 78 F.T.C. 1472, at *4 (1971) (rejecting proposed findings "as argumentative rather than reflective of evidentiary facts").

In addition, Complaint Counsel cited unreliable hearsay that is irrelevant without foundation in support of their Proposed Findings.[9] Proposed Findings of Fact should not be predicated solely on unreliable hearsay that lacks foundation. Complaint Counsel opted not to call any sponsoring fact witnesses. Absent a sponsoring witness who can explain the contents of the otherwise hearsay documents, many of the points raised in Complaint Counsel's CCPFF lack essential factual foundation, facts necessary to establish the reliability, accuracy, or context for statements within those documents. Those documents should accordingly be afforded little, if any, weight, and facts supported only by hearsay should be disregarded as inappropriate. *See E.E.O.C. v. Lee's Log Cabin, Inc.*, 436 F. Supp. 2d 992, 993 (W.D. Wisc. 2006 ("disregard[ing] those proposed findings of fact [which are] based on hearsay").

Finally, Complaint Counsel's Post-Trial Brief cited to Proposed Findings of Fact that are "intentionally left blank."[10] Any argument in Complaint Counsel's Post-Trial Brief citing to Proposed Findings that are "intentionally left blank" should be disregarded as void of support.

[9] *See, e.g., infra*, ECM's Response to Finding No. 44.

[10] *Compare, e.g.*, Complaint Counsel's Post-Trial Brief, at P. 53 (citing to FOF ¶¶ 400–405) *with* CCPFF Nos. 400–405 (all "Intentionally Left Blank").

SPECIFIC RESPONSES TO COMPLAINT COUNSEL'S PROPOSED FINDINGS OF FACT:

1. Plastic is a generic term used to describe high-molecular weight polymers. (CCX-891, ¶ 28).

Response to Finding No. 1:

Respondent has no specific response.

2. There are various plastics, but synthetic (laboratory-made), petroleum-based plastics are by far the most common. (CCX-891, ¶ 29); (McCarthy, Tr. 397) (stating that petroleum-based plastics make up the bulk of the plastics used today)).

Response to Finding No. 2:

Respondent has no specific response.

3. Plastics derived from petrochemicals are strong, durable, and inexpensive to manufacture, which make them ideally suited for commercial applications. These petroleum-based plastics ("conventional plastics") represent over 90% of the commercial plastic market. (CCX-891, ¶ 29); (McCarthy, Tr. 397) (stating that petroleum-based plastics make up the bulk of the plastics used today)).

Response to Finding No. 3:

Respondent has no specific response.

4. The most common types of conventional plastic are high-molecular weight *polyethylene* (PE), used to manufacture plastic bags, packaging material, and bottles; and *polyurethane* (PUR), used in medical and industrial applications such as adhesives and paint. Also common is *polypropylene* (PP), used for disposable cups, clothing, storage containers, and DVD covers; and *polystyrene* (PS), which is used to make disposable cutlery and cups, foam packing peanuts, insulation, and fast food containers. (CCX-891, ¶ 30); (McCarthy, Tr. 397, 398) (listing examples of products made from different types of plastics)).

Response to Finding No. 4:

Respondent has no specific response.

5. The characteristics that make conventional plastics commercially useful—strength, durability, synthetically derived from petrochemicals—make them highly resistant to biological attack. (CCX-891, ¶ 33, CCX-880 at 2); (McCarthy, Tr. 397-99) (defining "conventional plastic" and stating that commodity plastics, PE, polypropylene, are polystyrene are generally considered nonbiodegradable)); (Burnette, Tr. 2432-2433 ("[P]lastics are designed to be stable. Their product integrity is important. They have an intended use. Their product integrity is important. They have an intended use. They're intended to be stable. That means that at a molecular level these are stable compounds.")).

Response to Finding No. 5:

To the contrary, Dr. McCarthy stated that "over time, all things will likely biodegrade. Therefore, the statement that conventional plastic is not biodegradable should be read to mean 'not biodegradable in any timeframe less than hundreds, thousands or even millions of years.'" (CCX 891 (McCarthy, Rep. n. 4).

To the contrary, immediately following the portion of Dr. Burnette's testimony cited by Complaint Counsel, Dr. Burnette went on to say:

> However, you know, there is documented evidence…that just because they are stable and potentially resistant forms of chemical and mechanical degradation, nature still has enzymes, and enzymes are tools that can act on these. And even though we might consider plastics to be synthetic…it doesn't mean that the subunits that make up these plastics are not similar enough in nature to natural products that enzymes will recognize and act upon them. And I have provided evidence in this report that, yes, microorganisms do exist that do have enzymes that can degrade plastic. **They are not – they are not totally resistant to enzymatic degradation.**

(Burnette, Tr. 2433).

6. Biodegradation is described as the chemical process by which microorganisms such as bacteria and fungi use the carbon found in organic materials as a food source. (CCX-891, ¶ 22; CCX-893, ¶18; RX-854, ¶ 1; RX-855 at 12, 13; CCX-880 at 2); (Tolaymat, Tr. 130); (McCarthy, Tr. 372-373); (Sahu, Tr. 1976 (confirming he defines biodegradation as breakdown of the plastic substrate through biological means)); (Burnette, Tr. 2374-75).

Response to Finding No. 6:

Respondent has no specific response.

7. Given enough time, all things are "biodegradable." However, conventional plastics are not considered susceptible to biological attack. This process could take hundreds, if not thousands, of years. Therefore, it is commonly understood in the scientific community that conventional plastics are not biodegradable. (CCX-891, ¶¶ 33-34; CCX-892, ¶¶ 2-5); (McCarthy, Tr. 375) (polymers formed through addition polymerization are not considered biodegradable)); (McCarthy, Tr. 397-399 (defining "conventional plastic" and stating that commodity plastics, PE, polypropylene, are polystyrene are generally considered nonbiodegradable)); (Sahu, Tr. 1758-1759 (conventional plastics last for "a very long time" in the environment after customary disposal, perhaps 10,000 or more years)); (Barlaz, Tr. 2292 (traditional plastics in general do not biodegrade at all)); (Michel, Tr. 2869 ("[d]oes polyethylene biodegrade over thousands of year. Well, yes, it does, but so do many other things, you know, which we would not consider biodegradable.")).

Response to Finding No. 7:

Dr. McCarthy testified at hearing that he was unsure whether he was familiar with the peer-reviewed scientific publications that conclude that conventional plastics are biodegradable. (RPFF ¶ 1490). However, at deposition in response to the same question, Dr. McCarthy said that "[t]here are publications concerning polyethylene…[and] there are some on polypropylene…[and] on PET." (RPFF ¶ 1491). Despite peer-reviewed publications that conclude that conventional plastics can biodegrade, Dr. McCarthy failed to provide any qualification regarding his statement that there is "overwhelming scientific consensus that conventional plastics are not biodegradable after customary disposal." (RPFF ¶ 1492). Furthermore, Dr. Sahu testified at hearing that conventional plastics like polyethylene have been proven to be biodegradable in the peer reviewed literature. (Sahu, Tr. 1848-53). Dr. Sahu also testified that the peer-reviewed literature demonstrates that anaerobic processes are capable of biodegrading conventional plastics. (Sahu, Tr. 1458-59).

8. There are some plastics that are susceptible to biological attack, however these generally do not have the same durability and low cost of most commodity conventional plastics. (CCX-891, ¶¶ 34-35; *See generally* CCX-892; RX-855 at 9, n.6) (McCarthy, Tr. 399-404 (explaining that some plastics are biodegradable and that conventional plastics dominate the market due to price)).

Response to Finding No. 8:

Complaint Counsel expert Dr. McCarthy admits that all plastics are susceptible to biological attack, at least to some degree. Dr. McCarthy wrote that "over time, all things will likely biodegrade." (CCX 891 (McCarthy, Rep. n. 4). If all things biodegrade, then all plastics are of course susceptible to biological attack.

9. The high-molecular weight and chemical structure of most conventional plastics prevent naturally occurring microorganisms from accessing the carbon. (CCX-891, ¶¶ 30, 32); (McCarthy, Tr. 375 (polymers formed through addition polymerization are not considered biodegradable because of their "carbon backbone . . . that doesn't have any of these linkages that can be broken by the enzymes")).

Response to Finding No. 9:

Although the molecular weights of plastics are very high, that does not preclude biodegradation. Dr. Sahu testified that the peer-reviewed scientific literature reveals that polymer chains with molecular weights as high as 10,000 can be biodegraded. (Sahu, Tr. 1872-73).

Dr. Sahu explained how naturally occurring microorganisms reach the carbon within plastic polymers. Contrary to Dr. McCarthy's cited testimony, Dr. Sahu testified that the biodegradation of plastic polymers involves, *inter alia*, hydrolytic cleavage of polymer bonds. (Sahu, Tr. 1859-60). Dr. Sahu further testified that biological activity typically begins at the weak points and endings of a polymer chain and works into the remaining portions of the polymer. (Sahu, Tr. 1866-67).

10. Petroleum-based conventional plastics have only existed for a hundred years or so, not long enough for microorganisms to have evolved to degrade them. (CCX-891, ¶ 33; CCX-880 at 2 (referring to plastics as xenobiotic)); (McCarthy, Tr. 375).

Response to Finding No. 10:

Dr. Sahu testified that scientists in the field have published information concerning the types of bacteria and microorganisms that are found in nature (including MSW landfills), which have also been shown to biodegrade conventional plastics. (Sahu, Tr. 1867-68; RX 855 at 34). Dr. Burnette testified that "enzymes exist that can degrade plastic. That's been documented. Well we have been able to characterize the **microorganisms** that make these enzymes. And those microorganisms have been identified in landfills." (Burnette, Tr. 2433-34). Similarly, Dr. Sahu testified that microbes can evolve to biodegrade plastic, "the point is, even synthetic compounds that are not that old, so to speak, are susceptible to biological attack quite readily." (Sahu, Tr. 1880–81).

11. Americans generate about 32 million tons of plastic waste every year, more than half of which ends up in landfills. (CCX-893, ¶¶ 15-16; CCX-880 at 1); (Tolaymat, Tr. 129 (in 2012 "plastic constituted over 12 percent of the total municipal solid waste generated or about 31.7 million tons of plastic")).

Response to Finding No. 11:

Respondent has no specific response.

12. Landfills continue to be the dominant method for managing discarded waste (MSW) in the United States. Biodegradation in landfills is remarkably slow because typical U.S. landfills are primarily anaerobic environments with low-moisture. U.S. landfills are anaerobic, temperate, "dry tombs" by design; these conditions are engineered (and largely mandated by federal law) to facilitate the containment rather than stabilization of MSW. The life of organic biodegradable materials in landfills is anywhere from 12 to 70 years. (CCX-893, ¶ 16; CCX-819 (Sinclair, Dep. at 9) (Q. But you would agree that most plastics are disposed of in landfills? A. Most plastics are at this time intended to end up in a landfill, or in other words, would more likely than not end up in a landfill.")); (Tolaymat, Tr. 126 ("Landfilling is by and large the largest

management option for municipal solid waste in the United States. About 54 percent of solid waste is managed in that capacity.")); (Tolaymat, Tr. 133-134 (describing slow biodegradation process in landfill conditions)); (Tolaymat, Tr. 333-35 (the majority of landfills in the U.S. are "dry tomb" landfills)).

Response to Finding No. 12:

Dr. Barlaz testified that the term "dry tomb landfill" is misleading because the implication of the term and the implication of Dr. Tolaymat's report was that if a landfill is not actively adding moisture to a landfill, then it is a dry tomb landfill, which is false. (Barlaz, Tr. 2198). Dr. Barlaz has been to many landfills that are not actively adding leachate or external liquids to the landfill, and yet by virtue of infiltration of rainwater alone the landfills have considerable moisture, and they are making considerable methane. (Barlaz, Tr. 2198). There are thus many landfills that by virtue of infiltration alone are not "dry tomb" landfills. (Barlaz, Tr. 2199).

Complaint Counsel cites no authority for its statement that "the life of organic biodegradable materials in landfills is anywhere from 12 to 70 years." Thus this proposed finding fails to cite record evidence, and is therefore a statement of counsel lacking support, and it violates the September 3rd order. On this basis, Respondent moves to strike this finding.

13. Due to their recalcitrant nature, plastics pose a growing disposal and environmental pollution problem. (CCX-895 at 11 (observing "[t]he massive islands of plastic pollution now collecting in the world's oceans . . . , plastic particle pollution in naturalbodies of water like the Great Lakes . . ., and the plastic that pollutes many of the world's beaches and natural areas . . . .")); (RX-855 at 9 ("The parties can agree that conventional plastics are a large and growing portion of the solid waste disposal stream . . . persistence of plastic was products poses such an enormous environmental threat.")).

Response to Finding No. 13:

None of the authority that Complaint Counsel cites supports the conclusion that the growing disposal and environmental pollution problem is a result of plastics' "recalcitrant

nature." Thus this portion of the proposed finding fails to cite record evidence, and is therefore a statement of counsel lacking support, and it violates the September 3rd order. On this basis, Respondent moves to strike this portion of the finding.

Furthermore, Dr. Barlaz testified, and wrote in peer reviewed publications, that based on decay rate, the slower a product biodegrades in a landfill environment, the better that product is for the environment after disposal. (Barlaz, Tr. 2287-88). For the typical landfill that does not collect gas for years after disposal, a product that biodegraded completely within one year after disposal would be a net emitter of methane to the environment and therefore have negative environmental impact over a more slowly degrading substance. (Barlaz, Tr. 2289-90). Therefore, the greenhouse gases emitted by rapidly degrading materials are arguably worse for the environment than the "persistence" of plastics in landfills.

14. Many consumers are concerned about environmental harms caused by plastic pollution: in a relatively recent survey, 62% of consumers said that they would be willing to pay a higher price for a product that is less burdensome on the environment. (CCX-865, ¶ 29; CCX-809 (Flexible, Dep. at 72) ("There is a lot of backlash against plastic bags. A lot of people don't like plastic bags."); CCX-800 (BER, Dep. at 18) ("[Customers] were looking for a product they could mark as degradable to say that they were being, you know, environmentally sensitive. It's very important in their packaging, that they could…print it right on the package, you know, biodegradable."); CCX-822 (ANS, Dep. at 13) ("People . . . don't want to pollute the environment and this [biodegradable plastics] is what they choose to buy.")).

Response to Finding No. 14:

There is no evidence in the record that any consumer actually purchased a plastic amended with the ECM additive and to the extent that any consumer ever purchased such a plastic product, that the "biodegradability" of the product was material to the purchasing decision. (Tr. 1-3005; RPFF ¶¶ 930-32).

Complaint Counsel relies on the Synovate survey to support its proposition that consumers are willing to pay a higher price for a product that is less burdensome to the environment. However, both Dr. Stewart and Dr. Frederick believe the Synovate study is flawed. (Frederick, Tr. 1045, 1049-51; Stewart, Tr. 2513–17; RX 856 (Stewart Rep. at 5-9)). The yes or no question that Complaint Counsel relies on for this finding is a close ended question. Close ended questions do not afford the respondent the full opportunity to explain their answer. (Frederick, Tr. 1276; Stewart, Tr. 2513–14, 2517–18).

Due to the nature of this close ended question, it is unclear which "environmentally friendly" products the respondent would pay more for, how much more the respondent would be willing to pay or whether other characteristics of the product significantly outweigh this factor. Thus, almost nothing can be gleaned from this isolated question.

15. In response to consumer demand, various materials have been introduced to improve the biodegradability of plastics. These include conventional plastics amended with additives meant to enhance biodegradability (*e.g.*, photodegradable, oxodegradable, and biodegradable additives), bio-based plastics, and natural fiber composites. (CCX-891, ¶¶ 26, 34, 36; CCX-880 at 3).

Response to Finding No. 15:

Complaint Counsel cites to the expert report of Dr. McCarthy to support a factual finding in violation of the September 3rd order, which states "Do not cite to expert testimony to support factual propositions that should be established by fact witnesses or documents." On this basis, Respondent moves to strike.

Furthermore, Dr. McCarthy has not been qualified to testify as an expert in the areas of consumer demand, consumer behavior, or industrial economics. (CCX 891; McCarthy, Tr. 359-689). Dr. McCarthy has degrees in chemical engineering, textile chemistry, and macromolecular science, none of which bear any relationship to consumer behavior or market analyses. (CCX

891 at 38). No foundational basis has been laid in Dr. McCarthy's report or testimony to support his qualifications to opine on consumer demand, consumer behavior, or industrial economics. (CCX 891; McCarthy, Tr. 359-689).

CCX 880 offers no support for the stated proposition. The words "consumer" and "demand" appear nowhere on page 3 of CCX 880. ECM thus moves to strike this "finding."

16. *Intentionally Left Blank.*

17. ECM exploits consumers' environmental consciousness. "Green impact" is ECM's sales pitch. For example, its website lists statistics on the environmental impact of plastic waste. (CCX-19 at 2; CCX-20 at 3 ("Who's winning the war on plastics?"); RX-138; CCX-7 (sustainability brochure); CCX-21 (presentation)).

Response to Finding No. 17:

This finding is an argument of counsel that has been presented as a fact. It is an unsubstantiated mischaracterization of ECM. In fact, there is no record evidence that ECM has ever interacted with a "consumer." (Tr. 1-3005). This finding of fact is predicated on an as yet undetermined finding of law: whether ECM's claims are false or misleading. Thus, ECM moves to strike this finding.

18. ECM claims to have a "revolutionary additive technology" that "renders. . . plastic products biodegradable . . . ." and ECM advises its customers that mixing 1% ECM Additive to non-degradable plastic, *i.e.*, conventional plastic, "transforms" it into a biodegradable plastic ("ECM Plastic"). (CCX-3; CCX-15; CCX-19 (ECM website screenshots); CCX-20 (ECM website screenshots); CCX-24 (ECM website screenshots); CCX-25 (ECM website screenshots)); (Sinclair, Tr. 767 (Q: "What do you tell customers that the ECM additive will do?" A: "It makes their plastic product that they use it in biodegradable.")).

Response to Finding No. 18:

Respondent has no specific response.

19. ECM sells its additive to plastic producers. (CCX-818 (Sinclair, Dep. at 62); CCX-818 (Sinclair, Dep. at 217) (discussing distribution chain)); (Sinclair, Tr. 758, 759, 787).

Response to Finding No. 19:

Respondent has no specific response.

20. A company called Microtech Research, Inc. owns the ECM additive technology, and ECM licenses the technology from Microtech. (CCX-818 (Sinclair, Dep. at 21) (explaining ECM-Microtec relationship); CCX-241 (ECM-Microtech licensing agreement)); (Sinclair, Tr. 1000 (Microtech owns the rights to the ECM additive)).

Response to Finding No. 20:

Respondent has no specific response.

21. Some of these manufacturers use the additive to make "biodegradable" products for purchase by retailers or end-use consumers. Other manufacturers simply make plastic (such as plastic "film") that they sell to product and package manufacturers, who in turn sell to packagers, retailers, or end-use consumers. (CCX-818 (Sinclair, Dep. at 217); *See also* CCX-800 (BER, Dep. at 10-11)).

Response to Finding No. 21:

Respondent has no specific response. (*See* RPFF ¶¶ 368, 370, 394) (discussing ECM customers' characteristics and supply chain).

22. Customers buy the ECM additive because they want biodegradable plastic—and they want to be able to advertise their plastic as biodegradable. (CCX-800 (BER, Dep. at 17-18); CCX-801 (D&W, Dep. at 19-22); CCX-803 (DTE, Dep. at 39-40; 42-43; 45-46); CCX-804 (Eagle, Dep. at 15-16); CCX-809 (Flexible, Dep. at 13-18); CCX-810 (FP Int'l, Dep. at 15-16); CCX-811 (IPB, Dep. at 11-12); CCX-812 (Kappus, Dep. at 14;15;19); CCX-817 (Quest, Dep. at 19-24; 26); CCX-822 (ANS, Dep. at 12-13)) (Sinclair, Tr. 774-75 (ECM customers buy the additive because "they want biodegradable products.")).

Response to Finding No. 22:

Respondent has no specific response. (See RPFF ¶¶ 321, 329, 331) (discussing ECM's customers' reasons for purchasing the ECM additive).

23. ECM has sold its product to approximately 300 customers. (CCX-747 at 7-68).

Response to Finding No. 23:

Respondent has no specific response. However, the term "customers" does not refer to consumers or end-use consumers, as ECM has never sold its product to a consumer or end-use consumer, has no brick-and-mortar storefront and does not sell its product on the internet. (RPFF ¶¶ 360, 366-68, 389).

24. ECM's "biodegradable plastic" has reached millions of end-use consumers. (CCX-822 (ANS, Dep. at 26) ("millions" of shopping bags); CCX-803 (DTE, Dep. at 48-49) (3.5 million grocery bags); CCX-811 (IPB, Dep. at 74-75) (12-13 million shopping bags)).

Response to Finding No. 24:

There is no record evidence that a single end-use consumer purchased an ECM amended plastic product. (Tr. 1-3005). Whether a product amended with ECM's additive has "reached" end-use consumers is irrelevant. There is no record evidence that a single end-use consumer made a purchasing decision based on the biodegradability of an ECM amended plastic product. (Tr. 1-3005; RPFF ¶¶ 930-32). There is no record evidence end-use consumers "purchase" shopping bags or grocery bags, or that end-use consumers make purchasing decisions based on the properties of bags given them by stores.

25. ECM's "biodegradable plastic" claims have also reached millions of consumers through advertising for a host of products and packages—ranging from grocery bags

to shampoo bottles, Frisbees, golf tees, highlighters, storage cases, shoe soles, mailers, zippers, plastic cutlery, straws, and more. (CCX-30 (ad for biodegradable plastic bags); CCX-32 (apple bag with biodegradable logo); CCX-36 (biodegradable logo for bags and marketing material); CCX-37 (website ad for biodegradable cards); CCX-39 (website ad for biodegradable golf tees); CCX-40 (ad for biodegradable packaging); CCX-41 (ad for biodegradable bags and film); CCX-44 (art for bags with biodegradable logo); CCX-46 (biodegradable conditioner bottle); CCX-47 (biodegradable label for shampoo); CCX-52 (labels for "certified" biodegradable bags and cases); CCX-56 (ad for biodegradable bags and cutlery); CCX-59 (ad for biodegradable supply bags); CCX-61 (ad for biodegradable bottle); CCX-63 (biodegradable cold packs); CCX-64 (ad for biodegradable mailers); CCX-65 (ad for biodegradable trash bin); CCX-69 – 75 (various types of biodegradable plastic bags; CCX-76 (biodegradable credit card); CCX-79 (biodegradable zipper ad); CCX-96 (biodegradable straws); CCX-97 (biodegradable cutlery); CCX-98 (biodegradable foam clamshells for food); CCX-103 (biodegradable Frisbee); CCX-112 – 122 (various types of biodegradable bags); CCX-126 (biodegradable highlighter); CCX-139 (biodegradable shoe soles); CCX-142 (ad for biodegradable air cushions)).

Response to Finding No. 25:

These claims are not ECM's claims. (RPFF ¶ 372). ECM has no control over how its customers label or advertise their products. (RPFF ¶ 372). Furthermore, the citations to the factual record by Complaint Counsel do not support the finding that "ECM's 'biodegradable plastic' claims have also reached millions of consumers." Complaint Counsel has merely cited a host of images with no foundation or testimony to provide context or prove that these claims ever reached consumers or that a consumer ever purchased a product containing these claims. CCX 30 is an informational webpage that explains to distributors and retailers how to purchase biodegradable plastic bags. (CCX 30). The minimum order is 3000 units. (CCX 30). This is not a product that is sold to end-use consumers or consumers. (CCX 30). Furthermore, Complaint Counsel failed to call a single fact witness that could establish whether these bags or claims ever reached a single end-use consumer. (Tr. 1-3006).

CCX 32 is a biodegradable plastic bag. (CCX 32). It is unclear whether this bag is sold or, if sold, who this bag is sold to, and there is no evidence that this claim ever reached a single end-use consumer or consumer. (Tr. 1-3005).

CCX 36 displays a biodegradable logo for Earthware products. (CCX 36). However, Complaint Counsel failed to call a single fact witness and there is no evidence in the record that this logo was ever placed on a product that was sold to a consumer or end-use consumer. (Tr. 1-3005). Furthermore, CCX 36A does not identify the type of product, if any, saleable to an end-use consumer, on which this logo was placed. (CCX 36A). It is an industrial plastic film that is not intended for use or purchase by end-use consumers or consumers. (CCX 36A).

CCX 37 is an informational webpage for biodegradable credit cards. (CCX 37). This is not a product that is sold to an end-use consumer. Furthermore, Complaint Counsel failed to call a single fact witness and there is no evidence in the record that a single company or individual purchased this product. (Tr. 1-3006).

CCX 39 is a website advertisement for biodegradable golf tees. (CCX 39). This product cannot be purchased from the website depicted in the exhibit, and the record contains no evidence that illustrates how a consumer would purchase this product. (CCX 39; Tr. 1-3005). Furthermore, Complaint Counsel called no fact witnesses that could provide evidence that this product was ever purchased by a consumer or end-use consumer. (Tr. 1-3005). Finally, the product is not available in the United States. (CCX 39).

CCX 40 is a FAQ for industrial or commercial plastic packaging material. (CCX 40). This product would not be used by an end-use consumer or consumer, and there is no evidence that an end-use consumer or consumer ever purchased this product. (CCX 40; Tr. 1-3005). CCX 41 is a marketing sheet for industrial or commercial biodegradable film and bags. (CCX 41). This product would not be used by an end-use consumer or consumer, and there is no

evidence that an end-use consumer or consumer ever purchased this product. (CCX 41; Tr. 1-3005).

CCX 44 is an image of a biodegradable plastic bag. (CCX 44). There is no evidence that an end-use consumer or consumer every purchased this bag. (Tr. 1-3005).

CCX 47 is a design image of a bottle label with "biodegradable" written on it. (CCX 47). There is no evidence in the record that this label was ever placed on a bottle. (Tr. 1-3005).Furthermore, Complaint Counsel called no fact witnesses to testify that a bottle with this label was actually purchased by an end-use consumer or consumer. (Tr. 1-3005).

CCX 52 is an image of bag labels that say "biodegradable" on them. (CCX 52). Complaint Counsel called no fact witnesses and there is no evidence in the record that these labels were placed on a bag or purchased by a consumer or end-use consumer. (CCX 52; Tr. 1-3005).

CCX 56 is an image of an Island Plastic Bags brochure advertising the biodegradability of its plastic bags. (CCX 56). These bags are not purchased by end-use consumers or consumers; instead they are purchased by distributors and commercial retailers for use at their stores. (RPFF ¶¶ 501, 560, 564-65).

CCX 59 is an advertisement for biodegradable supply bags. (CCX 59). This product is intended to be sold to service industry companies such as dental offices. (*See* CCX 59). There is no evidence in the record that this product was ever actually sold, and no evidence that it reached end-use consumers or consumers. (Tr. 1-3005).

CCX 61 is not an ad for a biodegradable bottle as Complaint Counsel alleges. (CCX 61). Instead, it is an image of a label for an unascertainable product. (CCX 61). There is no context or testimony to illuminate the ambiguities associated with this exhibit. (Tr. 1-3005; CCX 61). There is no evidence in the record that this label was ever placed on a product. (Tr. 1-3005). There is no

evidence in the record that a product containing this label was ever purchased. (Tr. 1-3005). There is no evidence in the record that a product with this label ever reached an end-use consumer or consumer, or that an end-use consumer or consumer ever purchased such a product. (Tr. 1-3005).

CCX 63 is an image of biodegradable cold packs. (CCX 63). There is no context that explains whether this product is advertised to consumers or retailers. (CCX 63). However, the advertisement does say that a company can "increase market exposure" by getting a custom logo printed on the pack. (CCX 63). Thus, it appears that this product is intended for commercial use. (CCX 63). There is no evidence in the record that a single one of these products ever reached an end-use consumer or consumer. (Tr. 1-3005). There is no evidence in the record that a single end-use consumer or consumer purchased this product. (Tr. 1-3005).

CCX 64 is an image of biodegradable mailer bags. (CCX 63). There is no context in the record that explains whether this product is advertised to consumers or retailers. (CCX 63; Tr. 1-3005). There is no evidence in the record that a single one of these products ever reached an end-use consumer or consumer. (Tr. 1-3005). There is no evidence in the record that a single end-use consumer or consumer purchased this product. (Tr. 1-3005).

CCX 65 is an advertisement for various biodegradable products. (CCX 65). There is no evidence in the record that a single one of these products ever reached an end-use consumer or consumer. (Tr. 1-3005). There is no evidence in the record that a single end-use consumer or consumer purchased this product. (Tr. 1-3005).

CCX 79 is a specification sheet for a biodegradable plastic zipper. (CCX 79). This zipper is sold by the pallet, and is clearly intended for industrial customers. (CCX 79). There is no evidence in the record that a single one of these zippers ever reached an end-use consumer or

consumer. (Tr. 1-3005). There is no evidence in the record that a single end-use consumer or consumer purchased one of these zippers. (Tr. 1-3005).

CCX 97 and CCX 98 are images of enviroware biodegradable cutlery package and foam clamshells. (CCX 97-98). These products are sold by Dispoz-o and D & W Fine Packto distributors. (RPFF ¶ 626). The chain of distribution for these products end at businesses such as restaurants. (RPFF ¶ 626). Because Complaint Counsel called no fact witnesses, no evidence was presented at hearing to indicate that these products ever reached an end-use consumer or consumer. (Tr. 1-3005). There is no evidence in the record that a consumer or end-use consumer ever purchased these products. (Tr. 1-3005).

CCX 103 is a picture of a biodegradable plastic frisbee. (CCX 103). This evidence lacks foundation. There is absolutely no evidence in the record, testimonial or otherwise, to explain the significance of this image. (Tr. 1-3005). There is no evidence in the record that this frisbee ever reached an end-use consumer or consumer. (Tr. 1-3005). There is no evidence in the record that a single end-use consumer or consumer purchased one of these frisbees. (Tr. 1-3005).
CCX 112 through CCX 122 are pictures of various plastic bags that indicate they are biodegradable. (CCX 112-22). Complaint Counsel called no fact witnesses, and there is no testimonial evidence that any consumers or end-use consumers purchased these products. (Tr. 1-3005).

CCX 126 is a picture of a highlighter that says “biodegradable” on it. (CCX 126). This evidence lacks foundation, and there is no evidence to connect ECM with this highlighter. (Tr. 1-3005). CCX 139 is a picture of a biodegradable insole and informational material regarding the insole. (CCX 139). This evidence lacks foundation, and there is no evidence to connect ECM with this insole. (Tr. 1-3005).

CCX 142 is a picture of a biodegradable plastic bag. (CCX 142). This evidence lacks foundation, and there is no evidence to connect ECM with this insole. (Tr. 1-3005). This proposed finding of fact is completely unsupported by the citations from Complaint Counsel. For this reason ECM moves to strike this finding.

26. Every page of ECM's website, ecmbiofilms.com, has displayed the repeating tagline, "Additives for Manufacturing Biodegradable Plastic Packaging and Products," with a description of ECM's allegedly groundbreaking technology for biodegradable plastic. (CCX-22; CCX-19; CCX-24).

Response to Finding No. 26:

Respondent has no specific response.

27. ECM has distributed brochures aimed at "green business" promising that its technology yields "biodegradable plastic products" that are "priced competitively with, and have the same mechanical characteristics as, traditional non-degradable products." (CCX-7 at 5; RX-138).

Response to Finding No. 27:

Respondent has no specific response. However, it should be noted that these brochures were never distributed to end-use consumers or consumers. ECM's promotional and marketing information is exchanged through detailed business transactions with sophisticated corporations, to wit, plastics manufacturers, and not consumers or end-use consumers. (Sinclair, Tr. 761–67). ECM does not purchase any consumer-type advertising. (Sullivan, Tr. 701). ECM's advertising budget is less than $12,000 per year, which is mainly devoted to website maintenance. (Sullivan, Tr. 700).

28. ECM's flyers have called ECM Plastics "Biodegradable" or "100% Biodegradable." (CCX-3; CCX-12; CCX-15; CCX-17).

Response to Finding No. 28:

Respondent has no specific response. However, it should be noted that these flyers were never distributed to end-use consumers or consumers. ECM's promotional and marketing information is exchanged through detailed business transactions with sophisticated corporations, to wit, plastics manufacturers, and not consumers or end-use consumers. (Sinclair, Tr. 761–67). ECM does not purchase any consumer-type advertising. (Sullivan, Tr. 701). ECM's advertising budget is less than $12,000 per year, which is mainly devoted to website maintenance. (Sullivan, Tr. 700).

29. ECM's letters have certified the biodegradability of plastics made with ECM Additive. (CCX-10; CCX-11).

Response to Finding No. 29:

The 2007 (CCX 10) and 2008 (CCX 11) letters that Complaint Counsel cites references were never intended to be provided to consumers or end-use consumers. That is evidenced by the closing line: "thank you again for your interest and for using our technology in many of your plastic products." (CCX 11, at 2). Instead, these letters were intended to be provided to plastic manufacturers and producers. Furthermore, there is no evidence in the record that these letters were provided to end-use consumers. (Tr. 1-3005).

30. ECM's emails with customers have echoed and expanded on unqualified biodegradable claims made in marketing materials. (CCX-317; CCX-341; CCX-342; CCX-344).

Response to Finding No. 30:

ECM has always been transparent with customers, and always explained that "biodegradation is a natural process that occurs around the world but at varying speeds due to various conditions." (RX 137). There is no record evidence establishing that any ECM customer that received an ECM email used the content of that email in marketing plastic products to sell to end-use consumers. (Tr. 1–3005; CCX 0–RX 970).

31. ECM is not the only company that offers a biodegradable additive. (CCX-6 (ECM marketing flyer explaining differences between ECM's additive and competing technology); CCX-12 (same); CCX-17 (ECM webpage with same); CCX-21 (presentation comparing compostable technologies with ECM additive)); (Sinclair, Tr. 775 (ECM sells its additive in a competitive market)).

Response to Finding No. 31:

Respondent has no specific response. ECM's product is the oldest product on the market, and is a successful cost-effective solution for companies looking to reduce long-term environmental impact. (CCX 818 (Sinclair, Dep. at 120); CCX 820 (Sullivan, Dep. at 56–57); CCX 445)).

32. ECM claimed that its additive causes plastic to completely biodegrade in nine months to five years. This claim has pervaded ECM's marketing materials and customer communications. (CCX-3; CCX-5; CCX-6; CCX-7 at 6; CCX-10; CCX-19 at 5; CCX-242 at 15; CCX-245; CCX-269; CCX-275-CCX-280; CCX-283; CCX-296; CCX-299; CCX-303; CCX-326; CCX-384; CCX-809 (Flexible, Dep.at 20; CCX-800 (BER, Dep. at 19; CCX-822 (ANS, Dep. at 13; CCX-812 (Kappus, Dep. at 14); (Sinclair, Tr. 768 ("We certainly have, you know, used those words out there . . .")); (Sinclair, Tr. 974-975 (discussing Sinclair email characterizing 9 month to 5 year time frame as "a window of biodegradation")); (Sinclair, Tr. 983 (discussing CCX 1008, 2009 Sinclair email claiming that biodegradation time for most products will be nine months to five years)); (Sinclair, Tr. 1606 (discussing 2007 Sinclair affidavit)); (Sullivan, Tr. 716 (testifying that ECM told customers its additive would cause plastics to biodegrade in a landfill in nine months to five years)); (RX-135 at 1, 5).

Response to Finding No. 32:

ECM stopped making the nine month to five year claim after the 2012 revision of the Green Guides. (RPFF ¶ 314; Sinclair, Tr. 770-71). ECM offered its "9 month to 5 year" degradable claim not as a performance claim, but as a means to distinguish its technology from competing technologies claiming to satisfy short-term compostability standards. (Sinclair, Tr. 768; Sullivan, Tr. 711). ECM always explained the actual rate of biodegradation for each specific piece of plastic was, of course, subject to numerous disposal conditions. (Sinclair, Tr. 769; RX 137).

ECM had a reasonable basis to make the 9 months to 5 years claim at the time it made the claim based on Mr. Sinclair's own testing, Mr. Riley's own testing and assurances to Mr. Sinclair, and the opinions of two highly qualified scientists, Dr. Barber and Dr. Litt. (RPFF ¶¶ 49-66). Mr. Sinclair and Mr. Riley performed a myriad of home tests on plastics amended with the ECM additive, including burying the plastic in various places and observing the extent to which it broke down, and performing aerobic and anaerobic tests in sealed drums. (RPFF ¶¶ 52-53). In all of these tests, they observed visual indications of partial or complete biodegradation. (RPFF ¶ 54). Mr. Riley also conveyed the findings of Dr. Barber's McClaren/Hart report to Mr. Sinclair. (RPFF ¶ 49). This report stated that "the results of the aerobic degradation tests indicate that, in time, plastics produced using ECM pellets will biodegrade in aerobic conditions." (RPFF ¶¶ 57, 61, 66). The report further stated that ECM plastics should break down under anaerobic conditions as well, although at a slower rate than 100 percent ECM pellets. (RPFF ¶ 63). Based on all of this information, Mr. Riley and Mr. Sinclair had a reasonable basis at that time to make the 9 month to 5 year claim.

33. ECM claims that plastics treated with its additive will biodegrade in a landfill. (CCX-3; CCX-6; CCX-7 at 6; CCX-11; CCX-12; CCX-15; CCX-19 at 5; CCX-242 at 15; CCX-276; CCX-372).

Response to Finding No. 33:

Respondent has no specific response.

34. Competing technologies do not work in anaerobic environments like landfills. (CCX-818 (Sinclair, Dep. at 77-78)).

Response to Finding No. 34:

That finding mischaracterizes Robert Sinclair's deposition testimony. There are numerous technologies that compete with ECM including other additive companies, compostable plastics, replacement resin companies, and oxo-degradable producers. (RPFF ¶¶ 322-25). The portion of Mr. Sinclair's deposition testimony cited by Complaint Counsel is limited to a discussion of compostable plastics. (CCX 818 (Sinclair, Dep. at 77-78)). Mr. Sinclair explained that products that are designed to biodegrade in a compost environment (i.e., compostables) do not biodegrade in a landfill. (CCX 818 (Sinclair, Dep. at 77-78)).

Furthermore, Robert Sinclair testified at hearing regarding technologies that compete with ECM and their efficacy. (Sinclair, Tr. 775-77). Complaint Counsel has no proper purpose for citing to deposition testimony when the topic was addressed at hearing. Thus, ECM moves to strike this finding.

35. ECM's claims that ECM Plastics completely biodegrade in 9 months to 5 years and in landfills are material to its customers. (CCX-819 (Sinclair, Dep. at 231; 292); (Sinclair, Tr. 829 ("But the biodegradability is important to them [customers] in one fashion or another; otherwise, they wouldn't be coming to us.")); (Sinclair, Tr. 922 ("Rate wasn't that big a deal for most people. And now we've progressed where we saw that you and others are all concerned with the rate, and so we had to make different analogies and talk to him and others in other ways.")); (Frederick, Tr. 1157-1158 (stating, generally, that studies indicate that biodegradable claims matter to consumers)); (Sullivan, Tr. 721 (testifying that ECM customers often asked ECM how quickly its additive caused plastics to biodegrade)); (RX-135 at 5-6 (customer asks "how long in typical landfills does your plastic break down?")).

Response to Finding No. 35:

ECM's former claim that plastic amended with the ECM additive biodegrade in a landfill in 9 months to 5 years was not material to its customers because it was understood that this was not a rigid timeframe and ECM's customers were only concerned with intrinsic biodegradability and complying with FTC regulations. (Sinclair, Tr. 769-70)

ECM always explained the actual rate of biodegradation for each specific plastic to customers as being an approximation that was, of course, subject to numerous disposal conditions. (Sinclair, Tr. 769). ECM explained to customers that it had seen products biodegrade in less than nine months in some conditions, however, conditions in an extremely dry or cold climate might result in biodegradation in far more than five years. (Sinclair, Tr. 769–70). ECM customers and their downstream customers do not care how long it takes for a product to biodegrade. (Sinclair, Tr. 775). ECM's customers do not even think about how long it takes for plastic containing the ECM additive to biodegrade. (CCX 800 (Ringley, Dep. at 32)).

Additionally, in response to Mr. Sinclair's 'Green Guides Update' email (RPFF ¶¶ 380-82), ECM customers did not cancel their contracts, instead they asked whether they were now precluded from claiming the product was "biodegradable." (RX 60; RX 69; RX 73). ECM's customers are all sophisticated plastic manufacturers. (Sinclair, Tr. 773–74). ECM's customers test their products with the ECM additive before making any purchase. (RPFF ¶ 401). Rate of biodegradation is not material to any of ECM's customers' purchases. (RPFF ¶¶ 605–725). Additionally, Dr. Stewart found that no specific rate of biodegradation is material to consumers' purchasing decisions. (RPFF ¶¶ 1300–08, 1310–12, 1315–18, 1322, 1333–39).

36. ECM's customers pass on the same or similar claims to ECM's nine month to five year claim in their own advertising. (CCX-33 (9 months to 5 years claim in ad for

AirPouch biodegradable air pillows); CCX-34 (9 months to 5 years and landfill claims in AirPouch "Sales and Marketing Alert"); CCX-37 (website ad for biodegradable cards claims 9 months to 5 years); CCX-38 (biodegradable packing ad claims 9-5 in landfill); CCX-38 (Customer's FAQs for "Good Earth packaging" claim biodegradation in landfill); CCX-41 (Customer ad for biodegradable film and bags claim biodegradation in landfill); CCX-43 (landfill claim in ad for "enviroware"); CCX-44 & 45 (9 months to 5 years and landfill claims on art for grocery bag); CCX-50 at 2 (landfill claim in ad for storage cases and boxes); CCX-57 (9 months to 5 years claim in fact sheet for biodegradable vinyl); CCX-61 (landfill claim in ad for biodegradable bottle); CCX-105 (9 months to 5 years claim on ad for film); CCX-134 (9 months to 5 years and landfill claims on bag); CCX-563 (9 months to 5 years and landfill claims on ad for air cushions); CCX-565 (9 months to 5 years and landfill claims on ad for loosefill); CCX-627 (9 months to 5 years and landfill claims on fact sheet for "Bio Ultra Blend Liners"); CCX-811 (IPB, Dep. at 40 (customer acknowledging passing of 9 months to 5 years and landfill claims to downstream customer))).

Response to Finding No. 36:

The evidence cited by Complaint Counsel does not support the stated proposition. ECM's nine month to five year claim (discontinued approximately three years ago) has never made its way to the end-use consumer level (except in two isolated instances cited by Complaint Counsel, CCX 44-45; CCX 134), because it is not material to purchasing decisions. In the rare instance when a product containing an ECM additive is labeled, it ordinarily has a naked "biodegradable" claim upon it, which is the only claim ECM has in its certificate of biodegradability. (RX 00; RX 02; RX 03; RX 14; RX 15; RX 16; RX 17; RX 22; RX 26; RX 28; RX 29; RX 30; RX 315; CCX-30 ; CCX-31; CCX 32; CCX 36; CCX 39; CCX 43; CCX 46; CCX 47; CCX 49; CCX 50; CCX 52; CCX 59; CCX 60; CCX 63' CCX 64; CCX 65; CCX 66; CCX 79; CCX 97; CCX 98; CCX 99; CCX 100; CCX 101; CCX 103;CCX 104; CCX 107; CCX 109–CCX 133; CCX 135; CCX 136; CCX 138; CCX 139; CCX 140; CCX 142–CCX 151). Even in the examples cited by Complaint Counsel in this finding, only two products that could potentially be seen by an end-use consumer (but not purchased) contain a rate claim at all. (CCX 44-45; CCX 134).

Furthermore, not conceding the foundational issues in Complaint Counsel's Finding No. 25, only one product that an end-use consumer might see (CCX 44) contains a rate claim. Thus, the nine month to five year claim cannot be said to have been passed on to even a significant minority of end-use consumers.

37. After the Green Guides were issued, ECM removed many of its nine-month-to-five-years claims, replacing them with a disclaimer stating that "Plastic products produced with our additives will biodegrade in biologically-active environments (including most landfills) in some period greater than a year." (CCX-819 (Sinclair, Dep. at 53 (discussing pulling the 9 month to 5 year claim off of website at the end of 2012)); CCX-231 (voluntary access letter dated 8/30/2011); CCX-20 at 2 (ECM website in March 2013)); (Sinclair, Tr. 770-771 (discontinued the claim when the revised Green Guides were released because to make a biodegradable claim "it had to be a year or less. And we knew, you know, our stuff isn't going to be in a year or less . . . so we just said we're more than a year.")).

Response to Finding No. 37:

ECM only disputes Finding No. 37 insofar as it implies that ECM did not discontinue all of its nine-month-to-five-years statements once the Green Guides were revised in 2012. To the extent that ECM failed to discontinue any nine-month-to-five-years statements after the Green Guides were revised in 2012, that failure was inadvertent and due to error, and was not company policy. (Sinclair, Tr. 770–71; CCX 813 (Nealis, Dep. at 244–45 (explaining that when Mr. Nealis sent out the flyer with the 9 months to 5 years statement, that "it's [his] fault," that it's a "mistake," and that he did not obtain that flyer from ECM's server))).

38. ECM did not change its claim until at least October 2012, even though ECM's claims had been the subject of an FTC investigation since August 2011, and it did not completely remove the 9 months to 5 years claim until the end of 2013. (CCX-819 (Sinclair, Dep. at 54 (discussing pulling the 9 months to 5 year claim off of website at the end of 2013); CCX-231 (voluntary access letter dated 8/30/2011)).

Response to Finding No. 38:

The cited transcript page from Mr. Sinclair's deposition and the cited document do not support the stated proposition that ECM did not remove the 9 months to 5 year statement until the end of 2013. (CCX 819 (Sinclair, Dep. at 54); CCX 231)). In fact, in CCX 819, there is no page 54. (CCX 819 (Sinclair, Dep.)). To the extent that ECM failed to discontinue any nine-month-to-five-years statements after the Green Guides were revised in 2012, that failure was inadvertent and due to error, and was not company policy. (Sinclair, Tr. 770–71; CCX 813 (Nealis, Dep. at 244–45 (explaining that when he sent out the flyer with the 9 months to 5 years statement, that "it's my fault," that it's a "mistake," and that he did not obtain that flyer from ECM's server))).

39. ECM continued to make the nine-month-to-five-year and landfill claims on its website even after it added its disclaimer. (CCX-25 at 104, 117, 203, 208).

Response to Finding No. 39:

ECM cannot properly respond to Finding No. 39 because ECM cannot know what date Complaint Counsel refers to by "after it added its disclaimer." The cited document contains over 200 pages purportedly from the ECM website, but those pages are irrelevant because they lack any foundation and do not appear to be part of any coherent order or category. (CCX 25). To the extent that ECM failed to discontinue any nine-month-to-five-years statements after the Green Guides were revised in 2012, that failure was inadvertent and due to error, and was not company policy. (Sinclair, Tr. 770–71; CCX 813 (Nealis, Dep. at 244–45 (explaining that when Mr. Nealis sent out the flyer with the 9 months to 5 years statement, that "it's [his] fault," that it's a "mistake," and that he did not obtain that flyer from ECM's server))).

40. ECM continued to make the nine-month-to-five-year and landfill claims in its marketing materials that ECM distributed to customers, even after ECM added its disclaimer. (RX-138 at 9).

Response to Finding No. 40:

ECM cannot properly respond to Finding No. 39 because ECM cannot know what date Complaint Counsel refers to by "after it added its disclaimer." The cited document contains no date. (RX 138). In addition, RX 138, for the purposes being used in Finding No. 40, is irrelevant and lacks foundation. (RX 138). To the extent that ECM failed to discontinue any nine-month-to-five-years statements after the Green Guides were revised in 2012, that failure was inadvertent and due to error, and was not company policy. (Sinclair, Tr. 770–71; CCX 813 (Nealis, Dep. at 244–45 (explaining that when Mr. Nealis sent out the flyer with the 9 months to 5 years statement, that "it's my fault," that it's a "mistake," and that he did not obtain that flyer from ECM's server))).

41. ECM continued to make the nine-month-to-five-year and landfill claims in emails to customers even after it added its disclaimer. (CCX-259 (attaching flyer with 9 months to 5 years and landfill claims); CCX-281 (April 2013 email describing "time frame of nine months to five years" in a landfill); CCX-282 (October 2013 email describing biodegradation "in a period of 9 months to 5 years" in landfills); CCX-286 (May 2013 email stating, "we say nine months to five years for biodegradation to take place"); CCX-321 (July 2013 email explaining "time period of nine months to five years"); CCX-423 (October 2013 email describing 9 months to 5 years as the "typical" range); CCX-813 (Nealis, Dep. at 241-244 (Nealis acknowledging that he continued to send customers marketing flyer with 9 months to 5 years claim))).

Response to Finding No. 41:

ECM cannot properly respond to Finding No. 41 because ECM cannot know what date Complaint Counsel refers to by "after it added its disclaimer." In addition, CCX 259, CCX 281, CCX 282, CCX 286, and CCX 321 are e-mails from Thomas Nealis, who did not testify at trial, and those exhibits are therefore unsubstantiated hearsay and irrelevant without foundation.

(CCX 259, 281, CCX 282, CCX 286, CCX 321). CCX 423 is an ECM communication log, and is therefore unsubstantiated hearsay and irrelevant without foundation. (Chappell, Tr. 856 (noting that a communication log, such as CCX 423, is hearsay). At his deposition, Mr. Nealis clarified that when he sent out the flyer with the 9 months to 5 years statement, that "it's my fault," that it's a "mistake," and that he did not obtain that flyer from ECM's server. (CCX 813 (Nealis, Dep. at 244–45)). To the extent that ECM failed to discontinue any nine-month-to-five-years statements after the Green Guides were revised in 2012, that failure was inadvertent and due to error, and was not company policy. (Sinclair, Tr. 770–71; CCX 813 (Nealis, Dep. at 244–45 (explaining that when Mr. Nealis sent out the flyer with the 9 months to 5 years statement, that "it's my fault," that it's a "mistake," and that he did not obtain that flyer from ECM's server))).

42. Sixty-two percent of respondents to the Synovate study agree with the statement: "*If products I currently purchase were made less burdensome on the environment, I would be willing to pay a higher price*." (RX-856 at 24; CCX-865, ¶ 29).

Response to Finding No. 42:

Both Dr. Stewart and Dr. Frederick believe the Synovate study flawed. (Frederick, Tr. 1045, 1049-51; Stewart, Tr. 2513–17; RX 856 (Stewart Rep. at 5-9)). The yes or no question that Complaint Counsel relies on for this finding is a close ended question. Close ended questions do not afford the respondent the full opportunity to explain their answer. (Frederick, Tr. 1276; Stewart, Tr. 2513–14, 2517–18).

Due to the nature of this close ended question, it is unclear which "environmentally friendly" products the respondent would pay more for, how much more the respondent would be willing to pay or whether other characteristics of the product significantly outweigh this factor.

Thus, almost nothing can be gleaned from this isolated question.

43. ECM's disclaimer did not change its customers' understanding of the additive's function. (CCX-809 (Flexible, Dep. at 38 ("Q. Is it your understanding that there was a change in how the product worked? A. No. My understanding was a change in the rules, in terms of what we could call biodegradable . . . There wasn't any change in the product.")); CCX-809 (Flexible, Dep. at 29 ("Q. How quickly did you understand the product would cause your product to break down when you made the greater than one year qualifier? A. …That was our belief, was that in that range of nine month to five year, that that would fully degrade.")); CCX-800 (BER, Dep. at 33 ("Q. During that time ["approximately 2009 to the beginning of 2014"], BER understood that plastic treated with the ECM additive should biodegrade in nine months to five years? A. Yes."))).

Response to Finding No. 43:

In Finding No. 43, Complaint Counsel mischaracterizes ECM's customers' testimony. For example, Flexible Plastics simply understands that by adding the ECM additive to their plastic bags, that their bags will then break down faster than an untreated bag. (RPFF ¶ 532). BER Plastics actually never really thought about how long it would take an ECM amended plastic to biodegrade. (RPFF ¶ 605). ECM's customers all understand that the function of ECM's additive was simply to cause the final plastic product to become biodegradable, both before and after ECM added the greater than one year qualifier. (RPFF ¶¶ 329–31, 340–41, 387, 431).

44. ECM claimed that independent tests proved its additive caused ECM Plastic to biodegrade in 9 months to 5 years in a landfill in its marketing materials. (CCX-4; CCX-5; CCX-6; CCX-10; CCX-11; CCX-21 (presentation)).

Response to Finding No. 44:

The cited documents, which are unreliable hearsay and irrelevant without foundation, do not support the stated proposition. In the cited documents, ECM claims that independent tests prove that its additive renders plastic biodegradable, but not that independent tests prove that

plastic containing the ECM additive will biodegrade in 9 months 5 years. (CCX 4; CCX 5; CCX 6; CCX 10; CCX 11; CCX 21).

CCX 4 makes no reference to 9 months or 5 years. (CCX 4). In fact, CCX 4 states that "through years of testing … plastic products that are manufactured with at least a one percent (1%) load, by weight, of [the ECM additive] will fully biodegrade once they are placed in conditions wherein they are in constant contact with other biodegradable materials." (CCX 4). CCX 4 makes no mention of the rate of biodegradation of plastic containing the ECM additive. (CCX 4). CCX 5 similarly states that independent tests "certify the full biodegradation of most all plastic products manufactured with at least a one percent load of [ECM] additive." (CCX 5). CCX 5 does not support the proposition that ECM claimed independent tests proved its additive caused ECM Plastic to biodegrade in 9 months to 5 years in a landfill in its marketing materials. (CCX 5). CCX 6 makes no claim whatsoever about "independent tests," and therefore does not support Finding No. 44. (CCX 6). CCX 10 makes no claim at all regarding "independent tests," and therefore does not support the proposition in Finding No. 44 (CCX 10). CCX 11, like CCX 5, states that "tests concluded that the products were fully biodegradable under both aerobic and anaerobic conditions," without stating any specific rate of biodegradation. (CCX 11). CCX 11 therefore does not support the proposition that ECM claimed independent tests proved its additive caused ECM Plastic to biodegrade in 9 months to 5 years in a landfill in its marketing materials. (CCX 11).

It is remarkable that Complaint Counsel cites to CCX 21 for Finding No. 44, as CCX 21 does not contain the nine month to five year statement at all, and does not contain the word "independent" at all. (CCX 21). Therefore, like all other documents cited in purported support for Finding No. 44, CCX 21 does not support the proposition that ECM claimed independent tests proved its additive caused ECM Plastic to biodegrade in 9 months to 5 years in a landfill in

its marketing materials. (CCX 21).

45. ECM claimed that independent tests proved its additive caused ECM Plastic to biodegrade in 9 months to 5 years in a landfill in its communications with customers. (CCX-266; CCX-270 at 2; CCX-277 at 4; CCX-281; CCX-296 at 2; CCX-298; CCX-300; CCX-302; CCX-303; CCX-332; CCX-333; CCX-334; CCX-335; CCX-336; CCX-337; CCX-338; CCX-339; CCX-340; CCX-404 at 2)).

Response to Finding No. 45:

The cited documents, which are unreliable hearsay and irrelevant without foundation, do not support the stated proposition. ECM has not claimed in any of the cited documents that independent tests prove that its additive caused plastic to biodegrade in any specific rate, but only that it causes plastic to become biodegradable.

ECM does not claim in CCX 266 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 266). CCX 270 does not have pages numbers, so ECM cannot know what Complaint Counsel refers to by "CCX-270 at 2;" notwithstanding, nowhere in CCX 270 does ECM claim that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 270).

CCX 277 at page 4 states that "independent tests validate our ECM MasterBatch pellets as being biodegradable." (CCX 277, at P. 4). CCX 277 does not support the proposition that ECM claimed that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 277, at P. 4). ECM does not claim in CCX 281 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 281). ECM does not claim in CCX 296 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 296). ECM does not claim in CCX 298

that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 298).

In CCX 300, ECM states that it has "independent third party test results that prove" ECM's claims. (CCX 300). ECM does not define the nine month to five year statement as a "claim," so in CCX 300, ECM is not stating that it has independent third party test results that prove that its plastic will biodegrade in nine months to five years because nine months to five years is not a "claim." (Sinclair, Tr. 768 (explaining that nine months to five years "was never a definitive claim")).

ECM does not claim or otherwise state in CCX 302 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 302). ECM does not claim or otherwise state in CCX 303 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 303). ECM does not claim or otherwise state in CCX 332 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 332). ECM does not claim or otherwise state in CCX 333 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 333). ECM does not claim or otherwise state in CCX 334 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 334). ECM does not claim or otherwise state in CCX 335 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 335). ECM does not claim or otherwise state in CCX 336 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 336).

ECM does not claim or otherwise state in CCX 337 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 337). ECM does not claim or otherwise state in CCX 338 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 338). ECM does not claim or otherwise state in CCX 339 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 339). ECM does not claim or otherwise state in CCX 340 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 340). ECM does not claim or otherwise state in CCX 404 that independent tests proved its additive causes plastic containing the ECM additive to biodegrade in 9 months to 5 years in a landfill. (CCX 404).

46. ECM issued a "Certificate of Biodegradability of Plastic Products" to its customers. (CCX-1; CCX-446; CCX-454; CCX-455; CCX-492; CCX-509; CCX-557; CCX-567; CCX-612; CCX-613; CCX-837; CCX-727; CCX-756; CCX-824; CCX-800 (BER, Dep. at 29); CCX-802 (D&W, Dep. at 20-23); CCX-803 (DTE, Dep. at 25-26); CCX-804 (Eagle, Dep. at 23-24); CCX-809 (Flexible, Dep. at 40-41); CCX-810 (FP Int'l, Dep. at 33); CCX-811 (IPB, Dep. at 12-18); CCX-812 (Kappus, Dep. at 24-25); CCX-817 (Quest, Dep. at 29); CCX-821 (3M, Dep. at 33;35); CCX-822 (ANS, Dep. at 17-18); (Sinclair, Tr. 783)).

Response to Finding No. 46:

ECM only issued its certificate of biodegradability to its customers once they had completed product trials and signed a letter of assurance. (RPFF ¶ 1345). The letter of assurance states that they understand the manufacturing process of their plastics with the additive, they understand the additive must be loaded at a minimum of one percent (1%) by weight, and that failing to meet the load rate requirement may endanger the biodegradability of their plastic. (Sinclair, Tr. 783).

Every ECM certificate of biodegradability provided the ASTM definition of "biodegradability" (ASTM D883-12). (RPFF ¶ 1347).

47. ECM's "Certificate of Biodegradability" claims to "certify that numerous plastic samples, submitted by ECM Biofilms, Inc., have been tested by independent laboratories in accordance with standard test methods approved by ASTM, ISO and other such standardization bodies . . . ." (CCX-1 and CCX-14); (Sinclair, Tr. 890-891 (certificate issued to SL Plastic Company Limited states that the "biodegradation of submitted plastic samples were tested using ASTM D5209-91 . . . and then ASTM D5338.")).

Response to Finding No. 47:

Respondent has no specific response.

48. ECM's Certificate of Biodegradability states that the tests "certifies [sic] that plastic products manufactured with ECM additives can be marketed as biodegradable" and the certificate itself can be "used by [customer] to validate its claims to the biodegradability" of ECM Plastic. (CCX-1 and CCX-14).

Response to Finding No. 48:

Respondent has no specific response.

49. Microtech commissioned the McLaren/Hart report. (Sinclair, Tr. 1702-03).

Response to Finding No. 49:

Respondent has no specific response.

50. ECM often provided the "McLaren/Hart" or "ChemRisk" assessment to its customers. (CCX-732 ("Ecological Assessment of ECM Plastic," Prepared by ChemRisk, A Service of McLaren/Hart Inc., Feb. 16, 1999); CCX-266; CCX-322; CCX-333; CCX-334; CCX-335; CCX-336; CCX-337; CCX-338; CCX-339; CCX-340; CCX-818 (Sinclair, Dep. at 125 ("Q. And do you provide copies of this test to your customers? A. I think so. Yes, I believe we have many, many times.")); (Sinclair, Tr. 1010) (Sinclair "absolutely" sent the McLaren/Hart report to customers)); (Sinclair, Tr. 1702); (Sinclair, Tr. 1000-1001).

Response to Finding No. 50:

Respondent has no specific response.

51. The testing claim was essential to ECM's business, giving ECM credibility with its target audience, plastic manufacturers and other businesses. (CCX-818 (Sinclair, Dep. at 93 ("[Customers] want to see data from an outside lab."); CCX-813 (Nealis, Dep. at 20) (Q: What is the purpose of that certificate? A: To give to our customers to show that we have tested. It states in there that we have tested it to three different standards, ASTM standards. Q: And why is that important? A: To show that our product is biodegradable.")).

Response to Finding No. 51:

ECM cannot properly respond to Finding No. 51 because ECM cannot know what Complaint Counsel is referring to by "[t]he testing claim." Based on the citations to deposition transcripts that Complaint Counsel provides, it appears that Complaint Counsel is referring to some type of claim wherein ECM claims that laboratories have tested the ECM additive. ECM does not dispute that it told customers and potential customers that independent laboratories tested plastic containing the ECM additive and found that plastic containing the ECM is biodegradable. (*See, e.g.*, Barber, Tr. 2045–46, 2065).

52. And ECM's customers passed the testing ECM gave them (or ECM's testing claims) on to their customers. (CCX-35 (Customer's FAQs for "EarthAware Biodegradable Film" claim "independently tested" and offer certificate as proof); CCX-38 (Customer's FAQs for "Good Earth packaging" claim that "[i]ndependent labs…have substantiated all our claims"); CCX-41 (Customer ad for biodegradable film and bags claim "thoroughly tested by independent laboratories"); CCX-64 (Customer ad for "Cool Stuff Mailers" claims "certified biodegradable"); CCX-246 (customer passing testing claims to downstream customer); CCX-257 (same); CCX-258 (same); CCX-261 (same); CCX-491 (same)).

Response to Finding No. 52:

ECM cannot properly respond to Finding No. 51 because "testing claims" is vague and ambiguous. ECM does not dispute that some of ECM's customers passed tests ECM provided,

like the McLaren/Hart Report, onto their own customers. ECM also does not dispute that some ECM customers informed their customers that ECM certified the biodegradability of plastics properly manufactured with the ECM additive. Notably, the claims that ECM's customers and their customers made on the websites cited by Complaint Counsel in Finding No. 51 do not mention rate of biodegradation at all, but only that their products are certified biodegradable. (CCX 35; CCX 38; CCX 41; CCX 64). Thus, there is no evidence provided in Finding No. 52 that customers passed on or made any claim about rate of biodegradation.

53. ECM routinely provided the biodegradability certificate to its customers. (CCX-813 (Nealis, Dep. at 20) (explaining that ECM routinely provided the certificate)); (Sinclair, Tr. 783); (Sinclair, Tr. 784).

Response to Finding No. 53:

ECM only issued its certificate of biodegradability to its customers once they had completed product trials and signed a letter of assurance. (RPFF ¶ 1345).

54. ECM routinely told its customers that ECM had "proof" of its claims. (CCX-329 ("I would think your customers want proof the product is biodegradable and ECM Biofilms offers that proof."); CCX-301 ("We have done testing to prove the biodegradation…"); CCX-298 ("[W]e already proved what we needed to prove . . .")).

Response to Finding No. 54:

ECM has proof that plastics amended with the ECM additive at a 1% load rate caused the plastic to biodegrade within a reasonably short period of time after customary disposal. (RPFF ¶¶ 1606-07, 2001, 2133-2706). ECM provided its customers with test results that support this. (RPFF ¶¶ 420, 422, 429). Finally, Dr. Barlaz and Dr. Sahu concluded that ECM's biodegradability claim is substantiated by the body of testing performed on ECM amended plastics. (RPFF ¶¶ 1630-31, 1698, 2001).

55. ECM stood behind its claims. (CCX-323 ("We stand behind every product sold with our additives as 'biodegradable' and have successfully been doing this in the marketplace around the world for over 10 years"); CCX-331 ("We fully stand behind our products' efficacy based on the [testing] that we have and so can your customer."); CCX-380 ("[W]e have tested the mentioned ASTM test standards and we stand behind the biodegradation of our product with the ECM BioFilms additive.")).

Response to Finding No. 55:

As Complaint Counsel points out in Finding 55, ECM stands by the claim that the ECM additive, when properly infused into conventional plastics, renders those plastics "biodegradable." ECM has defined the term "biodegradable" with the ASTM definition. (RPFF ¶ 1347). ECM's testing has shown that ECM amended plastics are "biodegradable." (RPFF ¶¶ 1630-31, 1698, 2001).

56. The Certificate of Biodegradability was a means of assuring customers and ECM's customers' customers that ECM's additive worked as advertised. (CCX-272 (ECM providing customer with certificate "assuring you and your customers that the products made with our additives are fully biodegradable"); CCX-200 (same); CCX-341 (same); CCX-344 (same); CCX-346 (same); CCX-347 (same); CCX-348 (same). *See also* CCX-273; CCX-278; CCX-282; CCX-290; CCX-304; CCX-305; CCX-306; CCX-321 (ECM advising customer to "use" the certificate to prove claims); CCX-343 (ECM attaching certificate in response to request for "written validation" that additive will cause biodegradation in a landfill); CCX-419 at 3; CCX-681 ("Now in order to use in in [Palace's] products, they need your help in receiving a certification that their product is biodegradable. They need an official certificate that they can show whenever it is necessary and that none can sue them for fraud."); CCX-818 (Sinclair, Dep. at 183 ("[I]t's like having a guarantee on your box."))); (Sinclair, Tr. 783-784 ("we then fill out one of these biodegradable certificates that we send to them, saying that, okay, to you and to your customers, here is our statement that says, because you're complying with us, that your plastic products with our additives are going to be fully biodegradable.").

Response to Finding No. 56:

The certificate of biodegradability provided customers with the ASTM definition of biodegradability, thus removing any potential confusion regarding that term. (RPFF ¶ 1347).

Thus, every ECM customer and downstream customer that saw the Certificate of Biodegradability received the definition of "biodegradable" that ECM meant to convey.

57. ECM also used testing claims and the certificate to convince customers to purchase the additive without doing their own testing. ECM repeatedly told customers that testing was unnecessary due to ECM's own testing and its assurances in the certificate; testing would only create unnecessary costs and delay. (CCX-298; CCX-300 (thanks to the ECM certificate, no "need to incur the expense of duplicating our test results"); CCX-301 ("Due to the high cost and time needed we don't send samples out for testing. These tests can cost up to $25,000 and take over a year. We have done testing to prove the biodegradation and I have attached those for your use and review."); CCX-302 ("We do have concerns regarding how to test to confirm the biodegradability . . . To address your concerns about testing, because we have third party independent testing of our additive in plastic ECM BioFilms certifies that when used at a minnimum [sic] of 1% the product is biodegradable."); CCX-303; CCX-304 ("First remember that none of this [testing] needs to be done as we certify your products…"); CCX-305 ("Concerning testing, yes it is very expensive which is why most all customers rely on our certification from our hundreds of thousands of dollars of testing over the years rather than going through the expense themselves"); CCX-304 (Sinclair to Shields: "First remember that none of this [testing] needs to be done as we certify your products with our additives . . . ."); CCX-306; CCX-390 ("Testing is very expensive, which is why most customers rely on our certification"); CCX-394 ("Asked about testing – not necessary"); CCX-818 (Sinclair, Dep. at 185 ("Q. Does ECM encourage its customers to rely on its certificate in lieu of testing? A. Again, we want as fast and quick a sale as we can possibly get.")).

Response to Finding No. 57:

The first sentence in Finding No. 57 is legal argument, is not appropriate for a finding of fact, and contains no citation. ECM therefore moves to strike it. As for the second sentence, Complaint Counsel mischaracterizes the record by citing to unreliable hearsay documents that are irrelevant without foundation, and by citing deposition testimony when trial testimony is available on the same topic. ECM actually encourages customers to test the ECM additive, while at the same time informing customers that ECM will "back [] up" the customers based on all the testing that ECM has seen. (Sinclair, Tr. 772–73; Sullivan, Tr. 706 ("we've usually encouraged customers to get testing, that they want – if they – if they have concerns about their

product and their ability to support whatever they're going to claim that they then—for them to go ahead and get their testing.")).

58. ECM's customers relied on ECM's representations about its proof, i.e., the testing and the Certificate of Biodegradability. (CCX-822 (ANS, Dep. at 16 ("Q. Did you rely on ECM's testing as the evidence that the product worked as advertised? A. Yes."); CCX-800 (BER, Dep. at 24 ("Q. Did BER rely on ECM's testing as proof that its additive worked? A. Yes."); CCX-803 (DTE, Dep. at 28-29 ("Q. Did that fact [that ECM claimed to have tested] give Down to Earth comfort that ECM's product would perform as advertised? A. Yes."); CCX-804 (Eagle, Dep. at 32 ("Q. Did your company rely on ECM's claims relating to the alleged biodegradability of plastics containing its additive? A. Yes."); CCX-809 (Flexible, Dep. at 34; 38; 51 (explaining that he understood the certificate's purpose to be "so that we can certify that that…if somebody wants to see evidence that our bags are biodegradable, this is what I would provide them."); CCX-811 (IPB, Dep. at 40 ("Q. Island Plastic bags was relying on ECM for its interpretation of the McLaren/Hart report. A. Yes."); CCX-812 (Kappus, Dep. at 22 ("Q. Did Kappus rely on ECM's testing as proof that its additive worked? A. Yes, 100 percent.")).

Response to Finding No. 58:

ECM does not dispute that some ECM customers relied on tests that ECM forwarded to customers and relied on claims ECM made in its certificate of biodegradability to customers. Neither the tests nor the certificate of biodegradability contain the nine month to five year statement or proof of specific rates of biodegradation. (CX 14 (Certificate of Biodegradability); CCX 266E (McLaren/Hart Report)). However, ECM cannot properly respond further to Finding No. 58 because Complaint Counsel fails to further define what is meant by "representations about its proof."

59. ECM customers posted the Certificate of Biodegradability on their websites. (CCX-39 (excerpt from customer website displaying certificate); CCX-265 (email regarding downstream customer interest in posting certificate on website)).

Response to Finding No. 59:

ECM's certificate of biodegradability contains no rate claim, and instead makes a "biodegradable" claim. (CCX 14). Furthermore, the certificate ECM gives to its customers provides the ASTM definition of "biodegradable." (CCX 14; RPFF ¶ 1347). Thus, the certificate of biodegradability is a document of full disclosure, and the further downstream it is seen, the more transparent ECM's claims and the claims of its customers become.

Additionally, the pervasiveness of the certificate's use is indicative of the fact that rate claims were not material to customer decisions, and instead "biodegradability" without reference to specific rate is of actual importance.

60. ECM customers provided the Certificate of Biodegradability to their downstream customers. (CCX-822 (ANS, Dep. at 18; 28; CCX-800 (BER, Dep. at 30 ("Q. Why did you give [the certificate] to each customer that purchased the product? A. To certify that it was biodegradable . . . ."); CCX-800 (BER, Dep. at 18 ("Originally one of my customers asks how can you prove that my bag is biodegradable, they get the certificate…"); CCX-804 (Eagle, Dep. at 25-26 ("Q. And is this a certificate that you forward to your own customers who are interested in buying blown film containing the ECM additive? A. Yeah."); CCX-811 (IBP, Dep. at 18 ("Q. In fact, IPB regularly sent copies of the certificate to prospective customers of Island Plastic Bags. A. Yes. Q. IPB did that to provide prospective customers with assurance that ECM bags would in fact biodegrade. A. Yes."); CCX-34 ("Airpouch Sales & Marketing Alert" stating that "[s]ending this [certificate] to your customer should be your first response for validation"); CCX-257 (ECM customer providing certificate to its customer); CCX-258 (same); CCX-261 (same); CCX-345 (customer asking ECM for certificate because it "[h]elps me with sales."); CCX-351 (customer asking ECM for certificate "hot rush back to me as my customer in California is going to drop our products without some sort of proof that our products [are] biodegradable")).

Response to Finding No. 60:

ECM does not dispute that some of its customers provided ECM's Certificate of Biodegradability to their customers, but the citations for Finding No. 60 do not support the fact that **all** ECM customers provided the Certificate of Biodegradability to **all** of their downstream customers. Indeed, there is no record evidence at all to support the conclusion that even a significant minority of end use consumers ever saw a biodegradability or rate claim on products

they received in the market, let alone the ECM Certificate of Biodegradability. To the contrary, Dr. Stewart's survey evidence reveals no common understanding, among even a significant minority of consumers, as to the meaning of biodegradability. (Stewart, Tr. 2578–83).

61. ECM customers copy the language from the Certificate of Biodegradability verbatim in their own marketing materials. (CCX-812 (Kappus, Dep. at 22 ("We basically took the information that ECM had on their paperwork and moved it to our letterhead, transposed it on our letterhead . . ."); CCX-812 (Kappus, Dep. at 26-27 (explaining that most of the language from CCX-837 and CCX-838 was taken from ECM's marketing materials); CCX-62, CCX-458, CCX-459 (customer certifications with ECM certification language)).

Response to Finding No. 61:

ECM does not dispute that some of its customers copy the language from the Certificate of Biodegradability verbatim in their own marketing materials, but the citations for Finding No. 61 do not support the fact that **all** ECM customers copy the language from the Certificate of Biodegradability verbatim in their own marketing materials or that any of those "marketing" materials ever reaches end-use consumers.

62. ECM sells the right to make a "biodegradable" advertising claim. (CCX-819 (Sinclair, Dep. at 277 (stating that he advised customers to market biodegradability); CCX-21 at 30 ("Conclusion" of ECM marketing presentation is that "Products can be marketed as 'biodegradable'…"); CCX-330 (Email from ECM Sales Director to potential customer: "If you or your customers want an additive to make your bags totally biodegradable and they want to say so on the bags let me know.")).

Response to Finding No. 62:

Respondent has no specific response.

63. ECM provides its customers with the ECM biodegradable logo to place on their products, packaging, and advertisements. (CCX-819 (Sinclair, Dep. at 432 (Q. What claims did you intend to convey with the old logo to end-use consumers? A. That the product is biodegradable.); CCX-809 (Flexible, Dep. at 24-25 (explaining that he

provided logo that ECM sent him to his customers so that they could use it as a "sort of label on the box for, you know, for customers to see."); CCX-308 (email in which ECM advises customer on use of its logo); CCX-309 (same); CCX-316 (same); CCX-317 (same); CCX-319 (same); CCX-320 (same); CCX-322 (same); CCX-358 (ECM providing logo); CCX-359 (same); CCX-361 (same); CCX-362 (same); CCX-364 (same); CCX-374 (same); CCX-403 at 1 (same); CCX-411 (same)).

Response to Finding No. 63:

ECM does not dispute that it provided some of its customers with the ECM biodegradable logo to place on their products, packaging, and advertisements, but the citations for Finding No. 63 do not support the fact that ECM provided **all** of its customers with the ECM biodegradable logo to place on their products, packaging, and advertisements. Nor is there any evidence that the logo ordinarily appears on products distributed in the market. Nor is there any evidence that the logo has appeared to even a significant minority of end-use consumers.

63A. ECM biodegradable logo is a picture of a green tree with the words "ECM" and "Biodegradable." (CCX-8 and CCX-13).

Response to Finding No. 63A:

Respondent has no specific response.

64. Many customers use the ECM logo, especially on plastic bags. (CCX-816 (Poje, Dep. at 52; CCX-822 (ANS, Dep. at 24; CCX-803 (DTE, Dep. at 42; CCX-307 at 2 (customer explaining to ECM employee that he wanted to use the ECM logo on his bag); CCX-32 (portion of "biodegradable" apple bag with ECM logo); CCX-39 (excerpt from CHAMP website advertising biodegradable gold tees with ECM logo); CCX-44 ("biodegradable" grocery bag with ECM logo); CCX-47 ("biodegradable" shampoo container with ECM logo); CCX-73 – CCX-75 ("biodegradable" shopping bags with ECM logo); CCX-118 ("biodegradable" detergent bag with ECM logo); CCX-134 (bag with ECM logo); CCX-621 (kitchen bags with ECM logo); CCX-623 (restaurant bag with ECM logo)). Less frequently, customers used the ECM leaf logo. (*See, e.g.*, CCX-46; CCX-114; CCX-123).

Response to Finding No. 64:

The cited documents—which are unreliable hearsay and irrelevant without any foundation—and deposition testimony do not support the stated proposition. The word "many" is vague and ambiguous, so ECM cannot properly respond to Finding No. 64. Complaint Counsel fails to provide evidence that "many" customers use the ECM logo, or that ECM customers use the logo "especially on plastic bags." In fact, the only testimony Complaint Counsel cites to in Finding No. 64 from ECM is that of the deposition testimony of Alan Poje. (CCX 816 (Poje, Dep. at 52)). In that testimony, Mr. Poje testified as follows: "Q. When you were working at ECM, did you ever give the logo to any customers? A. If requested by Bob, yes. Q. And what was your understanding at the time of why the customers requested the logo? … A. Obviously for them to use it … on their product." So, there is no evidence that "many" customers, or even a significant minority of them, use the ECM logo, or that the logo is used "especially" on plastic bags.

65. ECM provides its customers with marketing materials for the customer to use when selling ECM "biodegradable" plastic. (CCX-816 (Poje, Dep. at 37); CCX-822 (ANS, Dep. at 20-21); CCX-350 (ECM providing flyers that "may be used for marketing"); CCX-364 ("You and your customers can use the attached logos…and their related promotional material."); CCX-368 (giving customer's "marketing department" permission to use ECM's flyer "as they see fit"); CCX-369 (recommending making sales "using the tools that we have given you"); CCX-370 (attaching "sales tools you may find helpful for your sales team"); CCX-373 (attaching "a good tool for your sales team"); CCX-387 (attaching marketing materials "for your sales team"); CCX-390 at 2 (attaching "flyer that might be useful for your sales people")).

Response to Finding No. 65:

ECM does not dispute that it provides some of its customers with marketing materials that those customers can then use when selling plastic containing the ECM additive, but the citations for Finding No. 65 do not support the fact that ECM provided **all** of its customers with

marketing materials that those customers can then use when selling plastic containing the ECM additive.

66. ECM's Director of Sales, Thomas Nealis, specifically advised customers to refer consumers to the ECM website. (CCX-308; CCX-320).

Response to Finding No. 66:

The citations provided do not support the stated proposition. CCX 308 is an e-mail correspondence between Robert Sinclair and Colin Farrant—Thomas Nealis is not a party to that correspondence and is not mentioned in that correspondence. (CCX 308). In CCX 320, Mr. Nealis is not "specifically advising" any customer to refer consumers to the ECM website. (CCX 320). Rather, Mr. Nealis is suggesting to a single customer that it can put ECM's website on their product, if they so choose. (CCX 320). Complaint Counsel provides no evidence that Mr. Nealis "specifically advised" any customer, let alone multiple customers, to refer consumers to the ECM website.

67. ECM's Director of Sales, Thomas Nealis, specifically advised customers to use ECM's flyer for marketing. (CCX-3; CCX-15; CCX-259; CCX-259A; CCX-266; CCX-266C; CCX-267; CCX-267E; CCX-271; CCX-271D; CCX-368; CCX-373; CCX-387; CCX-390 at 2; CCX-492 at 6).

Response to Finding No. 67:

The citations provided do not support the stated proposition. All of the cited documents are unreliable hearsay and irrelevant without foundation. CCX 3 and CCX 15 are just flyers and do not mention Mr. Nealis. (CCX 3; CCX 15). CCX 259 is an e-mail from Mr. Nealis to a prospective customer, providing a flyer, but not "specifically advising" the customer to use the flyer for marketing. (CCX 259; CCX 259A). CCX 266 is an e-mail from Mr. Nealis to a prospective customer, providing a flyer, but not "specifically advising" the customer to use the

flyer for marketing. (CCX 266; CCX 266C). CCX 267 is an e-mail from Mr. Nealis to a prospective customer, providing a flyer, but not "specifically advising" the customer to use the flyer for marketing. (CCX 267; CCX 267E).

CCX 271 is an e-mail correspondence between a total of four individuals, none of which is Mr. Nealis. (CCX 271). In CCX 368, Mr. Nealis tells a prospective customer that it "may use any or all the information on the flyer as they see fit," but does not "specifically advice the customer to use the flyer for marketing. (CCX 368). Furthermore, it is not possible to know which "flyer" Mr. Nealis is referring to in CCX 368 and Mr. Nealis was not called as a witness to testify at hearing, nor was he asked this question at his deposition. (CCX 368).

CCX 373 is an e-mail from Mr. Nealis to a prospective customer, providing a flyer, but not "specifically advising" the customer to use the flyer for marketing. (CCX 373). CCX 387 is an e-mail from Mr. Nealis to a prospective customer, providing a flyer, but not "specifically advising" the customer to use the flyer for marketing. (CCX 387). CCX 390 is a communication log, and nothing on page 2 supports the proposition stated in Finding No. 66. (CCX 390, at P. 2). Page 6 of CCX 492 is only a flyer, and does not support a finding that Mr. Nealis talking to any customer, let alone specifically advising any customer to use the flyer for marketing. (CCX 492, at P. 6).

68. ECM instructed customers to make unqualified biodegradable claims. (CCX-818 (Sinclair, Dep. at 42-43 (testifying that biodegradable would be a very reasonable claim for putting on an item in response to the question whether ECM advised its customer to use the biodegradable claim); CCX-819 (Sinclair, Dep. at 277 ("Q. So you advised your customers to use the term biodegradable in their marketing? A. Right."); CCX-260 (customer informing downstream customer of ECM's feedback on marketing claims: "This bag is Biodegradable" or "This bag is manufactured from 100% Biodegradable plastic"); CCX-315 (advising customer "you do not need to mince words with our additives"); CCX-316 (advising customer to use ECM logo and "state 'totally biodegradable'"); CCX-317 (advising customer on color and language for claim such as "Biodegradable" or "This Liner Is Totally Biodegradable"); CCX-

319 (suggesting that bag be labeled "Biodegradable/Recyclable"); CCX-320 (recommending "'packaging and product biodegradable' or simply biodegradable'"); CCX-321 (recommending using logo or printing "biodegradable" on bag)).

Response to Finding No. 68:

The cited documents and testimony do not support the stated proposition. First, CCX 321 does not contain any recommendation by ECM about using the logo or printing "biodegradable" on a bag, as Complaint Counsel contends. (CCX 321). Second, ECM never "instructed" any customer to make any claim. Rather, ECM offered its opinions and advice to its customers about claims, but only in those rare, select instances when customers reached out to ECM for advice. For example, in CCX 260, one ECM customer tells its downstream customer that it "contacted ECM Biofilms about printing 'This bag is 100% Biodegradable plastic.' [ECM] recommended printing 'this bag is biodegradable' since there is printing on the bag and the ink is not biodegradable." (CCX 260). Similarly, in CCX 315, the customer asks ECM if ECM has "any example statement we could put on our literature and labels?" (CCX 315). In response, ECM tells the customer that its customers "put things like 'Fully Biodegradable,' 'Biodegradable,' and such on their products." (CCX 315). In CCX 316, it is not possible to tell to what e-mail Mr. Nealis is responding to, however one can infer that he is responding to a question of how ECM's potential customer can advertise their bags made with ECM additive. (CCX 316). In CCX 317, ECM responded to its customer's statement that it is considering using a green tint bag. (CCX 317). In CCX 319, ECM responded to the customer's question of "[w]hat kind of logo/symbol or wording that can be used on our product/packaging if we use your additive[?]" (CCX 319). In CCX 320, ECM responded to a potential customer's specific questions about how to market plastic containing the ECM additive such as whether ECM has "a logo, special certification visualization or something that we can use it on the package?" (CCX 320).

69. ECM provided detailed guidance on a customer's specific ad copy. (CCX-283 (offering to customer to "work together on particular language that [downstream customer] would want"); CCX-307 at 1 (correcting advertising claim); CCX-308 (suggesting specific copy for biodegradable claim on bags); CCX-309 (same); CCX-397 (correcting customer's claim); CCX-408 (sending ECM's "rewriting" of customer's website page); CCX-562 (suggesting specific advertising language to place on bag made of ECM plastic); CCX-1095)).

Response to Finding No. 69:

This level of involvement by ECM is atypical. (RPFF ¶ 373). Rarely, an ECM customer will ask Mr. Sinclair what he thinks about their anticipated labeling language, and Mr. Sinclair will provide his opinion and feedback. (RPFF ¶ 373). ECM's customers usually put their marketing department to the task of developing claims. (RPFF ¶ 356). Thus, this instance represents an exception and not the rule. There is no record evidence that ECM provides even a significant minority of those companies that purchase its product advertising advice in general, or ad copy reviews in particular.

70. ECM was integrally involved in developing and approving the marketing claims for "biodegradable" grocery bags used by a Hawaiian grocery store chain called Down to Earth All Natural and Organic ("Down to Earth"). ECM offered its approval of Down to Earth's biodegradable claims in its press releases and on its bags. ECM recommended that specific, technical language about biodegradability be included in Down to Earth's claims. (CCX-497 (approving 2009 press release); CCX-498; CCX-803 (DTE, Dep. at 54-56)).

Response to Finding No. 70:

The first sentence in Finding No. 70 is a legal argument, arguing that ECM was "integrally" involved, contains no citation, and is therefore inappropriate as a proposed finding of fact. ECM therefore moves to strike it. As for the latter two sentences of Finding No. 70, ECM stated that it "liked" Down to Earth's news release and provided facts about the ECM biodegradation process; ECM did not "approve" the press release or any biodegradable claims within it. (CCX 497; CCX 498). In fact, Down To Earth did not even incorporate facts supplied

by ECM into their advertising. (CCX 803 (Santana, Dep. at 55 ("Q. You made the change that Mr. Poje recommended? A. No."))).

71. Robert Sinclair is the President of ECM. (CCX-818 (Sinclair, Dep. at 9, 62, 63; CCX-819 (Sinclair, Dep. at 378-379)); (Sinclair, Tr. 745).

Response to Finding No. 71:

Respondent has no specific response.

72. Mr. Sinclair is ECM's "main sales contact" and takes responsibility for ECM's claims. (CCX-350 (email from A. Poje to customer describing Sinclair's role); CCX-818 (Sinclair, Dep. at 194 (testifying" . . . but certainly everything in this company that has to do with claims or anything else about the product, you know, comes directly from me. I'm the final say on everything.")); (Sinclair, Tr. 915 (Sinclair agrees he is the "only person at ECM who is responsible for reviewing and approving claims")).

Response to Finding No. 72:

Respondent has no specific response.

73. Mr. Sinclair advises customers on both marketing and the "science" behind ECM's technology. (CCX-813 (Nealis, Dep. at 56-57; CCX-816 (Poje, Dep. at 22, 223; CCX-819 (Sinclair, Dep. at 343 ("Q. . . .Is there anyone in your staff who has in-house expertise on scientific testing? A. I am the person that handles all claims, everything to do with scientific testing and everything to do with anything of that sort.")); (Sinclair, Tr. 908 (Sinclair is the one who is "ultimately responsible at ECM BioFilms for addressing issues that come up with . . the science")).

Response to Finding No. 73:

Complaint Counsel has failed to provide support for the proposition that Mr. Sinclair advised customers on marketing. (*See* CCX-813 (Nealis, Dep. at 56-57; CCX-816 (Poje, Dep. at 22, 223; CCX-819 (Sinclair, Dep. at 343); Sinclair, Tr. 908)). The citations given only lend support for the proposition that Mr. Sinclair responds to customers' science questions. (*See*

CCX-813 (Nealis, Dep. at 56-57; CCX-816 (Poje, Dep. at 22, 223; CCX-819 (Sinclair, Dep. at 343); Sinclair, Tr. 908)). Accordingly, ECM moves that this finding be stricken for lacking of supporting citations.

74. Mr. Sinclair is a lawyer by training. (CCX-818 (Sinclair, Dep. at 7-8; CCX-819 (Sinclair, Dep. at 393-394); (Sinclair, Tr. 745-746); (Sinclair, Tr. 912)).

Response to Finding No. 74:

Respondent has no specific response.

75. Mr. Sinclair does not have any formal science training beyond a smattering of high school and undergraduate science classes, some time teaching science in the Cleveland Public Schools, and reading *Scientific American*. (CCX-818 (Sinclair, Dep. at 149-150)); (Sinclair, Tr. 746 (Q: "Are you a scientist?" A: "No, I'm not. I'm a layperson that has a good background in science and I've very much read a lot of science and think about it, and so forth, all the time, but no, I'm not a scientist.")).

Response to Finding No. 75:

Respondent has no specific response.

76. ECM's Director of Sales is Thomas Nealis. (CCX-819 (Sinclair, Dep. at 14 ("Q. Again, who is Tom Nealis? A. Tom Nealis is the Director of Sales located in Indiana"); CCX-813 (Nealis, Dep. at 9-10 ("Q. Do you have a particular job title? A. My title is Director of Sales. You can call me anything you want, but bottom line, I'm a salesman.")); (Sinclair, Tr. 761).

Response to Finding No. 76:

Respondent has no specific response.

77. Mr. Nealis disavows knowledge about most aspects of ECM's business and customer relationships. (*See* CCX-813 (Nealis, Dep. at 10-12)).

Response to Finding No. 77:

This is a mischaracterization of Mr. Nealis's deposition testimony. Mr. Nealis testified at deposition that he was not involved with the distributors for ECM, but only involved with the plastics manufacturers. (CCX 813 (Nealis, Dep. at 10)). He further testified that he didn't know the exact number of customers that ECM has, explaining that he doesn't have access to that information. (CCX 813 (Nealis, Dep. at 10-11)). He then testified that he believed customers bought the ECM additive to make their plastic products biodegradable, but that he didn't know the exact reasons why they wanted to do this. (CCX 813 (Nealis, Dep. at 11)).

78. Mr. Nealis claimed that he did not know how many customers ECM had. (CCX-813 (Nealis, Dep. at 10)).

Response to Finding No. 78:

Respondent has no specific response.

79. Mr. Nealis claimed that he did not know why they wanted to buy the ECM additive. (CCX-813 (Nealis, Dep. at 12)).

Response to Finding No. 79:

This statement is taken out of context. Mr. Nealis did testify that he did not know precisely why customers wanted to buy the ECM additive. (CCX-813 (Nealis, Dep. at 12)). However, he had already testified that he believed that manufacturers purchased the additive because they "want to make a plastic product that's biodegradable." (CCX-813 (Nealis, Dep. at 11)).

80. Mr. Nealis claimed that he did not know the size of ECM customers. (CCX-813 (Nealis, Dep. at 13).

Response to Finding No. 80:

This finding is irrelevant and Respondent has no specific response.

81. Mr. Nealis does not have any college degree. (CCX-813 (Nealis, Dep. at 53).

Response to Finding No. 81:

Respondent has no specific response.

82. Until mid-2013, ECM's Regulatory Specialist was Alan Poje. (CCX-816 (Poje, Dep. at 11; 31)); (Sinclair, Tr. 843 (Poje worked as ECM's regulatory affairs specialist)).

Response to Finding No. 82:

Respondent has no specific response.

83. Mr. Poje advised customers on plastics extrusion (the mechanics of adjusting the manufacturing process to incorporate the ECM additive). (CCX-816 (Poje, Dep. at 22).

Response to Finding No. 83:

Respondent has no specific response.

84. Mr. Poje had business cards describing himself as ECM's "Vice President for Engineering Development" and he described himself this way to at least one customer. (CCX-816 (Poje, Dep. at 32 – 33) (discussing CCX-677, an email in which Mr. Poje described himself to a customer as Vice-President of Engineering Development)).

Response to Finding No. 84:

This finding is irrelevant and Respondent has no specific response.

85. Mr. Poje claimed that he never actually filled the role of "Vice President for Engineering Development." (CCX-816 (Poje, Dep. at 31; 32-34)).

Response to Finding No. 85:

This finding is irrelevant and Respondent has no specific response.

86. Many of ECM's customers and downstream users are relatively small companies—"mom and pop"-type businesses. (CCX-819 (Sinclair, Dep. at 304); CCX-813 (Poje, Dep. at 14-15)).

Response to Finding No. 86:

CCX 813 is the deposition transcript for Thomas Nealis, not Allen Poje. (CCX 813 (Nealis, Dep. at 1)). The page cited of CCX 813 does not support the proposition contained in Finding no. 86.

This finding is a gross misstatement of the testimony contained in Robert Sinclair's deposition. (CCX 819 (Sinclair, Dep. at 304)). The referenced testimony is as follows:

> "Q: Let's go back. Do you know what kind of end-use products your additive makes it into?
>
> A: They're in all types of products.
>
> Q: So do some of those products go to – not to large companies?
>
> A: There are products that are packaging that will end up in mom or pop's grocery bag or whatever you want to say, absolutely."

(CCX 819 (Sinclair, Dep. at 304)).

It is clear from this testimony that Mr. Sinclair is referring to the grocery purchaser as a mom and pop, and not the retailer. (CCX 819 (Sinclair, Dep. at 304)). Even if Mr. Sinclair was referring to the retailer, the proposition that ECM customers are "mom and pop" – type businesses is not supported by this testimony. (CCX 819 (Sinclair, Dep. at 304)).

87. ECM's customers show that they did not have the resources or know-how to evaluate ECM's biodegradability claims (beyond seeking information from ECM itself) or conduct their own testing. (CCX-809 (Flexible, Dep. at 34-38 (answering series of

questions about resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER, Dep. at 21-24) (same); CCX-822 (ANS, Dep. at 14-16) (same); CCX-803 (DTE, Dep. at 13-19) (same); CCX-811 (IPB, Dep. at 34-38) (same); CCX-812 (Kappus, Dep. at 18-21) (same); CCX-804 (Eagle, Dep. at 31-32) (same); CCX-817 (Quest, Dep. at 34) (same)).

Response to Finding No. 87:

Every ECM customer has the resources to conduct their own testing because an ASTM D5511 biodegradability test is relatively cheap, usually starting around $2,000. (RX 873 (Ullman, Dep. at 73); RX 876 (Poth, Dep. at 14)). For example, Island Plastic Bags has an average annual revenue of $6.8 million, Dispoz-o had a 2008 revenue of $83 million, D&W Fine Pack had a 2009 revenue of $120 million and a 2013 revenue of $424 million, and Down to Earth Organic and Natural had an approximate revenue of $30 million from 2008 to 2013. (RPFF ¶¶ 452-54, 489, 568). Therefore, many ECM customers performed their own biodegradability testing. (RPFF ¶¶ 410-11, 549-550, 2242, 2257, 2457, 2478, 2507, 2524, 2550, 2559, 2581, 2603). In fact, of the dozens of gas evolution tests in the record, only the McClaren/Hart report was not performed by ECM customers. (RPFF ¶¶ 2133-2659). Thus, it is wholly incorrect to suggest that ECM customers were incapable of performing their own testing, because ECM customers in fact did perform their own testing, and the weight of the evidence shows the exact opposite to be true.

88. Island Plastic Bags is still a small company—only about 16 employees and, as such, does not employ anyone with any expertise related to biodegradability. (CCX-811 (IPB, Dep. at 33-38)).

Response to Finding No. 88:

Respondent cannot properly respond to this finding of fact because the term "small company" is vague and ambiguous. Island Plastic Bags has had approximate annual revenue of

6.8 million dollars from 2008 through 2013. (RPFF ¶ 568). Island plastic bags has been in business since 1992. (RPFF ¶ 557). Island Plastic Bags manufactures and sells high density and low density polyethylene bags in various dimensions and gauges, and also sells plastic cutlery. (RPFF ¶¶ 558-59). Island Plastic Bags sells its products in high volume to distributors and retailers. (RPFF ¶ 560). Thus, it is not true that Island Plastic Bags is a "small company" based solely on its number of employees. Furthermore, ECM BioFilms is a "smaller" company by Complaint Counsel's standards, maintaining a staff of only six employees. (RPFF ¶ 28).

89. Island Plastic Bags reviewed ECM's testing (the McLaren/Hart Report), but had no way to evaluate whether the testing had been properly conducted and could reliably support its conclusions. (CCX-811 (IPB, Dep. at 38-40)).

Response to Finding No. 89:

Island Plastic Bags' lack of in-house expertise would not preclude the company from performing its own biodegradability testing by contract or hiring a scientific consultant to assess the findings of the McClaren/Hart Report, however Complaint Counsel never called Mr. Hong as a fact witness, and as a direct result this court is unable to determine if Island Plastic Bags was truly incapable of evaluating ECM's testing. (Tr. 1-3005). Importantly, other ECM's customers **did** perform their own biodegradability testing by contracting with a testing laboratory. (RPFF ¶¶ 410-11, 549-550, 2242, 2257, 2457, 2478, 2507, 2524, 2550, 2559, 2581, 2603). Thus, this finding is inappropriate because Complaint Counsel has failed to show Island Plastic Bags actually lacked the ability to evaluate or have evaluated the McClaren/Hart Report and has failed to show Island Plastic Bags is representative of ECM customers.

90. Despite its sophistication in manufacturing, Island Plastic Bags needed to rely—and did, in fact, rely—on ECM when it came to understanding biodegradability. Island Plastic Bag's story is not unique. For example, the deposition of Eagle film extruders

> shows that the company "couldn't perform" any testing because it doesn't "have any of that testing equipment internally….Way too big of a thing for us to manage, being a small company." (CCX-811 (IPB, Dep. at 40); CCX-804 (Eagle, Dep. at 25)).

Response to Finding No. 90:

Complaint Counsel bases the finding that "Island Plastic Bags needed to rely – and did, in fact, rely – on ECM when it came to understanding biodegradability" on one question and answer in the Hong deposition:

> Q: Island Plastic Bags was relying on ECM for its interpretation of the McClaren/Hart report.
>
> A: Yes.

(CCX 811 (Hong, Dep. at 40).

The transcript reflects that Island Plastic Bags relied on ECM's interpretation of the McClaren/Hart report, not that Island Plastic Bags relied on ECM's definition for the term biodegradability. No fact witness from Island Plastic Bags was called by Complaint Counsel at hearing and, from the definition transcript, there are no questions concerning the extent to which Island Plastic Bags reviewed any other scientific information or testing germane to biodegradability of plastics infused with the ECM additive. (Tr. 1-3005). It is therefore a leap without cited support to conclude that Island Plastic Bags depended on ECM for its understanding of the term biodegradability. It is a second leap, without cited support, to conclude that because Eagle Extruders did not have in-house testing capability, that it depended on ECM's definition of biodegradability. Moreover, other ECM customers without in-house testing capability performed biodegradability testing on the ECM product by contracting with a testing laboratory. (RPFF ¶¶ 410-11, 549-550, 2242, 2257, 2457, 2478, 2507, 2524, 2550, 2559, 2581, 2603). Complaint Counsel have not shown that either Island Plastic Bags or Eagle Extruders are representative of ECM's entire customer base let alone of a significant minority of

those customers. Thus, this finding is inappropriate because the deposition transcript citations do not support the finding of Complaint Counsel.

91. Other customers did have the resources to conduct or commission their own testing. (CCX-172 (email between employees of potential ECM customer, identifying inadequacies in each of ECM's tests); CCX-173 (test on ECM plastic commissioned by potential ECM customer)).

Response to Finding No. 91:

Many of ECM's customers performed their own testing by hiring outside labs. (RPFF ¶¶ 410-11). Eden laboratories and Northeast laboratories both performed testing for ECM customers. (RPFF ¶¶ 406-07). Dr. Barlaz visited Eden laboratories and Northeast laboratories and found their testing procedures and facilities to be appropriate for anaerobic testing. (RPFF ¶¶ 2211-16, 2430-33).

92. 3M is a global manufacturer with approximately $30 billion in sales (employing 75-80,000 people). (CCX-821 (3M, Dep. at 12:)).

Response to Finding No. 92:

Respondent has no specific response.

93. 3M has its own environmental laboratory, with ready capacity to conduct its own testing of ECM's additive. (CCX-821 (3M, Dep. at 18-19)).

Response to Finding No. 93:

Respondent has no specific response.

94. 3M conducted a biodegradation study that showed no biodegradation of plastic containing the ECM additive. 3M is not unique. Other companies had sufficient sophistication in evaluating biodegradation to test and reject ECM's additive. For example, Covidien identified the potential issues related to the additive, and sent

> plastic with the ECM additive to an independent laboratory, Organic Waste Systems, for testing—which showed no biodegradation of ECM plastic. (CCX-153; CCX-154 and CCX-155 (project outline and data collection showing the rigor of 3M's testing process); CCX-230; CCX-254-256; CCX-157 (test); CCX-158 (presentation summarizing test); CCX-821 (Joseph, Dep. at 66, Ex. 17)).

Response to Finding No. 94:

Finding no. 94 contains a legal argument of counsel and is not appropriate for a proposed finding of fact, which is evidenced by the fact that the first four sentences all lack citations. This finding wholly ignores the dozens of positive tests conducted by ECM's equally sophisticated customers. (RPFF ¶¶ 406-07, 2130-2659). Other companies had sufficient sophistication in evaluating biodegradation, concluded based on independent tests that the ECM additive accelerated the biodegradation of plastics, and chose to purchase the ECM additive. (RPFF ¶¶ 549-550, 2242, 2257, 2457, 2478, 2507, 2524, 2550, 2559, 2581, 2603). These companies included FP International, Shields Bag & Printing, Fellows, PPC Industries, D&W and many more. (RPFF ¶¶ 549-550, 2242, 2257, 2457, 2478, 2507, 2524, 2550, 2559, 2581, 2603).

ECM's experts have testified that the Covidien and 3M tests are not proof that ECM additive-infused plastics are not biodegradable but are merely inconclusive without scientific analysis to establish the basis for a negative result. (RPFF ¶¶ 2886-2908). An inconclusive result cannot be equated with a negative test result unless the cause of the failure to biodegrade is identified through scientific inquiry, which did not occur in any of the cases cited by Complaint Counsel. (Sahu, Tr. 1937–43; Barlaz, Tr. 2272–74, 2335–38; Burnette, Tr. 2440–46). For a more comprehensive discussion of the testing performed by ECM customers, please see Response to Finding Nos. 174, 180–182.

95. Some companies had the resources to commission testing—but did not have the expertise to meaningfully evaluate the results. (CCX-802 (D&W, Dep. at 65, 94-95); CCX-801 (D&W, Dep. at 16-18; 25)).

Response to Finding No. 95:

In finding no. 95, Complaint Counsel's finding proposes that multiple companies lacked the expertise to meaningfully evaluate test results, but only miscites to a deposition by a D & W representative, Ashley Leite, and a deposition by another D & W representative, Donald Kizer. At deposition, Mr. Leite never testified that D&W lacked the expertise to meaningfully evaluate biodegradability test results. (*See* CCX 802 (Leite, Dep. 65, 94-95)). While Mr. Kizer testified that D&W did not have scientists on staff, he also testified that D&W contracted with scientists. (CCX 801 (Kizer, Dep. at 18)). Furthermore, D&W is a very large company, employing over 1,100 employees, and as such is fully capable of hiring, in-house or contracted, a scientist capable of explaining biodegradability test results. (CCX 801 (Kizer, Dep. at 17)). This finding is therefore unsupported by the record and should be struck.

96. ECM customers turned to Mr. Sinclair, ECM's president, for guidance in understanding negative results. (CCX-323-CCX-325 (Sinclair explains away bad test results); CCX-954)).

Response to Finding No. 96:

The evidence demonstrates that Robert Sinclair was aware of many positive tests showing that the ECM technology was efficacious. (RPFF ¶¶ 49-62). To the extent customers alerted him to inconclusive test results (a limited number of which exist), the evidence shows that Mr. Sinclair truthfully and accurately explained that those results were inconsistent with ECM's positive data, and he encouraged his customers to do their own testing and provided them with more information and data so that all interested persons could develop a better understanding of the outcomes. (CCX 422 at 54 (Sinclair requesting to see the data to better

understand the negative results); Sinclair, Tr. 772–73 (Sinclair testifying that ECM encourages its customers to conduct biodegradation testing)). To the extent complete scientific information was ever conveyed to Mr. Sinclair, his response and approach to inconclusive testing was consistent with ECM's expert testimony, wherein ECM's experts have explained that the inconclusive results are not proof of a negative result because the cause of inconclusiveness was never scientifically determined. (Sahu, Tr. 1937–43; Barlaz, Tr. 2272–74, 2335–38; Burnette, Tr. 2440–46). Moreover, they testified that the inconclusive results must be assessed and balanced against the totality of the scientific evidence, which includes an overwhelming number of positive scientific test data. *See infra*, Response to Finding Nos. 143, 144, 157, 168, 174, 449, 453.

97. Correspondence with these customers shows that Mr. Sinclair is adept at explaining away negative test results by assuming testing flaws and bias. (CCX-325 (explaining negative results because of testing has "fundamental problems"); CCX 575; CCX-422)).

Response to Finding No. 97:

ECM moves to strike this finding because it is based on a false representation of fact: that inconclusive test results are "negative test results." The record includes no evidence to identify the cause underlying any of the few tests that produced inconclusive results. Consequently, it is false to say that Mr. Sinclair "explained away negative test results." Mr. Sinclair's criticism of the testing discussed in CCX 325 is supported by the testimony in the record. Dr. Burnette explained that biofilms can contain hundreds to thousands of bacterial species. (RPFF ¶ 2091). Dr. Sahu explained how the creation of biofilms is essential to the mechanism by which the ECM additive accelerates the biodegradation of plastics. (RPFF ¶¶ 1722-27). Thus, it was reasonable for Mr. Sinclair to criticize the test in CCX 325 for weekly

cleaning of the test material. There is no proof that weekly cleaning of the test material is representative of a practice performed in any other test performed on ECM additive containing plastic. (RPFF ¶ 2002).

98. *Intentionally Left Blank.*

99. Mr. Sinclair also learned to steer potential customers away from testing labs that provided negative results and towards labs whose dubious testing protocols could produce a semblance of positive results. (CCX-422 at 53-61).

Response to Finding No. 99:

This is a mischaracterization of the evidentiary record and an argument of counsel. ECM moves to strike it. In fact, the email chain cited as CCX 422 occurred after Mr. Sinclair had recommended OWS to a customer, and does not substantiate the finding that Mr. Sinclair was steering customers away from OWS. (CCX-422 at 53-61). Additionally, this email chain provides absolutely no support for the assertion that Mr. Sinclair directed customers towards labs that provided positive results or that indeed all tests from any labs that tested the ECM product were uniformly positive or otherwise subject to question. (CCX-422 at 53-61).

100. *Intentionally Left Blank.*

101. *Intentionally Left Blank.*

102. ECM's spurious claims have not gone unnoticed; repeatedly, customers, distributors, and others informed Mr. Sinclair and ECM that ECM's testing did not substantiate its claims. (CCX-250; CCX-253 ("We chose ECM because of your strong claims for biodegradability, and now it seems we are unable to defend them."); CCX-323; CCX-327; CCX-328; CCX-375; CCX-381; CCX-382; CCX-386; CCX-391; CCX-400; CCX-402; CCX-409; CCX-428 ("Every scientist we have spoken to tell us that your claims are false and impossible to prove. We cannot put our name on a product that we cannot stand behind.")).

Response to Finding No. 102:

This finding is an argument of counsel and contains an as yet undetermined conclusion of law: whether ECM's testing substantiated its claims. Thus, ECM moves to strike it.

103. Mr. Sinclair knew that the National Advertising Division of the Better Business Bureau and at least two foreign tribunals had found that several ECM customers had made false and unsubstantiated biodegradability marketing claims (that used the very language that ECM assured its customers was backed by testing) concerning products containing the ECM additive. (CCX-26; CCX-27; CCX-28; CCX-177; CCX-178; CCX-179; CCX-180; CCX 181; CCX-182; CCX-183; CCX-184; CCX-185; CCX-186; CCX-187; CCX-188; CCX-189; CCX-190; CCX-191; CCX-375; CCX-471; CCX-203-207; CCX-214-215; CCX-219; CCX-225; CCX-222; CCX-570; CCX-810 at 47-49; CCX-184; CCX-188-CCX-193; CCX-696); (Sinclair, Tr. 1625 (upon receipt of the Masternet NAD decision, Sinclair offered to prepare a point-by-point refutation)); (Sinclair, Tr. 1630-1634 (admitting receiving copy of NAD decision against FP International)); (Sinclair, Tr. 1636-1637 (Sinclair was aware of the Dispoz-o NAD decision)).

Response to Finding No. 103:

ECM objects to Finding No. 103 because it is irrelevant whether Mr. Sinclair knew of any NAD decision or foreign tribunals that did not directly involve ECM. Furthermore, Finding No. 103 is a violation of this Court's September 3, 2014 Order because Complaint Counsel is referring to the NAD and foreign tribunal decisions for the truth of the matter asserted therein insofar as Complaint Counsel claims that those decisions "found that several ECM customers had made false and unsubstantiated claims." As the Court made clear, these decisions can only be used to support an argument for impeachment and to show that ECM received the decisions, but cannot be used as evidence of what those tribunals actually or did not find. (Chappell, Tr. 1617–18, 163–35, 1645–72).

104. ECM continued making its claims and routinely dismissed criticisms as nothing more than bias against the company. (CCX-323; CCX-324).

Response to Finding No. 104:

ECM moves to strike this finding because it is argument and not a finding of fact.

105. Mr. Sinclair has referred to Professor Narayan as, among other things, "very biased," and a "paid proselytizer." (CCX-818 (Sinclair, Dep. 284-289); (CCX-251; CCX-253; CCX-289; CCX-294)).

Response to Finding No. 105:

This finding is irrelevant, and Respondent has no specific response.

106. Mr. Sinclair has also accused entities such as the Biodegradable Products Institute ("BPI") and Organic Waste Systems, Inc. ("OWS") of being biased opponents of ECM. (CCX-819 (Sinclair, Dep. at 260 (describing BPI as "rabid opponents of us"); 262-281; 362); CCX-21 (describing BPI as "prime mover in the obfuscation campaign" conflating biodegradable and compostable technologies); CCX-251; CCX-253; CCX-273; CCX-290; CCX-295; CCX-297; CCX-422 at 54-63 (Sinclair accusing OWS of bias and skewing test results due to politics)); (Sinclair, Tr. 1692-1697 (discussing OWS's perceived bias and involvement with the "corn lobby")).

Response to Finding No. 106:

Mr. Sinclair's statements are truthful and have ample support in the record. (RPFF ¶¶ 1416-19). Furthermore, BPI's membership competes with additive companies like ECM, creating an inherent bias, and BPI has directly lobbied FTC against ECM, displaying actual bias. (RPFF ¶¶ 1412, 1415). Mr. Sinclair has expressed valid concerns over OWS's political activity and opposition to technologies that compete with compostables. (Sinclair, Tr. 1693-94).

107. ECM advertises on its website, www.ecmbiofilms.com. (CCX-25; CCX-726).

Response to Finding No. 107:

Respondent has no specific response.

108. The ECM website is publicly available and has been visited by at least some end-use consumers. (CCX-326; CCX-819 (Sinclair, Dep. at 312-314)).

Response to Finding No. 108:

Respondent objects to Complaint Counsel's use of deposition testimony of a witness who testified at hearing. (Sinclair, Tr. 745). Use of deposition testimony in this instance does not appear to be for impeachment purposes and is improper. Furthermore, Complaint Counsel had ample opportunity to cross-examine the witness regarding whether end-use consumers visited the ECM website at hearing. (Sinclair, Tr. 745-1019). This finding should be stricken as lacking reliability and proper support.

Furthermore, it should be noted that at deposition Mr. Sinclair merely stated that ECM had been contacted through its website by children looking for science fair projects and a handful of curious individuals inquiring about how the ECM additive worked, not to order the ECM product. (CCX 819 (Sinclair, Dep. at 312-314)).

109. Landfill conditions do not support short degradation times in a landfill. (CCX-893 at 10-12 ("Biodegradation in landfills is remarkably slow because typical U.S. landfills are primarily anaerobic environments that are relatively cool with low-moisture."); RX-853 at 3 ("[T]he suggestion that all materials should biodegrade within one, or even five years of disposal is not consistent with even the highest rates of biodegradation expected for [landfills]."); (Tolaymat, Tr. 133-134); (Tolaymat, Tr. 145); (Tolaymat, Tr. 155-156 ("it's going to take obviously more than five years for a – even the most biodegradable material to completely decompose in a landfill environment, even under the optimum conditions of wet landfills").

Response to Finding No. 109:

See Response to Findings Nos. 12, 127, 136, 154, 170, 415.

110. Since the Green Guides' revision in October, ECM has developed a version of its logo with the "some period greater than a year" disclaimer. However, ECM never

told customers to stop using the old logo and customers have continued to use the old logo. (CCX-819 (Sinclair, Dep. at 277-278, 407, 412-413)).

Response to Finding No. 110:

Respondent objects to Complaint Counsel's use of deposition testimony of a witness who testified at hearing. (Sinclair, Tr. 745). Use of deposition testimony in this instance is not for impeachment purposes and is improper. Furthermore, Complaint Counsel had ample opportunity to cross-examine the witness regarding ECM's logos, and even got very close to doing so when discussing rate claims with Mr. Sinclair. (Sinclair, Tr. 918-925). This finding should be stricken because it lacks reliability and proper support.

ECM informed all of its customers by email of the changes to the Green Guides and the effects those changes would have on claims. (RPFF ¶¶ 380-81). In that email ECM informed its customers that they would have to make their own determinations of what claims they could substantiate, but that for most customers a claim of some period greater than a year would appear to suffice. (RX 35–RX 77).

Lastly, Complaint Counsel has provided no evidence in the record that a single ECM logo containing a rate claim ever reached an end-use consumer. In finding no. 25, where Complaint Counsel purports to present products that reached "millions" of end-use consumers, there is no record support for that conclusion and not a single one of the products identified has an ECM logo containing a rate claim.

111. ECM's marketing materials contrast the "hundreds or thousands of years" that it takes for conventional plastics to biodegrade with ECM Plastics as biodegradable in a "hundredth" of that time or less. (CCX-19; CCX-21 ("[A]ll of the commodity plastics used in the world today will take hundreds of thousands of years or more to degrade naturally in the environment; Plastic productions with the ECM [Additive] will biodegrade . . . in a hundred thousandth of that time or less.")).

Response to Finding No. 111:

ECM did not make the statement, "with our additives, these same plastic formulas biodegrade in a hundredth of that time or less" with the intent to convey a specific timeframe. (CCX 19; RPFF ¶ 312). In fact, because the timeframe for conventional plastics is stated in broad, general ranges, "hundreds to thousands of years, or more," it is clear to any reader that a "hundredth" of that time would be within a broad range as well. (CCX 19). The intent of the statement is to convey that the ECM additive significantly reduces the time it takes for conventional plastics to biodegrade; a statement that is supported by the scientific evidence in this case.

Furthermore, the marketing material depicted in CCX 19 also states:

> The basic concept is that biodegradation is a natural process that occurs around the world but at various speeds due to various conditions. Plastics with our additives behave like sticks, branches or trunks of trees. Due to this fact, **we do not guarantee any particular time** because the time depends on the same factors that the biodegradation of woods and most other organic materials on earth depend - ambient biota and other environmental conditions…

(CCX 19 at 11).

Thus, it is clear that when the marketing material is taken in context, as a whole, that the net impression ECM was conveying is that individual articles of plastic will biodegrade at a speed dependent entirely on ambient biota and other environmental conditions. (*See* CCX 19).

112. ECM's marketing materials repeatedly reference landfills. (CCX-3; CCX-6; CCX-7 at 7; CCX-10 at 2; CCX-12; CCX-15; CCX-21 at 22; CCX-25 at 1).

Response to Finding No. 112:

Respondent has no specific response.

113. ECM's marketing materials specifically contrast its technology as working in landfills with other degradable alternatives that do not. (CCX-17).

Response to Finding No. 113:

The chart depicted in CCX 17 compares ECM amended plastics with oxo-degradable plastics and compostable bioplastics. (CCX 17). Oxo-degradable plastics have not been shown to biodegrade in landfills. (RPFF ¶ 347). Oxo-degradable plastics require oxygen to break down, and landfills are primarily anaerobic environments. (Barlaz, Tr. 2211). Compostable bioplastics are designed to decompose in a composting environment that is highly aerobic, and not the anaerobic environment of a landfill. (RPFF ¶ 327; Barlaz, Tr., 2211). In contrast, ECM amended plastics have been shown to biodegrade under conditions of customary disposal, including anaerobic conditions in landfills. (Sahu, Tr. 1752).

114. ECM's marketing materials with the new claim, "biodegrades in sometime greater than one year," still contrasted long biodegradation times for untreated plastic to the fraction of time for ECM Plastic. (CCX-25 at 104 ("Petrochemical plastics would normally take hundreds or thousands of years or even longer to biodegrade; with our additives, these same plastic formulas biodegrade in a hundredth of that time or less.")).

Response to Finding No. 114:

The cited document, which is unreliable hearsay and irrelevant without foundation, does not stand for the proposition stated. ECM did not make the statement, "with our additives, these same plastic formulas biodegrade in a hundredth of that time or less" with the intent to convey a specific timeframe. (CCX 25 at 104; RPFF ¶ 312). In fact, because the timeframe for conventional plastics is stated in broad, general ranges, "hundreds to thousands of years, or more," it is clear to any reader that a "hundredth" of that time would be within a broad range as well. (CCX 25 at 104). The intent of the statement is to convey that the ECM additive

significantly reduces the time it takes for conventional plastics to biodegrade; a statement that is supported by the scientific evidence in this case.

Furthermore, CCX 25 is not marketing material using the "sometime greater than one year" claim. (CCX 25 at 104). Thus, the finding is not supported by the evidence cited. Also, to the extent that ECM failed to remove any nine month to five year claims after the Green Guides were revised in 2012, that failure was inadvertent and due to error, and was not company policy. (Sinclair, Tr. 770-71).

115. *Intentionally Left Blank.*

116. *Intentionally Left Blank.*

117. *Intentionally Left Blank.*

118. *Intentionally Left Blank.*

119. *Intentionally Left Blank.*

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122. *Intentionally Left Blank.*

123. *Intentionally Left Blank.*

124. *Intentionally Left Blank.*

125. *Intentionally Left Blank.*

126. *Intentionally Left Blank.*

127. ECM's experts have opined that it would be unreasonable to believe that plastic products will biodegrade in one year or even five years because these times are inconsistent with even the shortest expected degradation times. (*See, e.g.*, RX-853 at 3 ("[T]he suggestion that all materials should biodegrade within one or even five years of disposal is not consistent with even the highest rates of biodegradation expected for mixed MSW."); RX-855 at 8 ("[T]he expectation that all plastics with the ECM additive added in the usual amount (i.e., at a level of 1 or at most a few percent) should completely . . . degrade in typical landfill conditions, in a time period of 1 year or even 5 years, is unrealistic.")).

Response to Finding No. 127:

Complaint Counsel cited to the expert reports of Drs. Barlaz and Sahu respectively, but misconstrues their expert testimony. Both Drs. Barlaz and Sahu testified that predicting rates of biodegradation in landfill is a near impossible task, and one that is unnecessary given the products involved. (Sahu, Tr. 1828-1836, 1886, 1953; RX 855 at 27 (Sahu Rep.); Barlaz, Tr. 2283-84; RX 853 at 12 (Barlaz Rep.). Dr. Barlaz and Dr. Sahu did not testify (or write in their reports) that plastics manufactured with the ECM additive could not biodegrade within five years of disposal under certain conditions, particularly if the plastic is disposed of in an environment with elevated moisture and temperature levels (for example, an anaerobic digester). Rather, Drs. Barlaz and Sahu simply testified that application of a standard "rate" for "all materials" involving the ECM additive would be incorrect and inconsistent with the rates of degradation observed in MSW settings. (RX 853 at 3; RX 855 at 8).

128. Dr. McCarthy is a professor of Plastics Engineering at the University of Massachusetts Lowell with more than thirty years' experience studying both the chemical and mechanical behavior of polymers, including their biodegradability. (CCX-891 at 3-5); (McCarthy, Tr. 359, 361).

Response to Finding No. 128:

Dr. McCarthy's education is in macromolecular science, and not polymer engineering or polymers. (McCarthy, Tr. 480-81). Dr. McCarthy does not have a graduate level degree in polymer chemistry or biochemistry, and he lacks fundamental knowledge of biological organisms involved in biodegradation. (McCarthy, Tr. 481-82). During his time at UMass Lowell, a significant portion of Dr. McCarthy's activities were devoted to generating research funding and bringing money to the University. (McCarthy, Tr. 530-532; RPFF ¶¶ 1396-1422). A substantial amount of that money has come directly from ECM's competitors who manufacture competing environmentally-friendly plastics in the same market as ECM. (McCarthy, Tr. 538-48, 564; RX 171; RX 172). Those same competitors have lobbied the FTC to act against their competition. (RX 211). Dr. McCarthy is the beneficiary of licensing and royalty agreements with those same competitors (e.g., Metabolix), such that Dr. McCarthy has personally profited from sales of products by the very same ECM competitors who lobbied the FTC to eliminate the additive market. (McCarthy, Tr. 523-5368 612; RX 209; RPFF ¶¶ 1399-1415). Metabolix has even hired Dr. McCarthy on two separate occasions to give expert testimony on its behalf. (McCarthy, Tr. 523-24). McCarthy conceded that Metabolix competes with ECM for market share. (McCarthy, Tr. 538–408; RX 841 (McCarthy, Dep. 64–66)). Thus, to the extent Dr. McCarthy has "thirty years' experience studying" polymers, a substantial amount of that work has been at the request of, and with funding from, ECM's competitors which have independently expressed an interest in the outcome of this case. Dr. McCarthy is not an objective witness. He has a financial interest in the outcome of this case. (RPFF ¶¶ 1398, 1401–05, 1411–15, 1427–48, 1527–28). For a full discussion of the record evidence concerning Dr. McCarthy's bias and credibility issues, please see ECM's RPFF ¶¶ 1353-1580.

129. ECM recommends that a small concentration, 1% to 5%, of its Additive be melt-batch blended with a non-biodegradable conventional plastic, such as polyethylene. (CCX-4; CCX-17; CCX-818 (Sinclair Dep. at 164-166)); (Sinclair, Tr. 787-788 (1% ECM additive must be added during the manufacturing process to ensure that the additive remains viable in the finished product)); (Sinclair, Tr. 790 (if a manufacturer adds less than 1% by weight, the product will not biodegrade at all)) (Sinclair, Tr. 797-798); (Sahu, Tr. 1813 (ECM additive is added to plastics by "blending through melting and then recooling afterwards")).

Response to Finding No. 129:

ECM has generally recommended that customers stay near to the one percent (1%) value, and few customers have ever exceeded 2%. (Sinclair, Tr. 765, 775–76, 783, 787–88, 790; CCX 20; RX 137). Rarely has a customer tested a final product that included more than 2% of the ECM additive. (RX 248; RX 254; RX 263; RX 265; RX 266; RX 268; RX 273; RX 276; RX 392; RX 393; RX 394; RX 395; RX 396; RX 398; RX 399; RX 401; RX 403; RX 402; RX 405; RX 465; RX 467; RX 468; RX 836; RX 838; RX 839; CCX 534; CCX 546; CCX 547; CCX 548; CCX 952).

With respect to Dr. Sahu's discussion of manufacturing procedures (Sahu, Tr. 1813), ECM agrees that the ECM additive is melt-compounded into final plastic resin. ECM notes that the process by which the ECM additive is melt-compounded into the structure of the final plastic is the *exact same* manufacturing process by which Dr. McCarthy creates "copolymers" through melt-compounding biodegradable substances with conventional plastic resins. *Compare* Sahu, Tr. 1813, 1816-18 *with* RX 756 at column 6 (McCarthy '199 Patent, describing methods to manufacture biodegradable blends).

130. A physical blend of a biodegradable polymer with a conventional plastic does not alter the chemical structure of the conventional plastic, a view resoundingly supported by the literature cited by ECM's own experts. (CCX-891, ¶ 64; CCX-895 at 13 ("Addition of additives into conventional plastics does not increase the carbonyl content of the plastic nor does it reduce the molecular weight of the high molecular weight polymers or add hydrolysable linkages or unsaturated carbon bonds."); CCX-

895 at 13-14 ("Consistent with this fact [that additives do not affect the chemical structure of the conventional plastic], studies in which even large percentages of starch have been incorporated into PE (50% to >80%) do not show any improvement in the biodegradation of the PE fraction (Nakashima et al., 2002). For example blends of 50% and 83% starch added to polyethylene displayed a maximum of 49% and 78% weight loss upon 16 months incubation in soil (Nakashima et al., 2002)."); (McCarthy, Tr. 387); (CCX-892 ¶¶ 10-16 (explaining why the articles cited by Dr. Sahu are irrelevant to ECM's claims)); (Michel, Tr. 2873-2875).

Response to Finding No. 130:

ECM objects to this proposed finding, to the extent that the "finding" is actually an argument of counsel that misrepresents the underlying record content. The citations to the record do not accurately reflect the proposition offered by Complaint Counsel. Complaint Counsel argues that their scientific view is "resoundingly supported by the literature cited by ECM's own experts," however the source citations link is to their own expert's rebuttal report, Dr. Michel, not ECM's expert reports or testimony. (*see* CCX 895 at 13-14). Dr. Michel apparently cited "Nakashima, et al., 2002," which was **never cited** by Dr. Sahu in his testimony or his expert report, was not commented on by any of ECM's experts, and is not part of the record in this case. *See generally* RX 855 (Sahu Report). The factual citations in this paragraph, which only reference Complaint Counsel's experts, also do not represent the prevailing scientific theory as explained by ECM's experts.

Moreover the point advanced by Complaint Counsel is scientifically erroneous. For instance, Dr. McCarthy testified that published literature cited by Dr. Sahu was inapplicable to landfill environments primarily because it involved the compost environment and, according to Dr. McCarthy, "in a landfill environment there would be an absence of oxidation." (McCarthy, Tr. 387-88). Accordingly, Dr. McCarthy misleading suggested that "oxidation" occurs only in aerobic systems, which is an error of basic science. In fact, ECM's experts each testified that oxidative reactions are common in anaerobic systems, that those reactions do not require

"oxygen." (Sahu, Tr. 1862, 1870-73; Barlaz, Tr. 2190-92; Burnette, Tr. 2396-99, 2421-22, 2426).

In addition, Dr. Sahu cited considerable amounts of literature in his expert report (in contrast to Complaint Counsel's expert reports), including articles that assess the overall scientific understanding for biodegradability of plastics generally. (Sahu, Tr. 1729-30, 1754-56, 1791, 1885-86; RX 855 at 24-40 (Sahu Rep.). In the sections of the record cited in this proposed finding No. 130, the articles criticized by Dr. McCarthy do not address the "blending" point raised by Complaint Counsel. Other studies do, however, including those relied on by Dr. McCarthy himself. For example, in RX 925 at 647 (Luckachan & Pillai, 2011), the authors specifically discussed the methods to create "biodegradable polymer blends," and one of the methods they cited was "blending a thermoplastic resin with a biodegradable one." (RX 925 at 647). That statement in the peer reviewed literature is precisely the opposite of the proposed finding of fact now offered by Complaint Counsel (No. 130), wherein Complaint Counsel argues that the literature "resoundingly" shows that a "physical blend of a biodegradable polymer with a conventional plastic" cannot make the plastic biodegradable. Indeed, Dr. McCarthy wrote in his own article that "binary blends of bacterial polyesters with polyethylene (PE) and polystyrene (PS)" can result in a biodegradable 'blend.'" (RX 945). That statement, and others like it (e.g., RX 925 at 647), also contradict Dr. Michel's statement in CCX 895 at 13-14.

Dr. Ron Sahu testified that plastics manufactured with the ECM additive will biodegrade at a rate faster than corresponding plastics without such additive (Sahu, Tr. 1753-54), in part, because the ECM additive "goes into [the plastic] matrix, … of these many chains, some crystalline, some amorphous, some additives," (Sahu, Tr. 1809-10), and the weaknesses in the carbon chain created by the additive create opportunities for enzymatic attack of the plastic. (RX 855 at 28). Dr. Sahu's position was supported by the peer reviewed literature. (RX 855 at 29-

40; Sahu, Tr. 1791). That literature included articles discussing the biodegradability of crystalline and amorphous regions of conventional plastics. (Sahu, Tr. 1885-86 (citing RX 855 at 35)).

Complaint Counsel's experts have also conceded that conventional plastics are, in fact, biodegradable. *See* Complaint Counsel's Proposed Facts No. 7 ("Given enough time, all things are "biodegradable.") (citing Michel, Tr. 2869 ("[d]oes polyethylene biodegrade over thousands of year. Well, yes, it does . . .")).

Drs. Sahu and Burnette testified that the ECM additive, when melted within the plastic, helps to accelerate biodegradation, including the enzymatic biodegradation of polymer chains. (Sahu, Tr. 1809-10; Burnette, Tr. 2414, 2435-37). The test data provided by ECM supports that conclusion, as more than two dozen gas evolution tests have shown biodegradation of the underlying *plastic* substrate, as opposed to the ECM additive alone. (Barlaz, Tr. 2248 (explaining that results of many ECM gas evolution tests were statistically significant, and revealed that anaerobic biodegradability of the plastic, based on a calculation of the maximum amount of biodegradation that could possibly be sourced from the ECM additive alone); *see also* RX 248; RX 254; RX 263; RX 265; RX 266; RX 268; RX 273; RX 276; RX 392; RX 393; RX 394; RX 395; RX 396; RX 398; RX 399; RX 401; RX 403; RX 402; RX 405; RX 465; RX 467; RX 468; RX 836; RX 838; RX 839; CCX 534; CCX 546; CCX 547; CCX 548; CCX 952).

Finally, as explained *supra*, the process by which the ECM additive is melt-compounded into the structure of the final plastic is the *exact same* manufacturing process by which Dr. McCarthy creates "copolymers" through melt-compounding biodegradable substances with conventional plastic resins. *Compare* Sahu, Tr. 1813, 1816-18 *with* RX 756 at column 6 (McCarthy '199 Patent, describing methods to manufacture biodegradable blends). Through that

very same method of manufacture, Dr. McCarthy maintains that his "blends" have altered the chemical structure of the finished plastic. (RX 756).

131. Because the additive does not alter the chemical characteristics that make conventional plastics resistant to biodegradation, the non-biodegradable plastic component is no more susceptible to biodegradation after blending than it was before. (CCX-891, ¶ 64); (McCarthy, Tr. 387).

Response to Finding No. 131:

ECM objects to this finding of fact on grounds that it misleads, misstates the evidentiary record, and is unsupported by the scientific record. The ECM additive alters the chemical characteristics of a plastic, just as a color additive does, and just as Dr. McCarthy's own additives do. The errors in this proposed finding are evident from an analysis of Dr. McCarthy's own writings published before he was retained as a witness in this case. (RX 756; RX 928). Complaint Counsel relies on Dr. McCarthy's opinion as the sole support for the point that ECM's additive "does not alter the chemical characteristics" of the plastics. Yet Dr. McCarthy himself relied on "blends" of biodegradable plastics melt-compounded with conventional plastics to create finished "biodegradable" blends that did alter the chemical characteristics of the conventional plastic. (McCarthy, Tr. 543-548; RX 928).

Dr. McCarthy testified that "copolymers" and blends (like his technology) were distinct chemical blends of the material, while ECM's additive is simply two independent materials never combining. (McCarthy, Tr. at 387). Dr. McCarthy testified that the ECM additive would not alter the chemical characteristics of the conventional plastic, unlike, perhaps, his "co-polymer" technology identified in his '199 Patent, which he claimed was fully biodegradable. (RX 928; RX 756). But Dr. McCarthy also explained in his '199 Patent how he created these "blends," which method uses the exact same manufacturing processes that manufacturers use

when introducing ECM additives into plastics. (RX 928 at column 6). According to Dr. McCarthy in sworn statements made to the USPTO:

> **Standard melt processing equipment and processing conditions can be used to prepare the new blends.** Examples of polymer melt processing equipment that can be used to make the new blends include melt mixers (Banbury mixer), blenders, **extruders for sheet, film, profile and blown-film extrusion**, vulcanizers, calenders, and spinnerets for fiber spinning, molding, and foaming.

(RX 928 at column 6) (emphasis added). In that section, Dr. McCarthy described the method by which you make a "biodegradable blend" involving a conventional plastic with a biodegradable component, whereby the blending process alters the chemical characteristics of the plastic, and that process is exactly the same manufacturing process ECM uses. (RX 928; RX 756).

Complaint Counsel (or Dr. McCarthy) never explain why melt compounding of a "co-polymer" **alters** the chemical composition of plastics when using the manufacturing process defined called for by Dr. McCarthy in his patent, but that melt compounding of the ECM additive **does not alter** the chemical composition of plastics when using that very same manufacturing process as is called for by ECM. Like Dr. McCarthy's biodegradable plastic invention, the ECM additive is a biodegradable component that is melt-compounded into a conventional plastic using "standard melt processing equipment and processing conditions" including, e.g., "extruders for sheet, film, profile and blown-film extrusion." (*c.f.* RX 928 at column 6, *with* Sahu, Tr. 1813). According to Dr. McCarthy's own work, therefore, the ECM additive would necessarily alter the chemical structure of the plastic through melt compounding, which is obviously a chemical denaturing process. Dr. McCarthy's own work thus contradicts the proposed Finding of Fact in Paragraph 131.

In fact, when the ECM additive is melted into the plastic, it necessarily alters the chemical structure of the plastic, as is consistent with Dr. McCarthy's own work, and as Dr.

Burnette opined in his testimony: "When the ECM additive is added to the plastics mixture, you perturb the plastics mixture, not necessarily in a way that violates the integrity or the quality of the product, but as I explained earlier, enzymes look for points of weakness… If there is a way to take a bond that is already favorable, it would be to further reduce that bond strength." (Burnette, Tr. 2436).

132. Even assuming ECM Plastic degrades faster (*e.g.*, by breaking the plastic into smaller pieces), the amount of time it would take for the conventional plastic to completely biodegrade would not be reduced to five years or even decades in any environment. (CCX-891, ¶ 65); (McCarthy, Tr. 385); (Sahu, Tr. 1953-1954 (ECM plastic would take 30 years to completely biodegrade, possibly up to 100 years on the "very, very high side")).

Response to Finding No. 132:

ECM objects to this proposed fact because it incorrectly states the record evidence and misleads. First, at page 385 in his testimony, Dr. McCarthy offered no characterization of the length of time by which ECM plastics would be expected to biodegrade. (McCarthy, Tr. 385). Second, Dr. Sahu did not testify that an ECM product would require 30 to 100 years for biodegradation, which would be a misleading characterization of his testimony. (Sahu, Tr. 1953). In fact, Dr. Sahu explained that there are too many factors to consider when determining the rate and time frame for biodegradation, and that it would be impossible to pinpoint the length of time. (Sahu, Tr. 1953) ("[t]here is no one answer that might apply"). He eventually testified that a period of 100 years would be "on the very high value in the distribution," and he also wrote that such a time frame for biodegradation would still be of considerable benefit by reducing the lifespan of a conventional plastic by a substantial margin. (Sahu, Tr. 1953-54; RX 855 at 9).

133. ECM Plastic could take as long as the conventional plastic to biodegrade (because it still consists of 99% conventional plastic), or even longer (if the fragmented pieces become recalcitrant to biodegradation). (CCX-891, ¶ 65); (McCarthy, Tr. 386 ("ECM plastics will not completely break down in an appreciably faster rate than conventional plastics without the ECM additive")); (McCarthy, Tr. 681-82 (testifying that conventional nondegradable plastics treated with 1% ECM additive will not completely break down into elements found in nature within one year)); (McCarthy, Tr. 682 (testifying that conventional plastics treated with 1% ECM additive will not completely break down into elements found in nature within 5 years)).

Response to Finding No. 133:

Complaint Counsel's theory expressed in this proposed finding of fact is inconsistent with the scientific testing performed by ECM customers, which proved that the plastic itself and not the additive were biodegrading. ECM proved that the plastic biodegraded by showing that the amount of methane produced in the test systems could only have come from the plastic (not the additive), because the methane produced was far in excess of what could theoretically be sourced from the additive alone. (Barlaz, Tr. 2248 (explaining that results of many ECM gas evolution tests were statistically significant, and revealed that anaerobic biodegradability of the plastic, based on a calculation of the maximum amount of biodegradation that could possibly be sourced from the ECM additive alone); *see also* RX 248; RX 254; RX 263; RX 265; RX 266; RX 268; RX 273; RX 276; RX 392; RX 393; RX 394; RX 395; RX 396; RX 398; RX 399; RX 401; RX 403; RX 402; RX 405; RX 465; RX 467; RX 468; RX 836; RX 838; RX 839; CCX 534; CCX 546; CCX 547; CCX 548; CCX 952).

Thus, even assuming, *arguendo*, that the ECM additive could be wholly biodegraded completely and independent of the plastic, the amount of biodegradation observed in the test systems was far more than what could have come from the additive or the inoculum alone. (Barlaz, Tr. 2246-65 (testifying that, based on his analysis, there was competent and reliable evidence to show that plastics manufactured with the ECM additive are anaerobically biodegradable)). Complaint Counsel has made no attempt to contest Dr. Barlaz's well-reasoned

analysis wherein he opined that the ECM infused plastics were shown to be biodegradable through competent and reliable scientific evidence. Moreover, because Complaint Counsel's witnesses performed no analysis of the relevant study data themselves, their opinions concerning the test data are speculative, conclusory, haphazard, and contradicted by the more exacting scientific work of Dr. Barlaz. *See generally* Michel, Tr. 2966; Tolaymat, Tr. 316-321; McCarthy, Tr. 654).

134. The Competent and Reliable Scientific Evidence standard is consistent with the level of substantiation expected from experts in the field, who view claims of biodegradable conventional plastic with great skepticism. (CCX-891, ¶ 37; *see also* CCX-892).

Response to Finding No. 134:

Complaint Counsel's only citation for this proposed fact is Dr. McCarthy's reports. To prove biodegradability of plastics, Dr. McCarthy has himself relied on the same gas evolution testing ECM used. (Sahu, Tr. 1894-95; McCarthy, Tr. 541; RX 928; RX 756). Moreover, all of the experts in this case have agreed that gas evolution testing of the kind ECM possesses is competent and reliable to prove biodegradation. (ECM RPFF ¶¶ 1608-1628; Tolaymat, Tr. 171; McCarthy, Tr., 413-14; Sahu, Tr. 1792; Barlaz, Tr. 2245-46; Burnette, Tr. 2435-39; Michel, Tr. 2904-05). Finally, each of Complaint Counsel's witnesses has variously used the same gas evolution testing to investigate or prove biodegradability of plastic products. (ECM RPFF ¶¶ 1608-1628). Dr. Tolaymat even relied on a "BMP" test, which is less representative of the so-called "typical" landfill environment than the D5511 test. (Tolaymat, Tr. 237-38). Dr. Tolaymat testified that the BMP test (again, less representative of the "typical" landfill) was competent and reliable to prove anaerobic biodegradability in landfills; he performed that test himself when investigating biodegradability of plastics, and he recommended to Complaint Counsel that they

should perform the same test to assess ECM's claims (but they did not commission the test Tolaymat wanted). (Tolaymat, Tr. 218, 237-38, 356-57).

135. To satisfy polymer scientists that 1% additive will make conventional plastics biodegradable in a stated timeframe and disposal condition, the claimant should provide the results of appropriately-analyzed independent, well-designed, well-conducted, well-controlled testing. The testing should use the appropriate plastic application, load rate, inoculum, test conditions, and sample weight, over an appropriate duration of time. (CCX-891, ¶ 38); (McCarthy, Tr. 412).

Response to Finding No. 135:

ECM objects to the proposed finding of fact to the extent that the language is vague, ambiguous, and requires a subjective scientific application that is not provided by Complaint Counsel. For instance, the record contains no evidence from which to assess whether test conditions are "appropriate" as used by Complaint Counsel. Moreover, this proposed fact vaguely and ambiguously suggests that certain testing might support a claim that a plastic is "biodegradable in a **stated timeframe** and disposal conditions" (emphasis added), but Complaint Counsel has introduced no record evidence of the type of testing it would accept as proof of "rate" claims for biodegradable products. *See* ECM RPFF ¶¶ 1105-1344.

136. Dr. Tolaymat states that tests must simulate landfill conditions if the claim is disposal in such conditions. Our experts independently conclude that ECM's evidence falls short of these requirements for several reasons. (CCX-891, ¶ 81; CCX-893, ¶¶ 50, 59-85)); (Tolaymat, Tr. 176); (Tolaymat, Tr. 202 (faulting ASTM D5511 tests because they do "not simulate a landfill environment")); (Tolaymat, Tr. 296-297).

Response to Finding No. 136:

ECM objects to this proposed finding of fact, which is predicated on Dr. Tolaymat's opinion that testing conditions must "simulate" landfill conditions. Dr. Tolaymat rejected dozens of ECM studies because they did not, according to Dr. Tolaymat, "simulate" landfill conditions.

(Tolaymat, Tr. 235-37, 296; CCX 893 at 39-46). However, Dr. Tolaymat was unable to support his testimony with reasoned science, and his testimony was replete with contradictions and inaccuracies which render his ultimate opinion incredible and unreliable. *See* ECM's RPFF ¶¶ 2707-2885. For instance, Dr. Tolaymat rejected each and every D5511 test that showed ECM plastics had biodegraded. (Tolaymat, Tr. 243). He did that solely because those tests allegedly did not "simulate" the landfill environment, and regardless of whether those studies were methodologically sound. (Tolaymat, Tr. 218-19, 238, 243, 268-69, 296). Yet, he also testified that the BMP test was competent and reliable to prove biodegradability, even though he testified that the BMP test less resembles the landfill environment than the D5511 test that he rejected outright. (Tolaymat, Tr. 252-54). Dr. Tolaymat could not reconcile how a test could be "accelerated" to produce data within reasonable time frames (something with which he agrees), while simultaneously "simulating" the landfill environment sufficiently. (Tolaymat, Tr. 244-46).

He recommended test procedures that are not practical or even available commercially. (Barlaz, Tr. 2238-42). Dr. Tolaymat offered testimony that conflicted with Complaint Counsel's other witnesses concerning his recommended use of the BMP test. Dr. Tolaymat testified that ECM's expert, Dr. Barlaz, was an authority in the relevant scientific field, and that Dr. Tolaymat had relied on Dr. Barlaz as an authority, and Dr. Barlaz then testified that Dr. Tolaymat's opinion was clearly erroneous, misleading, and unsupported. (Tolaymat, Tr. 233-34; Barlaz, Tr. 2196-97). As stated fully in ECM's Proposed Findings of Fact, Dr. Tolaymat lacks the expertise to render an opinion as to what type of evidence can support a biodegradable claim. *See* ECM RPFF ¶¶ 2707-2885.

137. The tests conducted by Dr. Barber rely on a weight loss methodology. (CCX-892, ¶ 24); (Barber, Tr. 2100 (Dolco tests primarily involved a weight loss methodology to

determine biodegradation)); (Barber, Tr. 2106-2109 (Dispoz-o, EDS, FP International tests primarily involved a weight loss methodology to determine biodegradation)).

Response to Finding No. 137:

ECM agrees that Dr. Barber's testing involved weight loss as one testing endpoint. However Dr. Barber's testing also included confirmatory endpoints, such as the measurement of free chloride ions in solution, which corroborated the evidence of biodegradation recorded through weight loss. (Sahu, Tr. 1912-13; Barber, Tr. 2056; Burnette, Tr. 2415-18; RX 370 at 6; RX 259).

138. The scientific community does not consider weight loss tests alone sufficient for determining biodegradation. (CCX-892, ¶¶ 24-26; RX-855 at 41 ("It is conventional wisdom, now, with some justification, that the only true indicator of biodegradation is, in fact, gas evolution. . . ."); RX-855 at 42); (McCarthy, Tr. 414, 457).

Response to Finding No. 138:

ECM objects to this proposed finding of fact, in part, because it is inconsistent with testimony from Complaint Counsel's own witnesses. Dr. Tolaymat testified that weight loss is a suitable endpoint to assess biodegradation in an *in situ* landfill study. (Tolaymat, Tr. 224). Moreover, Dr. McCarthy concedes that his own testing involved the use of "weight loss" as an endpoint to measure biodegradation. (McCarthy, Tr. 858; RX 942).

139. Our experts criticize ASTM D5511 as a basis to support ECM's claims. (CCX-891, ¶¶ 51-53; CX-892, ¶ 21; CCX-893, ¶¶ 77-84); (Tolaymat, Tr. 202-212); (McCarthy, Tr. 452 (most problematic tests on ECM plastics were the 5511 tests)).

Response to Finding No. 139:

ECM objects to the proposed finding of fact in that it misleads and is argument (to wit, "our experts criticize …") rather than a finding of fact. Moreover, ECM disagrees that Complaint Counsel's experts "criticized" the use of ASTM D5511 as a basis to support ECM's

claims. In fact, Dr. Michel testified at length in support of the D5511 test, which he himself ran as a competent and reliable test to measure the biodegradability of commercial plastics. (Michel, Tr. 2904-06). Furthermore, Dr. McCarthy also testified that the D5511 test was suitable to prove biodegradability of plastics to the extent amount of biodegradability reached a certain threshold (note, however, that the record contains no evidence of any kind supporting Dr. McCarthy's threshold theory). Finally, even Dr. Tolaymat testified that the D5511 test is appropriate to prove whether a product is anaerobically biodegradable. (CCX 893 at 30 (Tolaymat Rep.) ("ASTM D5511 thus can provide data about anaerobic biodegradation")).

140. ECM's experts and Tom Poth of Eden Laboratories criticized ASTM D5511. (RX-853, at 8 (Dr. Barlaz stating "[M]any of the tests used to measure biodegradability, e.g., ASTM D5511, are designed to measure intrinsic biodegradability."); RX-854, ¶ 65 (Dr. Burnette stating "The ASTM D5511 test is not representative of all possible MSW landfill conditions.")); (Poth, Tr. 1522-1523 (confirming that the witness told Sinclair that the 5511 test was "on its way out" and "a cheap-and-dirty test")).

Response to Finding No. 140:

ECM objects to this proposed finding of fact because it misrepresents the witnesses' testimony. The witnesses testified that D5511 test, like many other tests, are not perfect, but that they are competent and reliable to assess intrinsic biodegradability of plastic materials. (Poth, Tr. 1451-52; Barlaz, Tr. 2219, 2274-75; Sahu, Tr. 1895-96; Burnette, Tr. 2373). In Thomas Poth's testimony, Complaint Counsel prevented the witness from testifying truthfully and accurately with respect to the D5511 method by leading the fact witness against his will:

Q: And you also told Mr. Sinclair that it was a cheap-and-dirty test basically; correct
A: That sounds about right.
Q: So you recognize that the ASTM D5511 has several shortcomings, correct?
A: That would – that would – **I would need to clarify, but – I mean, it's more than a yes or a no.**

(Poth, Tr. 1522-23) (emphasis added). Mr. Poth testified that he lowers the moisture content of ERL's D5511 tests so they are perhaps more representative of landfills. (Poth, Tr. 1452; RX 839 at 1 (testing at about 48% solids content)). Mr. Poth also testified that the temperature at which he runs his tests (52 degrees Celsius) is representative of landfills, based, in part, on conversations he had with representatives from Waste Management. (Poth, Tr. 1519).

141. Timothy Barber's tests are unreliable. (CCX-891; *see also* RX-854, ¶ 71 (referring to the tests as inconclusive)).

Response to Finding No. 141:

This proposed statement of fact is argument, not a finding of fact. ECM moves that it be stricken. The statement is unsupported by the record citations; it is also vague, ambiguous, and mischaracterizes the record. The cited source CCX 891 provided no discussion of Timothy Barber's tests, and the proposed fact here offers no context or explanation for that missing connection. Moreover, RX 854 (Dr. Burnette's report) provided no discussion of Dr. Barber's testing in Paragraph 71, but only referenced Dr. Barber's deposition testimony on a different issue. A proper evidentiary source for this statement is therefore lacking.

That significant point notwithstanding, Dr. Barber, a principal scientist with Environ Corp., performed several tests of ECM infused plastics over time. In 2007 he determined based on his test data that plastics manufactured with the ECM additive are biodegradable, and would be expected to biodegrade completely over time. (RX 254 at 1). Dr. Barber is a well-qualified and highly credentialed scientist who has been involved in analytical environmental laboratory testing for more than twenty years. *See* ECM RPFF ¶¶ 92-110. He designed a biodegradation test methodology that would closely simulate the landfill environment, while providing a suitable test vessel to monitor biodegradation rates over time. (Barber, Tr. 2034, 2044-45, 2062). Dr.

Barber used weight loss as a primary endpoint to assess biodegradability, but he also relied on confirmatory endpoints. (Barber, Tr. 2048-49). For instance, while testing PVC plastics, Dr. Barber assessed whether the test vessels showed an increase in free chloride ions, which would indicate a breakdown of the PVC molecule. (Barber, Tr. 2053-56). Complaint Counsel's witness, Dr. Tolaymat, conceded that weight loss can be a suitable endpoint to measure biodegradation. (Tolaymat, Tr. 281-82). ECM's experts also reviewed Dr. Barber's tests and found them to be reliable. (Sahu, Tr. 1911–15; Burnette, Tr. 2414–15).

142. Northeast Lab's tests of ECM plastic are unreliable. (CCX-891, ¶ 88).

Response to Finding No. 142:

This proposed finding of fact mischaracterizes the totality of the evidence, and is an over-generalization unsupported by the record. The sole support offered here is Dr. McCarthy's report, which includes one paragraph of content discussing the Northeast Labs tests. (CCS 891, ¶ 88). Dr. McCarthy authored that section of his report before Alan Johnson, the owner of Northeast Labs, testified in this matter and, so, Dr. McCarthy had an incomplete and inaccurate understanding of the Northeast Labs test process. Furthermore, Dr. McCarthy's characterizations and criticisms of the Northeast Labs tests are unfounded. He raises four concerns with the NE Labs tests, which we address here seriatim (and which Dr. McCarthy conspicuously did not testify to during his appearance at the hearing (McCarthy, Tr. 359-680)).

First, he claims that NE Labs replaced the inoculum and that would lead to an overestimation of biodegradation because of the exposure of the inoculum to oxygen. (CCX 891 at ¶ 88(i). That point is based on a misunderstanding of the NE Labs' test process. NE Labs did not "expose" the inoculum to oxygen when replenishing the test vessels; rather, they switched vessels, used a completely new anaerobic inoculum, and sparged any excess oxygen from the

canisters using nitrogen (a gas that does not influence anaerobic biodegradability). (Johnson, Tr. 1573-74; Barlaz, Tr. 2276 (explaining that the use of metal canisters in NE Labs testing did not and would not affect the reliability of test results); Barlaz, Tr. 2276 (explaining that the presence of methane in the system demonstrates that conditions were strictly anaerobic)). Dr. McCarthy also errs by failing to observe that the biodegradation percentages measured in the NE Labs testing were based solely on the *methane production*. (Barlaz, Tr. 2276). Experts agree that methane can only be produced by an anaerobic system, and that oxygen would kill or substantially limit the activity of anaerobic microbes. (Barlaz, Tr. 2276-77). Thus, Dr. McCarthy's theory concerning the "exposure" to oxygen is unsupported and contradicted, and stems from his misunderstanding of the test process. Dr. Barlaz expressed no concern with the process of replenishing the inoculum. (Barlaz, Tr. 2276-77; Sahu, Tr. 1933-34 (expressing no concerns with the process of re-inoculating NE Lab's test vessels)).

Second, Dr. McCarthy criticized NE Labs' use of metal canisters because, according to Dr. McCarthy, "they deteriorated over time." (CCX 891 at ¶ 88(ii)). However, there is no evidence in the record that leakage occurred with the ECM test vessels, and Alan Johnson (owner of NE Labs) testified that deterioration had only been observed in certain instances, and that they had promptly corrected for same. (Johnson, Tr. 1557-96; Barlaz, Tr. 2276 (explaining that "you either have a leak in your system or you don't have a leak in your system," and a leak would be obvious)). Notably, Alan Johnson testified that NE Labs had switched to "lined" canisters that would prevent deterioration. (Johnson, Tr. 1565-66 ("We now actually use lined paint cans to prevent corrosion")). There is also no evidence in the data recorded to suggest that a leakage occurred and, even if there was, that "leak" would actually act to minimize (not enhance) the amount of biodegradation recorded because the totality of methane gases produced during biodegradation would not be fully recorded. (Johnson, Tr. 1566-68 (explaining that a

canister leak would be obvious, and that there was never an indication that leakage had occurred)).

Third, Dr. McCarthy claimed that NE Labs did not have someone with the proper education or training overseeing the tests. (CCX 891 at ¶ 88). Not so. In fact, the record reflects that many ECM tests were supervised and performed by Dr. William Ullmann, Ph.D., who had a Ph.D. in microbiology and was once the director of the State of Connecticut's Public Health Laboratory. (Johnson, Tr. 1562-63). Tests performed since have followed Dr. Ullmann's protocol and instructions. (Johnson, Tr. 1560-65). Alan Johnson explained that the low methane and gas outputs (relative to the total gas collected) were a result of the closed system laboratories losing biological vitality over time. (Johnson, Tr. 1573-74, 1589-90 (explaining that all test vessels reflected a reduction in activity, including the test plastic and blanks, after long-term testing). He testified that the head space in the test vessels would also contain atmospheric gases that are pushed into the collection cylinder along with the biogas and, therefore, those ambient gases represent a portion of the total gas collected, but those head space gases are unrelated to the biogas outputs that drive the test. (Johnson, Tr. 1591-92). Dr. Barlaz explained that the biodegradation test data is driven by the carbon dioxide and methane production, and he testified credibly that the NE Labs testing produced competent, reliable, and statistically significant results. *See* ECM RPFF ¶¶ 1964-2009, 2386-2625.

Fourth, Dr. McCarthy claimed in his report (but never testified) that NE Labs testing was deficient because they "conducted tests for periods well beyond the validation period of the test." CCX 891 at ¶ 88. That criticism only reflects Dr. McCarthy's misunderstanding of the relevant standards at issue in this case. The ASTM D5511 method **does not specify a cutoff time** or duration for the test and, in fact, the method specifically contemplates tests of varying durations: "The incubation time shall be run **until** no net gas production is noted for at least five days from

both the positive control and the test substance reactors." (RX 356 at 3 § 11.2.1.2) (emphasis added). The D5511 contains no upper limit or durational restriction of the kind Dr. McCarthy used to discount NE Labs testing. (*see* RX 356 (D5511-12 Standard)). Thus, Dr. McCarthy's opinion is, at best, misinformed and based on an inadequate review of the record.

Lastly, although Dr. Barlaz reviewed the raw data from the NE Labs testing (and others), and he determined that the studies were sound and statistically significant, Dr. McCarthy made no attempt to review the data, perform statistical analyses of his own, or review Dr. Barlaz's statistical calculations. (McCarthy, Tr. 654). Dr. Barlaz was "surprised" that Drs. McCarthy and Tolaymat discussed ECM's gas evolution data without having examined the data. (Barlaz, Tr. 2247). For a more complete discussion of why NE Labs tests are competent and reliable scientific evidence that the ECM additive produces biodegradable plastics, see Respondent's Proposed Findings of Fact (RPFF) at ¶¶ 1964-2009, 2386-2625.

143. Eden Lab's tests of ECM plastic are not competent and reliable. (CCX-891, ¶ 89); (McCarthy, Tr. 687-88 (testifying that the D5511 tests conducted by Eden Laboratories are not competent and reliable)); (McCarthy, Tr. 465-466 (testing he reviewed related to ECM additive yielded unreliable results)).

Response to Finding No. 143:

The fact statement proposed in this paragraph is faulty because it relies on conclusory testimony that is not supported by the factual record. Dr. McCarthy's criticisms of the Eden Laboratories test data are based on an incomplete review and inaccurate assumptions. At the outset, Dr. McCarthy's transcript pages at 465-466 do not address the Eden Laboratories ("ERL") actual testing. Dr. McCarthy posits four criticisms of Eden Laboratories' testing in his report (CCX 891 at 89), although he never or explained those points (or mentioned them) during his testimony on August 7, 2014. *See generally* McCarthy, Tr. 359-680. First, he contends that

Eden Laboratories "is run by a person lacking the proper credentials" to run biodegradation tests. (CCX 891 at 89(i)). Dr. McCarthy had never visited Eden Laboratories, or spoken with its owner, Thomas Poth. In fact, Eden Laboratories' studies are performed by Thomas Poth and Dr. Brian Essau. (Poth, Tr. 1440-41). Dr. Essau has a master's degree and a Ph.D. in biochemistry from the University of Illinois at Champaign-Urbana. (Poth, Tr. 1441). Dr. Barlaz visited Eden Laboratories during a visitation that predated this litigation and was unrelated to Dr. Barlaz's participation as a witness in this case. (Barlaz, Tr. 2274). Dr. Barlaz was satisfied that ERL's testing was strictly under anaerobic conditions and that ERL had the appropriate capability to accurately monitor gas volume and composition. (Barlaz, Tr. 2275). Note well that Dr. McCarthy never explained why the credentials of Thomas Poth had any relationship to the accuracy of the scientific data produced by ERL.

Dr. McCarthy (in his report but not in testimony) also discounted the ERL testing because, according to Dr. McCarthy, ERL replaced the inoculum during long-term testing. (CCX 891 at ¶ 89(ii)). However, when asked about replacing inoculum, Thomas Poth testified at the hearing that "[w]e don't do that." (Poth, Tr. 1474). Thus, although the record shows that replacing the inoculum is not necessarily improper (*see* response to FOF No. 142 *supra*), ERL testified that it did not happen in their testing and, so, Dr. McCarthy's criticism is unfounded. Dr. McCarthy claimed that Eden "conducted tests for periods well-beyond the validation period of the test." (CCX 891 at ¶ 89). As explained *supra* in response to proposed FOF 142, the D5511 test standard does not actually include a limitation or a "validation period of the test," and so, Dr. McCarthy appears to have fabricated that element. (*see* RX 359).

Dr. McCarthy also claimed, without any elaboration or explanation, that ERL "improperly modifies the raw data." (CCX 891 at ¶ 89(iv)). Without any explanation, it is unclear as to how, if at all, ERL has "improperly modified" data, and Dr. McCarthy has not

supported that statement in his report with any record evidence that would suggest same. This point, therefore, is incompetent and should not be credited. For a more complete discussion of why Eden Laboratories tests are competent, reliable, and evidence that the ECM additive produces biodegradable plastics, see Respondent's Proposed Findings of Fact (RPFF) at ¶¶ 1964-2009, 2180-2385.

Finally, Dr. McCarthy's criticisms of Eden Laboratories' testing at pages 687-88 are based solely on the potential for what Dr. McCarthy calls the "priming effect," which is an entirely theoretical premise that is not supported by the record evidence, or the general scientific community. Dr. McCarthy's priming effect theory is fundamentally flawed for at least several significant reasons, the theory is not supported or recognized by the relevant scientific community, and the theory is disproven by the evidentiary record. We address these points seriatim below.

First, Dr. McCarthy offers no explanation for how the priming effect is expected to manifest within the test systems. *See generally* McCarthy, Tr. 359-680. Thus, he sweepingly excludes blocks of ECM test data on the basis that it "could be" the priming effect, without giving any basis for this Court to understand what evidence actually exists for it in the tests undertaken and how one would know through evidence that this theory is real. That is significant because, if the priming effect was actually a significant element, other scientists (including Dr. McCarthy) would account for it in the test models proposed to test for biodegradation. In fact, none of the ASTM biodegradation test standards (e.g., ASTM D5511, D5526, D6400, etc.) require that the test laboratories consider or account for a priming effect. *See* CCX 84 (D5511); CCX 87 (D5526); CCX 91 (D6400). They do not even mention it, which should be reason enough to be highly skeptical of a priming effect theory of the magnitude Dr. McCarthy posits.

To support his own biodegradation testing, Dr. McCarthy designed a gas evolution biodegradation test which was memorialized in his '199 Patent. (RX 756 at columns 9-12). Although those tests reflected results similar to ECM's test data (e.g., 3%, 15%, 25%, 30%, 40%), Dr. McCarthy never mentioned, accounted for, or controlled for a "priming effect" in his testing. (RX 756 at columns 9-12). Dr. Michel performed D5511 testing to assess biodegradability of substances, and he never mentioned, accounted for, or controlled for the alleged "priming effect" in his testing. *See generally* CCX 164. If the priming effect was as significant as Dr. McCarthy posits, then surely it should be controlled for in the test models. But it is not (not even in Dr. McCarthy's own research), which fact alone renders dubious Dr. McCarthy's attempt to presume extant without fact a "priming effect" sufficient to categorically exclude all positive gas evolution tests in this case.

Consider that Dr. McCarthy recorded 14% biodegradation using his gas evolution test for polylactic acid (PLA) over 45 days, a substance he declared was completely biodegradable. (RX 756 at column 11; RX 756 at 2; McCarthy, Tr. 376). Dr. McCarthy did not discount that evidence in any way based on the priming effect, and that was under **aerobic** testing conditions, the only conditions in which a priming effect is said to exist in the scientific literature. (RX 756; Barlaz, Tr. 1888-89, 2278). Yet, in one test, the ECM additive produced over the 17% biodegradation under anaerobic conditions, and Dr. McCarthy discounted the entire study because, according to him, the data could have been the elusive priming effect in action. *See* RX 838 at 6 (6/13/2011 Report).

Aside from lacking any support in the peer reviewed literature (or in logic) for a massive priming effect theory that somehow swallows all positive test data, Dr. McCarthy's theory also suffers from a miscalculation when considering the inconclusive tests on which Complaint Counsel relies. *See* Complaint Counsel's Proposed FOF No. 174 (citing CCX-164; CCX-174-

CCX-176; CCX-156; CCX-157; CCX-163; CCX-169-CCX-171). If the priming effect was real or at all relevant, you would expect to see it manifested even in the inconclusive tests that Complaint Counsel cited. Note that Dr. McCarthy posits that the priming effect can account for methane production that far exceeds what the ECM additive could have produced based on total carbon, which is a very substantial "priming effect" indeed, and one that is not supported by the record.

Each of ECM's expert witnesses explained that the priming effect was borderline mythical and had no relevance to the anaerobic tests at issue in this case. (Sahu, Tr. 1888-89; Barlaz, Tr. 2278-79; Burnette, Tr. 2400). Dr. Barlaz specifically testified that the ECM additive was mostly composed of polycaprolactone (PCL) and, in Dr. Barlaz's own research, the amount of degradation solely from PCL is not significant enough to stimulate background methane production or a "priming effect." (Barlaz, Tr. 2279-80). Dr. Barlaz described Dr. McCarthy's priming effect theory as "quite speculative." (Barlaz, Tr. 2280-81). He also testified that the amount of biodegradation observed in the ECM tests is much higher than any reasonable interpretation of a priming effect theory and, so, the so-called "priming effect" is not supported by the actual tests performed on ECM additive containing plastics. (Barlaz, Tr. 2280).

144. Stevens Ecology, O.W.S., North Carolina State University, and Ohio State University tests show very little (or in some cases no) biodegradation of ECM Plastics under a variety of conditions. (CCX-891, ¶¶ 75-86).

Response to Finding No. 144:

ECM objects to this fact to the extent that it is unsupported by any evidence independent of conclusory statements buried within one of Complaint Counsel's expert reports. The proposed statement of fact is not backed by factual testimony or documentary support and, so, this proposal would violate the Court's prohibition in the September 3, 2014 Order regarding

Post-Trial Briefs (at 3), wherein his Honor specifically instructed the parties: "Do not cite to expert testimony to support factual propositions that should be established by fact witnesses or documents."

To the extent a response is warranted, ECM and its experts have acknowledged that a small number of tests show inconclusive results. (Sahu, Tr. 1915-16, 1937-39). Those tests, on balance, are in the minority. ECM's experts explained that many variables influence the viability of biodegradability tests and, so, inconclusive test results are expected but not proof of a negative test. (Sahu, Tr. 1938-39; ECM RPFF ¶¶ 2886-2908). The plastic must be manufactured properly with the ECM additive. (Sahu, Tr. 1938-39). Conditions of manufacturing can lead to a plastic that either does not contain sufficient amounts of the additive equally dispersed throughout the plastic, or scorches the additive rending it ineffective. (Sahu, Tr. 1816-22; Sinclair, Tr. 762-67). The additive is hydroscopic and shipped in lined containers designed to prevent moisture loss; failure to keep the additive enclosed during storage preceding manufacture can also adversely affect biodegradability. (Sinclair, Tr. 787–89). None of the inconclusive tests attempted to control for these variables. (Sahu, Tr. 1939). None of the inconclusive tests was evaluated scientifically to determine the actual cause for the lack of biodegradation, which is indispensable to a determination that the additive containing plastic is not biodegradable. (Sahu, Tr. 1937–43; Barlaz, Tr. 2272–74, 2335–38; Burnette, Tr. 2440–46). Particularly when faced with 28 positive gas evolution tests, (RPFF ¶¶ 2133–2659) and only a few inconclusive gas evolution tests, which are often flawed, invalid under the ASTM standards, and, regardless of their validity, measure biodegradation in the same manner as the positive tests, the totality of the competent and reliable scientific evidence supports the conclusion that plastics infused with the ECM additive are biodegradable.

145. ECM claimed to render conventional plastics "totally," "completely," "fully," and "100%" biodegradable. (CCX-3 ("fully"); CCX-7 at 7 ("fully"); CCX-10 ("completely"); CCX-12 ("100%"); CCX-316 ("totally"); CCX-317 ("totally")).

Response to Finding No. 145:

Complaint Counsel has offered no evidence concerning how ECM's customers (or even end-consumers) would interpret the phrase "totally biodegradable." The record evidence demonstrates that the phrase "totally" or "completely" biodegradable is a highly subjective and amorphous phrase, in part, because biodegradation is a process and not a clearly identified goal. (Barber, Tr. 2069). For instance, Complaint Counsel's own witness (Dr. Michel) explained that a product which biodegrades 44% would be considered "fully" biodegradable. (Michel, Tr. 2960-61). He also noted that cellulose (a material that is indisputably "fully biodegradable," as it is the positive control in biodegradation testing), could be fully biodegraded at just 74%. (Michel, Tr. 2955, 2992). Dr. McCarthy testified that he would want to see a gas evolution test produce 60% biodegradation of a test plastic before he would conclude that the plastic was fully biodegradable. (CCX 891 (McCarthy, Rep. at 13–16). Contradicting himself, Dr. McCarthy deemed biodegradable the plastics identified in his '199 patent upon proof that they would biodegrade by as little as "14%." (RX 756, at P. 8 Figure 11 (graph showing net percent biodegradation of various "biodegradable" polymers, including one showing 14% biodegradation). So what, then, is a "fully" or "totally" biodegradable substance? Complaint Counsel has offered no record evidence on that point and certainly none sufficient to show a scientific consensus or a general understanding among consumers, or industry, as to what biodegradation means and what fully biodegradation means. By contrast, survey expert Dr. David Stewart has established that not even a significant minority of end-use consumers or corporations that purchase the ECM additive share a common definition for the term

biodegradation and, thus, have no foundation on which to conclude what constitutes complete or full biodegradation. (Stewart, Tr. 2579–2586).

Drs. Barlaz and Sahu, by contrast, has explained that biodegradability is an intrinsic characteristic of the material. (Sahu, Tr. 1924-26; Barlaz, Tr. 2217-19). He used the example of copy paper, which could degrade differently under certain conditions (or not at all), but is indisputably "biodegradable" if or when that material is placed in an environment suitable for biodegradation:

> Q: So to what extent, if any, would changes in temperature and moisture influence intrinsic biodegradability of a material?
>
> A: Well they wouldn't. In other words, this piece of paper is bone dry and it's – I don't know what temperature in here – maybe its 70-71 degrees, but it's bone dry (indicating). It's not going to biodegrade if I hold it up here for the next hundred years. But this piece of paper is biodegradable. It's an intrinsic property of this paper that it's biodegradable.
> So the moisture and temperature would begin to put this piece of paper in a system where biodegradation is favored. And when we do biodegradability testing, obviously we're having to create an environment in which biodegradation can occur if the material is biodegradable.

(Barlaz, Tr. 2218-19).

The condition of complete biodegradation is thus defined by ECM's experts as one in which the plastic is rendered capable of break down into residue through addition of the additive, which condition Dr. Sahu testified would inevitably follow as a result of proper addition of the ECM additive to the plastic. (Sahu, Tr. 1943–44).

146. ECM conveyed that plastics completely biodegrade in most landfill environments. (CCX-15; CCX-25 at 1).

Response to Finding No. 146:

Subject to ECM's response *supra* to Proposed FOF No. 145, ECM has no additional response.

147. Tests must be conducted for a sufficient length of time to demonstrate that the entire treated plastic, not just the biodegradable additive, will be consumed. (CCX-891, ¶ 38f).

Response to Finding No. 147:

This proposed FOF is contrary to the credible evidence revealing that biodegradability is an intrinsic property of a material, such that a product which biodegrades will be expected to fully biodegrade to the extent that environmental conditions are conducive to same. *See* Sahu, Tr. 1924-26; Barlaz, Tr. 2217-19; *see also* Response to Proposed FOF No. 146. The point is that a test must be conducted so that the researcher can determine whether the test material is biodegrading. Both ECM and Complaint Counsel's experts have testified and written that the ASTM D5511 test is suitable to measure intrinsic biodegradability without the necessity for testing to continue until 100% of the test article disappears. (Sahu, Tr. 1924-26; Barlaz, Tr. 2219; Tolaymat, Tr. 171; CCX 893 at ¶ 77 (Tolaymat Rep.) ("ASTM D5511 … can provide data about anaerobic biodegradation")). As Dr. Barlaz explained:

> "I used the term 'intrinsic biodegradability' or more carefully 'intrinsic anaerobic biodegradability' to describe a property of the material, much like its color or weight or density. That's not going to change no matter where you put that material."

(Barlaz, Tr. 2218).

Moreover, ECM's experts have each explained that close-system reactor tests have lifespans because of the limitations of the test system. (Barlaz, Tr. 2273-74; Burnette, Tr. 2374-75). Those limitations are apparent in almost all of the long-term gas evolution tests in the record, including Dr. Michel's D5511 test where the biodegradation of materials obviously plateaued even for materials (e.g. cellulose) that are unquestionably biodegradable. *See* CCX 164 at 2589-90 (Fig. 4 & Fig. 5). Those limitations prevent laboratories from conducting tests of

sufficient duration to show "complete" biodegradation in the test environment as complaint counsel suggests. (Burnette, Tr. 2389-90, 2401-05). ECM's experts confirmed that laboratory tests would need to be conducted for many years to gather such data on "complete" degradation (as that term is improperly understood by Complaint Counsel) and, even were that possible, it would be wholly impractical and unnecessary. (Barlaz, Tr. 2212). That is because the ASTM D5511 test and other gas evolution tests, such as those used by Dr. McCarthy in his '199 patent, are "accelerated tests" designed to reveal intrinsic biodegradability. (Sahu, Tr. 1923–27). Positive gas evolution tests of limited time duration and of incomplete plastic biodegradation are nevertheless generally accepted as proof of intrinsic biodegradability (meaning that sooner or later it is expected that the hastening of biodegradation affected by the additive will yield a break down of the entire plastic article into residue). (Sahu, Tr. 1895–97; Barlaz, Tr. 2211–15; Michel, Tr. 2907).

Finally, Dr. Barlaz's statistical analyses have proven conclusively that the test data reveals that the plastic "and not just the biodegradable additive" is biodegrading at a substantial rate in the ECM tests. (RX 968; Barlaz, Tr. 2246–2270). Dr. Barlaz calculated the maximum amount of biogass (e.g., methane) that could theoretically be produced from the ECM additive, even assuming the additive were to completely biodegrade. (RX 968; Barlaz, Tr. 2246-2270). Dr. Barlaz observed that the amount of biodegradation observed in the ECM tests was often substantially more than what could have been sourced by the additive. (RX 968; Barlaz, Tr. 2246-2270). According to Dr. Barlaz, that conclusively established that the test plastic had biodegraded. (RX 968; Barlaz, Tr. 2246-2270). Complaint Counsel has entirely ignored that analysis, as important as it is, which is revealing. Complaint Counsel also ignores the obvious logical point that Dr. Barlaz's calculation is based on a very conservative assumption that the ECM additive would first fully biodegrade. (RX 968; Barlaz, Tr. 2246-2270). In reality, the

ECM additive is mixed throughout the test plastic and, so, the additive is only available to the microbes in limited amounts at a time, and the plastic must biodegrade before the microbes can continue to access the additive. *See, e.g.*, Tolaymat, Tr. 298-99; Sinclair, Tr. 788; Sahu, Tr. 1863-64). That means (a) the amount that the plastic (vs. the additive) biodegraded in ECM's tests is likely *more* than the data suggests and (b) the biodegradation is likely to be sustained throughout as the microbes slowly peel away plastic and expose more additive. (RPFF ¶¶ 1964–2128).

148. Biodegradation tests must show at least 60% biodegradation to support a claim of complete biodegradation. (CCX-891 ¶ 38f).

Response to Finding No. 148:

Complaint Counsel's 60% threshold is unsupported with any record evidence; it is not accepted by any scientists in the field, in the peer reviewed literature, or by Complaint Counsel's own experts (e.g., Dr. Michel). (Sahu, Tr. 1777, 1793; Michel, Tr. 2961 (stating that "a material the only biodegrades 44 percent to elements found in nature is biodegradable"). Dr. McCarthy included the "60%" threshold in his report at paragraph 38(f) (CCX 891 ¶ 38(f)). He offered no citation to any peer reviewed publication, standard, or otherwise that requires 60% biodegradation. (CCX 891 ¶ 38(f)). Dr. McCarthy offered no documentary support for his 60% threshold. (CCX 891 ¶ 38(f)). He did not himself require a 60% threshold in gas evolution testing before declaring materials "biodegradable" at amounts less than 60%. (McCarthy, Tr. 558–560; RX 928). There is in fact no consensus in the scientific community or peer reviewed literature that a gas evolution test should produce 60 percent biodegradation before the test article can be deemed biodegradable. (Sahu, Tr. 1793). In fact, Dr. Michel testified that an article which biodegrades to 44 percent would be considered biodegradable in a gas evolution

test. (Michel, Tr. 2961). Dr. McCarthy labeled a substrate "biodegradable" after observing just fourteen (14%) biodegradation in a gas evolution test. (Sahu, Tr. 1894; RX 756 at 11).

Dr. McCarthy's 60% threshold is entirely arbitrary, capricious, and lacking any evidentiary support. It is contradicted consistently by expert testimony by ECM's experts, (Sahu, Tr. 1777, 1793), and even by Complaint Counsel's, Michel, Tr. 2961 (stating that "a material the only biodegrades 44 percent to elements found in nature is biodegradable").

149. ECM rests its claim of complete biodegradation on the assumption that once started, biodegradation will go to completion. (CCX-15 ("The process continues until the plastic products become part of the organic components of the soil just like biodegraded sticks or other pieces of wood become part of the soil.")).

Response to Finding No. 149:

Subject to its response *supra* to proposed FOF 147, ECM has no further response. This statement also misconstrues ECM's position, which is actually that a "biodegradable" product will continue to biodegrade as long as the environmental conditions support biodegradation (i.e., just like sticks, pieces of wood, and other "biodegradable" materials).

A product is either biodegradable, or it is not. (Barlaz, Tr. 2218). The ECM additive is uniformly melted throughout the plastic, and it becomes part of the entire plastic matrix. (Sahu, Tr. 1813-14). The blended plastic is one homogenous, new material. *See, e.g.*, RX 756 at column 6 (describing manufacturing methods to make a blended polymer); Burnette, Tr. 2436; Sahu, Tr. 1813-14. As Dr. Sahu explained, the additive:

> Goes into the blend uniformly no matter whether it has got a high or low [weight] distribution. It is just that it will be present along with this varying chain lengths of original polymers that were there in the plastic and as they have cooled down and formed these crystalline and amorphous regions.

(Sahu, Tr. 1814).

Dr. Sahu explained that the process of "blending" the additive with the plastic resin involves heat blending so that the two components become one:

> The carrier is melting, the additive is melting, and then they are literally mixed together. They're compounded. And then the melt as its cooling is then further processed to make the article, in this case the bag or whatever, whatever article is going to be made from that compounded melt basically, subject to thermal action.

(Sahu, Tr. 1816).

Dr. Sahu compared the addition of the additive to a colorant, which are usually introduced into plastics at a 0.5-2% load rating (just like the ECM additive). (Sahu, Tr. 1818-19). Aside from the fact that Dr. McCarthy's own writings say that the plastic is chemically altered by this manufacturing process (RX 756, at column 6; Sahu, Tr. 1892–93).

ECM's experts testified that a material is deemed biodegradable if it has a proven potential to biodegrade in the environment; that is true even if the material is placed in a sterile environment where biodegradation cannot occur. (Barlaz, Tr. 2217–19). It will biodegrade at various rates depending on the environmental conditions; it may never biodegrade if withheld from the external environment (e.g., if it is placed on a shelf). But it remains "fully biodegradable," a point Dr. Michel recognized in his testimony concerning cellulose. (Michel, Tr. 2960-61 (explaining that a biodegradable material is still "fully" biodegradable or biodegraded even if biodegrades only to 44% in a test environment)).

150. The scientific community rejects extrapolation of biodegradation results. (CCX-891, ¶ 55; CCX-892, 892, ¶¶ 22, 23; CCX-83 (ASTM D5511 precludes extrapolation of results)); (McCarthy, Tr. 477-478); (Sahu, Tr. 1795-1796 (testifying that it would be "unusual" to extrapolate a time to complete biodegradation from a rate derived from a test); (Barber Tr. 2081-2082 (conceding that rates of biodegradation cannot be extrapolated beyond the precise environmental conditions or to other plastics)).

Response to Finding No 150:

This proposed FOF is misleading and mischaracterizes the record. The testimony focused on extrapolation of the "rate" of biodegradation, a practice that ECM agrees is difficult and impractical because the actual rate of biodegradation in an individual case depends on many variables that are impossible to predict in advance with certainty. (Sahu, Tr. 1768-70; Barlaz, Tr. 2282). As explained more fully *supra* in responses to Proposed FOF Nos. 147 and 149, the relevant inquiry is whether the treated material becomes intrinsically biodegradable. (Barlaz, Tr. 2218-19). Thus, Dr. McCarthy has relied on gas evolution test data showing less than "complete" biodegradation (in some cases, 14% biodegradation or 3% biodegradation) and extrapolated to conclude that the material is biodegradable. (RX 759). Thus, the alleged "finding" presented here is one to which Complaint Counsel's own experts do not adhere.

151. Mechanism of action to explain how ECM Plastics will biodegrade to completion. (CCX-4).

Response to Finding No. 151:

Proposed FOF appears to be placeholder text that was not completed by Complaint Counsel.

The statement is not presented or formatted as a fact or finding, it is merely a description of the document cited as CCX 4. ECM therefore has no response.

152. ECM's expert concedes that the presence of a biofilm does not indicate that the microorganisms are using the plastic as a food source. (RX-840 at 41-43).

Response to Finding No. 152:

ECM objects to the use of deposition testimony to establish facts concerning expert opinions where that expert appeared and gave testimony during the hearing, particularly where, as here, the statement is not offered for impeachment.

That point notwithstanding, Complaint Counsel has misinterpreted the concept of causation expressed by ECM's experts. A correct statement of fact on this point should state that ECM's experts conceded that the presence of a biofilm does not necessarily indicate that the microorganisms are using the plastic as a food source, but the formation of biofilms is a material step toward achieving the ultimate biodegradability of plastics. (RX 855 at 27; Burnette, Tr. 2406-09).

153. *Intentionally Left Blank.*

154. To support claims of biodegradation in landfill conditions, the experts agree that tests should be run at appropriate temperatures with appropriate anaerobic bacteria. (CCX-893, ¶ 51; CCX-891, ¶ 38c and d; RX-853 at 7-9); (Tolaymat, Tr. 203 (faulting ASTM D5511 for calling for a temperature that is "much higher than what you would expect to see in a municipal solid waste landfill")); (McCarthy, Tr. 391-392); (McCarthy, Tr. 442-443 (D5526 tests are preferable to D5511 tests for longer-time degradation results, in part, because they simulate "slower-degrading materials at a temperature that's closer to landfill conditions")); (Barlaz, Tr. 2300 (testifying that for the purpose of determining whether a material is biodegradable in a landfill, only anaerobic testing conditions are relevant)).

Response to Finding No. 154:

Proposed Finding No. 154 misconstrues the scientific record and overgeneralizes in complex areas of scientific dispute. ECM's experts have testified, without any response from Complaint Counsel's experts, that based on an analysis of thermophilic and mesophilic bacteria, the only material effect resulting from elevated temperatures in the laboratory tests goes to the "rate" of biodegradation ultimately observed in the landfill, and not whether biodegradation will

occur, or whether a product will biodegrade in a landfill. (Barlaz, Tr. 2228; Burnette, Tr. 2430-31 (explaining that mesophilic and thermophilic bacteria function at different temperatures and pace, but use common and universal mechanisms of action to gain access to food sources); Sahu, Tr. 1844 (stating that, at a fundamental level, there is no difference in the way thermophilic bacteria metabolize waste versus the way mesophilic bacteria metabolize waste). Finally, ECM's experts explained that landfills have bacteria that will biodegrade plastics comparable to the way bacteria digest plastics in the thermophilic gas evolution tests. (Barlaz, Tr. 2228; Burnette, Tr. 2430-33). All ECM experts testified that the D5511 tests conducted by ECM customers were competent and reliable to assess biodegradability in landfills. (Burnette, Tr. 2438-39; Barlaz, Tr. 2219; RPFF ¶¶ 1766-1809).

Complaint Counsel's witness stated thusly: "ASTM D5511 … can provide data about anaerobic biodegradation, but it … cannot provide data about the rate of biodegradation in a typical landfill." (CCX 893 at ¶ 77). To the extent Complaint Counsel would suggest that tests under thermophilic conditions (elevated temperatures) is not competent to measure whether a product will biodegrade in landfills, that statement is factually and scientifically incorrect, contradicted by Complaint Counsel's own experts, and thus unsupported by the record.

155. Hot temperatures could cause abiotic degradation of plastic that would not occur at more typical landfill temperatures of 37ºC. (RX-943 (Barlaz, Dep. Tr. at 82); RX-843 at 142).

Response to Finding No. 155:

ECM objects to the use of deposition testimony to establish facts concerning expert opinions where that expert appeared and gave testimony during the hearing, particularly where, as here, the statement is not offered for impeachment. Furthermore, the citations appear to be in

error, as the documents titled RX 943 and RX 843 do not in any way relate to the subject matter of the proposed fact.

Those points notwithstanding, the statement offered is inconsistent with the record and mischaracterizes the testimony of Dr. Barlaz. At his deposition on page 82, Dr. Barlaz testified that one simply should "confirm that the material being tested does not undergo an abiotic reaction at 52 [Celsius] that renders it more biodegradable [than] at a lower temperature." (CCX 943 (Barlaz, Dep. at 82)). Dr. Sahu performed that analysis, and concluded that a test temperature of 52 degrees would not influence the test results. (RX 855 at 44 n. 65 (Sahu Rep.) (explaining that the "temperature is fully compatible with the plastic materials that are intended to be used as test articles – in other words, there should not be negative impacts to the properties of the plastics or their structure that can, for secular reasons, accelerate the rate of biodegradation that is sought to be measured by the test")).

The ECM gas evolution tests involved negative controls (e.g., untreated plastics), and those negative controls invariably showed no biodegradation whatsoever. (RX 248; RX 254; RX 263; RX 265; RX 266; RX 268; RX 273; RX 276; RX 392; RX 393; RX 394; RX 395; RX 396; RX 398; RX 399; RX 401; RX 403; RX 402; RX 405; RX 465; RX 467; RX 468; RX 836; RX 838; RX 839; CCX 534; CCX 546; CCX 547; CCX 548; CCX 952). If the test plastics were susceptible to abiotic, temperature-related processes that promoted biodegradation, those results should also have been seen in the negative controls, but they were not.

Finally, expert testimony demonstrated that temperatures in landfills are highly variable, and can often meet or substantially exceed the 52 degrees C that is tested in the D5511 test. (Barlaz, Tr. 2207-09; Sahu, Tr. 1842-44). Landfills often have major temperature variations even within the same landfill. (Barlaz, Tr. 2208; Sahu, Tr. 1842-44). An arbitrary temperature

limitation of 37 degrees C for laboratory testing is therefore not supported by the scientific record.

156. The types of anaerobic bacteria that survive at the hotter temperatures are not the same types of anaerobic bacteria that operate at the cooler landfill temperatures. (RX-943 (Barlaz, Dep. Tr. at 82); CCX-893, ¶ 54); (Tolaymat, Tr. 141).

Response to Finding No. 156:

ECM reiterates here in full its response to Proposed FOF Nos. 154 and 155 *supra*. ECM objects to the practice of relying on deposition transcripts from expert witnesses who testified in full at hearing, particularly when the proffered statements are not offered for impeachment, and cover material that was discussed by the experts at the hearing. As discussed *supra* in response to FOF Nos. 154 and 155, ECM's experts explained that the difference in test temperatures does involve different anaerobic metabolic processes, and the only difference between mesophilic and thermophilic bacteria goes to the rate of biodegradation, and not whether a plastic would be biodegradable at one temperature but not at another. (Sahu, Tr. 1844; Barlaz, Tr. 2228; Burnette, Tr. 2430-31). The experts explained that the bacteria use the exact same mechanisms of digestion and biological processes to digest plastics (there are both mesophilic and thermophilic anaerobic bacteria that have been shown to biodegrade plastics in landfills), and the difference in temperature would therefore only influence the rate but not the extent of biodegradability (would not influence the intrinsic biodegradability of a material when placed in a landfill). (Sahu, Tr. 1844; Barlaz, Tr. 2228; Burnette, Tr. 2430-31). In other words, at different temperatures, the plastics may degrade faster or slower, but they would still biodegrade until completion if they are intrinsically biodegradable, and they would do so substantially faster than untreated plastics. It is not true, by contrast, that a plastic shown to be biodegradable in a thermophilic test will not also biodegrade in a landfill. (Sahu, Tr. 1844; Barlaz, Tr. 2228; Burnette, Tr. 2430-31).

Complaint Counsel's proffered statement of fact No. 156 is therefore misleading to the extent it suggests testing at elevated temperatures is improper to show biodegradation in landfills. Dr. Sahu testified that accelerated testing is very common and widely used to measure biodegradation. (Sahu, Tr. 1924-26). "Accelerated" tests allow laboratories to record data in an expedited manner without having to wait out the results of a field-scale timeline, which would be wholly unnecessary and impractical. (Barlaz, Tr. 2212). One way to "accelerate" a biodegradation test is to increase the temperature. (Sahu, Tr. 1924-26). Dr. Tolaymat, Complaint Counsel's expert, agreed that accelerated testing was proper. (Tolaymat, Tr. 244). Dr. Tolaymat's expert opinion concerning biological activity is not competent or reliable, however. Dr. Tolaymat admitted that he lacked any expertise or knowledge of the bacterial communities in landfills or the test environments. (Tolaymat, Tr. 264). Likewise, Dr. McCarthy admitted that he too lacks expertise and knowledge of microbiology and of the kinds of bacteria and fungi that biodegrade plastics. (McCarthy, Tr. 482). By their own admission, Drs. Tolaymet and McCarthy's knowledge of anaerobic bacteria is perfunctory and basic, at best. (Tolaymat, Tr. 264; McCarthy, Tr. 482). Their testimony therefore cannot support a ruling concerning the relationship of elevated temperatures in biodegradation testing vis-à-vis the microbiological organisms involved.

157. In tests conducted under the appropriate temperature range, virtually no biodegradation was observed. (CCX-946; CCX-951; CCX-954).

Response to Finding No. 157:

All of the tests cited by Complaint Counsel here are from Dr. Barlaz's laboratory at North Carolina State University. Complaint Counsel omitted from its citations CCX 952, another test

performed by Dr. Barlaz under the same temperature conditions, which revealed positive evidence of biodegradation. (CCX 952). That point notwithstanding, Dr. Barlaz testified that his BMP tests were performed in a completely liquid environment. (Barlaz, Tr. 2222-23). Dr. Barlaz explained that his tests were not well suited to measure the biodegradability of slowly biodegrading substances, and that he should not have cut short his BMP tests involving the ECM additive because there was evidence of continued biodegradation occurring. (Barlaz, Tr. 2271-72).

Moreover, significantly, Dr. Barlaz testified that his tests were only a few datasets among a much larger body of scientific evidence. (Barlaz, Tr. 2272-74). Dr. Barlaz acknowledged, as did Dr. Sahu, that many variables can affect the test results in a biodegradation study, including the manufacture of the plastic artifact tested. (Barlaz, Tr. 2272-74; Sahu, Tr. 1938-39). The few inconclusive tests produced by Dr. Barlaz did not affect Dr. Barlaz's ultimate opinion in this case, which, based on the totality of competent and reliable scientific evidence, was that the evidence showed that plastics infused with the ECM additive were anaerobically biodegradable. (Barlaz, Tr. 2272-74). Drs. Sahu and Barlaz agreed that the proper analysis must consider the evidence as a whole, and it would not be proper to cherry pick certain tests as Complaint Counsel has done, particularly when the overwhelming majority of the studies show that plastics infused with the ECM additive are biodegradable. (Sahu, Tr. 1943-44; Barlaz, Tr. 2274). For his part, Dr. Tolaymat was adamant that a proper opinion must involve an assessment of the totality of the scientific evidence, even though he had failed to perform that same analysis by categorically excluding whole categories of scientific data. (Tolaymat, Tr. 262).

158. At least a significant minority of consumers extrapolate rate and extent information concerning biodegradation times. (CCX-860, ¶¶ 43-44).

Response to Finding No. 158:

The record citation does not support the fact sentence offered by Complaint Counsel in Proposed Finding No. 158. ECM hereby restates and renews its prior response to Proposed FOF 199 *supra*, because no valid conclusions can be drawn from Dr. Frederick's surveys. The process or practice of "extrapolating" rate data is a different discussion within the context of biodegradation laboratory testing as compared to the discussion of extrapolation within the survey evidence, and Complaint Counsel here conflates the two distinct concepts. Here Complaint Counsel cited Dr. Frederick's flawed Google results to claim that end-consumers extrapolate "rate and extent" information. However, there is no evidence that consumers ever received sufficient information to properly or reasonably "extrapolate" any rate or extent information from a "biodegradable" claim, other than to simply guess at meaning of a rather subjective and broad term: "biodegradable." *See, e.g.*, Stewart, Tr. 2586. Because end-consumers only receive the simple "biodegradable" claim, they never receive the test data or scientific documentation, and they clearly lack any common understanding of biodegradation as a concept, there is no "significant minority" that is of legal consequence in this case. (Stewart, Tr. 2578–83).

159. Robert Sinclair knew the 9 month to 5 year claim was false. (CCX-818 (Sinclair, Dep. at 75 ("Q. Are you the only person at ECM who is responsible for reviewing and approving [] claims? A: "At this point, yes."); CCX-818 (Sinclair, Dep. at 81 ("Q. "[W]hen you came up with the nine-month-to-five-year claim, what did you base that on? A. Again, nine months to five years is not really the claim. It's only when you guys brought it up that it really like comes down to, Oh, what do you base that on and so forth, what's all this."); CCX-818 (Sinclair, Dep. at 81-82 (testifying that the 9 months to 5 years claim "was simply a frame of reference to get things out of the 6400 realm, that we're not talking about that, that we're talking about true biodegradation of things like a piece of wood.")); (Sinclair, Tr. 986-988).

Response to Finding No. 159:

ECM objects to the practice of relying on deposition testimony from fact witnesses who testified at the hearing fully on the same matters, particularly when the cited reference is not introduced for impeachment purposes. That point notwithstanding, none of the cited sources establish that ECM's President, Robert Sinclair, "knew" that ECM's claim was false. If anything, those sources establish that Mr. Sinclair had a good faith belief in the truthfulness of those claims. Robert Sinclair testified consistently that ECM informed its customers that no "rate" of biodegradation was guaranteed, that the actual rate of biodegradation in each specific instance was entirely dependent on external variables beyond ECM's control (e.g., environmental conditions), and that the 9 month to 5 year claim was based on his personal experience with the product (which included his own product testing and that of the inventor of the product, Patrick Riley). (Sinclair, Tr. 748–49, 755-56, 768-771).

Following changes to the Green Guides, Mr. Sinclair notified each of his consumers that they should independently review their biodegradable claims and determine the best claim for each customers' product. (RX 35-77 (representative customer emails sent by Robert Sinclair to all ECM customers, wherein ECM asks customers to reevaluate and choose proper rate claims)). ECM explained to customers that, while ECM disagreed with the logic behind the Green Guide revisions, customers could not make unqualified biodegradable claims, and ECM compared its technology to "Municipal Solid Waste that biodegrades slowly but surely over periods from a few years to tens of years..." *See, e.g.*, RX 43.

160. *Intentionally Left Blank.*

161. *Intentionally Left Blank.*

162. *Intentionally Left Blank.*

163. ECM knew that the ASTM 5511 protocol was not a pass/fail standard. (CCX-963).

Response to Finding No. 163:

Proposed FOF No. 163 is irrelevant and should be excluded. First, there is no testimony or evidentiary proof in the record establishing why a "pass/fail" discussion would be relevant. ECM does not hold out the ASTM test as a pass/fail standard. In documents sent to customers (e.g., ECM certificates of biodegradability), ECM simply explains that ECM plastics have been tested using various standards, and that "the results of those tests and the related biodegradation" establish biodegradability of the ECM infused plastics. *See, e.g.*, CCX 1.

Second, the statement presumes facts not in evidence, to wit, that the ASTM D5511 test is not a "pass/fail" standard. The document cited involves many separate emails sent between and among many different parties before ever reaching an individual at ECM. (CCX 963). The statement that the D5511 test is not a "pass/fail" test was proffered by an individual who ECM has publicly criticized and distrusts and, so, there is no indication whatsoever that ECM considered the statement to be truthful and authoritative. (CCX 819 (Sinclair, Dep. at 283-84)). The statements are at least double and potentially triple hearsay, from individuals at least two levels removed from any direct correspondence with ECM. (CCX 963).

Finally, the record is replete with accurate, non-hearsay evidence concerning ECM's understanding of the ASTM testing standards. ECM understood them to be useful guidelines that can establish biodegradability of test articles based on the scientific judgment of experts in the field. (Sinclair, Tr. 780-81).

164. ECM routinely conveyed to its customers that ECM Plastics were "certified to"; "passed"; or met the ASTM 5511 standard. (CCX-288).

Response to Finding No. 164:

None of ECM's marketing literature, certificates of biodegradability, or materials suggests that the ASTM standard is a pass/fail standard. Complaint Counsel's selective citation to one email amongst thousands of similar ECM emails does not constitute evidence that ECM "routinely" conveys to customers that plastics "passed" ASTM standards. The evidence reveals that ECM has sophisticated interactions with its customers concerning the nature and utility of the ASTM test standards, which standards are known to industry and publicly available. Consider CCX 331, wherein ECM wrote the following to a customer: "D5511 is certainly valid testing to demonstrate that a plastic product will fully biodegrade in a landfill (anaerobic environment). The only part that is somewhat iffy is the rate concept of being able to peg the data to real half-life data of other materials…" (CCX 331).

165. ECM customers made unqualified claims. (CCX-308; CCX-50).

Response to Finding No. 165:

ECM objects to this proposed FOF because it is false. ECM agrees that its customers used the claim "biodegradable" with respect to ECM plastics but not that ECM made unqualified biodegradable claims. Repeatedly ECM conveyed to its customers that biodegradation was dependent on ambient environmental conditions present at the ultimate disposal location for each specific plastic. (Sinclair, Tr. 985, 947, 985–86).

166. Even in landfills that are considered to be the most conducive to biodegradation (so-called "bioreactors"), Dr. Barlaz reports a range of degradation times for MSW anywhere from 24 (for rapidly biodegrading food waste) to over 200 years (for slowly degrading wastes). (RX-853 at 3, 14); (Barlaz, Tr. 2297 (explaining that even under accelerated biodegradation conditions, readily degradable municipal solid waste will not completely biodegrade in less than five years)).

Response to Finding No. 166:

The cited reference, RX 853 at 3 or 14, does not support the proffered fact No. 166 in any way. Dr. Barlaz wrote only that decay rates fluctuate in landfills, and he provided several different first order decay rates that might be applied to MSW waste. (RX 853 at 3-14). Dr. Barlaz did not calculate lifespans of MSW waste, as he testified that "it's very, very difficult to measure rates at … field scale either for individual components or for bulk waste…" (Barlaz, Tr. 2282). Dr. Barlaz also testified that the decay rate of material deposited in landfill environments is not environmentally significant or relevant. (Barlaz, Tr. 2283-84; RX 853 at 12).

167. Dr. Barlaz conducted at least four biodegradation tests of ECM Plastics under the Biochemical Methane Potential Test (BMP). (CCX-946-CCX-948; CCX-952; CCX-933; CCX-951; CCX-953; CCX-954); (Barlaz, Tr. 2306-20).

Response to Finding No. 167:

ECM reiterates its response to Proposed FOF No. 157, *supra*. ECM otherwise has no additional response to this proposed Finding.

168. The results of one of Dr. Barlaz's BMP tests showed no methane production. (CCX-951).

Response to Finding No. 168:

ECM reiterates its response to Proposed FOF No. 157, *supra*. Dr. Barlaz testified that he lacked essential information concerning the manufacturing or components of the test plastics involved in his testing. (Barlaz, Tr. 2268). Dr. Barlaz reviewed all of the scientific evidence in this case, and he explained that the inconclusive results did not affect his opinion that plastics manufactured with the ECM additive have been shown repeatedly to be anaerobically biodegradable. (Barlaz, Tr. 2272-74).

169. The results of three other BMP tests by Dr. Barlaz showed negligible amounts of methane production. (CCX-952; CCX-946; CCX-954).

Response to Finding No. 169:

ECM reiterates its response to Proposed FOF No. 157 and 169, *supra*. ECM further notes that the proffered Finding No. 169 is misleading, as Dr. Barlaz testified that he observed significant and continuing biodegradation in CCX 952. (Barlaz, Tr. 2270-74). Dr. Barlaz explained that, based on his assessment of CCX 952, "the BMP as [he'd] been using it … is perhaps imperfect or not appropriate" for "slowly degradable substrate[s]" like the ECM infused plastics (as compared to cellulose or cellulosic materials which were the type of materials Dr. Barlaz principled used his BMP test for). (Barlaz, Tr. 2266, 2272). The proffered Finding No. 169 therefore misrepresents the factual record.

170. Landfill conditions do not support rapid degradation times. (RX-853 at 3, 14; RX-855 at 8).

Response to Finding No. 170:

ECM objects to this Proposed FOF No. 170 because it is vague and ambiguous and mischaracterizes the scientific opinions of ECM's expert witnesses. The concept of "rapid" degradation is a relative term that is not defined by Complaint Counsel or the record citations provided. ECM's experts explained that landfill environments are highly variable with respect to moisture content and temperature, even within a single landfill. (Sahu, Tr. 1768-69). The landfill conditions can therefore favor many different rates of biodegradation, including accelerated rates of biodegradation in areas of high moisture or temperature. (Sahu, Tr. 1768-71.

Furthermore, the term "rapid" is a relative term must be defined properly before it can be used accurately in this case. The word "rapid" requires a marker for context. For instance, when compared to an arctic glacier, landfills would certainly promote "rapid" degradation times. But when compared to an active digester, the rate of biodegradation in landfills might be deemed slower. Because Complaint Counsel has failed to explain the use of ambiguous language, or provided any context, this proposed fact should be rejected. Critically, there is no competent survey evidence establishing that consumers share any common understanding as to the rate of biodegradation. (Stewart, Tr. 2511–2620).

171. The ECM Additive is mostly a synthetic biodegradable polymer like polycaprolactone (PCL). (CCX-891 ¶ 61).

Response to Finding No. 171:

ECM objects to this proposed FOF No. 171 because it lacks foundation. Furthermore, Complaint Counsel is using an expert report to shoehorn into the record findings that must come from fact witnesses or documents, in violation of the Court's September 3, 2014 Order regarding Post Trial Briefing (at 3). Complaint Counsel here relies solely on Dr. McCarthy's expert report (CCX 891 ¶ 61). There is no testimony in the record (or information in his report) showing that Dr. McCarthy has knowledge of the ECM additive, or its components. Dr. McCarthy has not tested the ECM additive, or obtained the proprietary trade secret formula from ECM in discovery. (Sinclair, Tr. 777 (explaining that the ECM additive's formula is a trade secret)).

172. The amount of methane generated in Dr. Barlaz's tests exceed the amount of methane attributable to the additive. (*Compare* CCX-951 and CX-954 *with* CCX-946 (determining the methane potential of the ECM Additive alone)).

Response to Finding No. 172:

ECM has no specific response to this Proposed FOF No. 172. Dr. Barlaz explained that where the methane amounts generated in the tests "exceed the amount of methane attributable to the additive," that means the biodegradation (i.e., the methane) came from the test plastic and not the additive. (Barlaz, Tr. 2246-72). In this Propose FOF No. 172 Complaint Counsel has admitted that evidence shows the ECM additive is efficacious; ECM agrees that the additive is efficacious.

173. Dr. Barlaz offers no opinion in his expert report regarding the biodegradability of ECM Plastics. (RX-853).

Response to Finding No. 173:

ECM objects to Proposed FOF No. 173 because it mischaracterizes the record and is erroneous. Dr. Barlaz opined in his expert report, and testified at length during the hearing, that competent and reliable scientific evidence proved that the ECM plastics were shown to be anaerobically biodegradable. *See, e.g.*, RPFF ¶¶ 1964-2009. In furtherance of that opinion, Dr. Barlaz performed statistical analyses of the test data relevant to this case, the purpose of that analysis was to offer an opinion as to the biodegradability of plastics tested. *See, e.g.*, RPFF ¶¶ 1964-2009. He testified in detail about his statistical calculations, and how the data proves that the test plastics (and not just the ECM additive) had biodegraded considerably during competent and reliable laboratory tests. Consider Dr. Barlaz's testimony:

> Q: Based on your review of the test materials in this case, do you have an opinion as to whether plastics manufactured with ECM's additive technology have been shown to biodegrade in anaerobic laboratory conditions?
> A: Yeah. Based on checking of the lab reports, there were numerous examples where specific plastics were shown to anaerobically biodegrade to methane.

(Barlaz, Tr. 2175).

> Q: Dr. Barlaz, based on the data you've looked at, the analysis you just testified to, do you have an opinion as to whether there is competent and reliable scientific evidence that plastics made with the ECM additive were anaerobically biodegraded in the tests you examined?
> A: Well, I'd like to go line by line and plastic by plastic, but there are certainly many tests where there's good scientific evidence that the material – that the material underwent anaerobic biodegradability (sic).

(Barlaz, Tr. 2264-65; *see also* RX 968).

This Proposed FOF No. 173 should be disregarded. Dr. Barlaz's testimony and his work product speak for itself.

174. There are several tests that also report no biodegradation was observed at the conclusion of the test. (CCX-164; CCX-174-CCX-176; CCX-156; CCX-157; CCX-163; CCX-169-CCX-171).

Response to Finding No. 174:

ECM objects to this Proposed FOF No. 174 because the tests cited **lack foundation**, the statement mischaracterizes the record, and it offers a conclusory analysis of several laboratory studies without any supporting testimony or explanation. There is literally no testimony in the record that discusses or explains the relevance or utility of the various tests cited by Complaint Counsel in this Proposed Finding of Fact No. 174. Complaint Counsel has cited no expert reports or testimony concerning the cited documents, and no fact witnesses have testified (either during depositions or at hearing) concerning the contents of these reports (the one exception being CCX 164, which is Dr. Michel's 2012 testing that he discussed as a rebuttal expert witness). The statement that "several tests … report no biodegradation" is therefore an argument of counsel only, unsupported by any record evidence other than the documents themselves. It lacks foundation because the documents have no sponsoring witnesses.

Note well, that these several tests Complaint Counsel has repeatedly used to suggest that the ECM additive is not efficacious are all gas evolution tests which it simultaneously condemns

as insufficient proof of biodegradation, (CCX-164; CCX-174-CCX-176; CCX-156; CCX-157; CCX-163; CCX-169-CCX-171; Complaint Counsel's Post-Trial Brief, at P. 68 (stating that some tests are flawed because "they look to the ASTM D5511 (a gas evolution test) to support ECM's biodegradation claims.")); moreover, Complaint Counsel simultaneously disregards every single positive ECM test in the record (which positive tests outnumber the inconclusive tests cited in Proposed FOF 174 by at least 3:1) (*compare* RPFF ¶¶ 2133–2659 (28 positive gas evolution tests) *with* Complaint Counsel's Post-Trial Brief, at PP. 59–60 (a few inconclusive gas evolution tests)). Even assuming Complaint Counsel could manipulate the record by ushering through scientific data without a sponsoring witness (expert or otherwise), the tests and datasets reveal substantial problems, which, ironically, are more egregious than some of the immaterial criticisms Complaint Counsel relied on to reject entire categories of ECM's supportive science.

To identify the problems with Complaint Counsel's citations, and because Complaint Counsel has not provided any testimony concerning the studies cited, ECM hereby discusses each specific test listed in Proposed FOF No. 174. However, for each such test, ECM renews and restates its **foundational objection** to the extent that no witness appearing before this Court (either through deposition or live testimony) has discussed the contents of these documents (e.g., the methodology, etc.), not even Complaint Counsel's own experts. As explained below, the tests cited by Complaint Counsel actually support ECM's expert testimony.

CCX 174; Stevens Ecology, 2008 Test of FP International's Loose Fill Product (Invalid Test):

Complaint Counsel includes this 2008 laboratory test as evidence that the ECM product did not perform in a gas evolution test. At the outset, to the extent the laboratory claimed to follow the D5511 test protocol, the test is not a valid test under the standard. The D5511 standard specifically says that "[f]or the test to be considered valid, the positive control must

achieve 70% biodegradation within 30 days." (CCX 84 at 3 ¶ 11.2.1.1). The point of that requirement is to ensure that the test environment is viable enough to actually measure biodegradation. None of the procedures in CCX 174 produced the 70% value within the 30 day period and, so, by letter of the standard, the tests are not valid. Furthermore, we do not need an expert to see why these tests reported little biodegradation. Consider the test environment as pictured by the laboratory on page 9 of CCX 174 (aerobic test):

Figure 2. Thermophilic Composting Apparatus

The image clearly shows that the test materials are not even contacting the inoculum that contains the microbes responsible for biodegrading material. Moreover, the laboratory

recognized that problem, and decided to remedy that major design error by simply shaking the vessels every now and then:

> "[T]his arrangement introduced a potential difficulty, **since most of the test material in treatments T was not in contact with the compost inoculum**. To alleviate this, and to ensure even aeration, the vessels were physically agitated each day."

(CCX 174 at 9) (emphasis added).

Neither Complaint Counsel nor their experts have attempted to explain how this type of test could be valid when the inoculum is not even contacting the test material, and whatever contact occurs is constantly broken by agitating the test material. Please note well, however, that this obvious design error did not stop Complaint Counsel from relying on the test as evidence against ECM, even though Complaint Counsel has simultaneously ignored dozens of positive ECM gas evolution tests that were conducted reasonably and competently, according to ECM's experts.

Finally, as almost all of the tests cited in Proposed FOF No. 174, and unlike many of the ECM gas evolution tests in the record, the laboratories never reported critical information such as the total methane produced in the various test reactors. *See generally* CCX 174. Because methane is the primary endpoint in assessing biodegradation during anaerobic tests, the absence of that information makes any analysis of the test impossible.

CCX 175; Stevens Ecology 2008 Biodegradation Testing of Plastic Film Product (Invalid Test):

As with CCX 174, this Stevens Ecology anaerobic testing failed to reach 70% biodegradation of the positive control within 30 days and, so, the test is considered invalid under the D5511 test protocol. (CCX 84 at 3 ¶ 11.2.1.1). The laboratory also never reported total methane production from the vessels, or gave methane reports as a percentage of total gas,

making an assessment of the biodegradation results impossible. *See generally* CCX 175. The laboratory did not provide the final data showing the numbers for total gas, and they reported no data (statistics, totals, anything) for the anaerobic testing. (CCX 175 at 15-19). Moreover, the laboratory designed and used the following contraption to measure gas totals:

Figure 7. Gas volume totalizers.

(CCX 175 at 17). There is no evidence or discussion in the record concerning how this system works (it involves makeshift PVC tubing that is apparently not even the same height), or how the laboratory could calibrate same. However, the use of this collection system is definitely not permitted by the ASTM D5511 standard. (CCX 84; RX 356). Recall that Complaint Counsel's expert, Dr. Tolaymat, criticized ECM's tests because the laboratories had used a graduated cylinder to record gas totals. (Tolaymat, Tr. 206). Dr. Tolaymat considered that practice imprecise, and rejected ECM studies as a result, even though the ASTM D5511 standard itself calls for the use of a graduated cylinder for that purpose. (Tolaymat, Tr. 206; CCX 84 at 2 ¶ 6.1 (requiring the use of an "inverted graduated cylinder or plastic column")). Complaint Counsel

also criticized Northeast Laboratories' use of a metal canisters during biodegradation testing instead of glass vessels. (CCX 891 at 34). Of course, Complaint Counsel makes no attempt to explain or justify the use of Stevens Ecology's makeshift "gas totalizers," or explain whether those devices are accurate at all. Complaint Counsel does, however, rely on the questionable Stevens Ecology test as evidence that ECM's product does not work.

CCX 176; Stevens Ecology 2008 Biodegradation Testing of Plastic Film:

This test report is a revised version of the test report marked CCX 175. The document presents the identical issues and concerns identified immediately above.

CCX 156; Collection of Emails Between Non-Parties (Incomplete Document):

This so-called "test" of an ECM product is actually just a series of email reports sent between OWS Labs and a nonparty. There is no evidence that ECM ever had these files in its possession until OWS produced same in discovery. The piecemeal reports submitted through email do not disclose the methane content of the test vessels or the triplicate data. (CCX 156). Note, however, that the laboratory reports a negative amount of biodegradation in the test vessel over the short duration test. (CCX 156 at OWS001640). In other words, the test article actually inhibited biodegradation when compared with the blank and the positive control.

That data, if accurate, only proves that ECM's experts are correct to be concerned with manufacture of the test article, or the formula of the test plastic itself. *See, e.g.*, Sahu, Tr. 1815-17, 1931-39; Sinclair, Tr. 761-64. Dr. Sahu, for example, explained that plastics may unwittingly include impurities or components that are antimicrobial. (Sahu, Tr. 1828-30, 1835-36). Complaint Counsel has conceded that the ECM additive is biodegradable. *See, e.g.*, CCX 891 at 24. In fact, Complaint Counsel has suggested (erroneously) that positive data from ECM

tests is simply owed to the ECM additive biodegrading. *See* Complaint Counsel's Amended Post Trial Brief at 1 ("the ECM additive is itself biodegradable"). Even assuming, *arguendo*, that Complaint Counsel is correct and biodegradation in positive tests comes only from the additive (which Dr. Barlaz conclusively disproved when he showed that the amount of biodegradation must have come from the plastic and not the additive), a laboratory should expect to see the ECM additive biodegrade in every test involving an ECM additive. If the laboratory actually records negative amounts of biodegradation, showing that the test article inhibited biological activity, that data strongly suggests at very least that (a) the ECM additive was not present in the test plastic (Sinclair, Tr. 787-790); (b) the test plastic may have contained other components that are antimicrobial or inhibitory to biodegradation (Sahu, Tr. 1828-30, 1835-36); (c) the ECM additive was not properly manufactured in the test article, either through burning or scorching (Sinclair, Tr. 762, 787-790; Sahu, Tr. 1815); or (d) the lab environments for the various test plastics were not biologically conducive for biodegradation testing (Barlaz, Tr. 2274; Burnette, Tr. 2388-90). Without at least exploring those possibilities, a result of the kind seen in CCX 156 is highly suspect. For good reason, ECM's experts explained that these inconclusive tests are not the same as negative test results and do not outweigh the many positive tests in the record. (Sahu, Tr. 1938-39; Burnette, Tr. 2442; Barlaz, Tr. 2272-73).

CCX 157; OWS 2010 Biodegradation Test for Covidien (Invalid Test):

As with other tests discussed here, the OWS test marked CCX 157 would not be considered a "valid" test under the D5511 standard because the test environment plateaued prematurely, demonstrating that the environment was not conducive to biodegradation. (CCX 157 at ECM114737). The test never reached the minimum 70% biodegradation for the positive control, as required by the test standard. (CCX 84 at 3 ¶ 11.2.1.1; RX 356 (same)).

Furthermore, the test environment ostensibly plateaued, even for the cellulose control, around the sixth day of testing, which strongly suggests that the test was not conducive to biodegradability testing. (Burnette, Tr. 2401-02, 2412-13, 2442-43; Barlaz, Tr. 2272-73). Nonetheless, even despite those evident flaws, the ECM test article revealed 3.9% biodegradation within the very short window where the test environment was biologically active. (CCX 157 at ECM114737). That percentage of biodegradation is consistent with ECM's other favorable tests that would go on to show substantial, consistent, and ongoing biodegradation of the test sample where the test environment remained viable. (*see, e.g.*, RX 838). Finally, the test reported as CCX 157 included collection of none of the data necessary to evaluate the tests themselves. The laboratory included no data concerning the methane production in the anaerobic test, except to characterize the methane composition as a total percentage. (CCX 157 at ECM114737-39). The laboratory provided no gas readings or triplicate data. Finally, there is no information as to the nature of the plastic or the load rating of the ECM additive.

CCX 163; OWS 2009 Biodegradation Test for Masternet:

This test demonstrated a biodegradation of -3.7% in the test article, meaning that the test plastic inhibited biodegradation. ECM reiterates and restates the same concerns with this OWS test as with the others discussed in this Response. ECM also reiterates its position with respect to inconclusive testing, *supra* at Response to Finding Nos. Note, however, that this test serves a critical purpose because **it validates expert opinion concerning the need to investigate inconclusive testing**. (Burnette, Tr. 2442; Sahu, Tr. 1938-39). ECM's experts testified that many variables can influence an inconclusive test. (Burnette, Tr. 2442; Sahu, Tr. 1938-39). Dr. Sahu explained that many plastics can contain additives (e.g., colorants), impurities, or manufacturing errors (e.g., scorching of the additive) that, unbeknownst to the manufacturer,

might have antimicrobial properties that would logically negate the effect of the ECM additive. (Sahu, Tr. 1828-1836, 1938-39). This study (CCX 164) shows that the test plastic actually inhibited the biological activity in the test vessel. The study authors specifically observed:

> The biodegradation percentage was slightly negative, this is because the background activity in the test reactors was slightly less than in the test reactors. **This could point to some kind of inhibition**, but probably not a severe toxicity.

(CCX 164 at ECM113623) (emphasis added). Note that OWS did not include a negative control in its tests and, so, it is impossible to determine whether that inhibitory effect was also observed in an untreated plastic. (*See generally* CCX 164).

CCX 169; OWS Letter to Gary Hellinger:

ECM objects to the inclusion of this document as evidence against ECM. Certainly, the document is not a "test" as described by Complaint Counsel in the proposed FOF No. 174 and, so, the use of this document to support Complaint Counsel's proffered fact is improper. The document marked CCX 169 appears to be a review of several other test documents and materials provided to OWS Labs by Gary Hellinger of Gary Plastic Packaging Corp. (CCX 169). The document states on the first page that it is a "review of the several documents, reports and statements on biodegradation of ECM MasterBatch pellets." (CCX 169 at 1). The document does not include any original test data considered by OWS, nor does it include any of the statements and marketing materials relied on by OWS in its review letter. (CCX 169). The document is not Bates numbered and, so, the origins of the actual exhibit are uncertain. Moreover, Complaint Counsel presented no testimony (either at the hearing or through depositions) from a sponsoring witness that could explain the contents of this document. The document is therefore **unreliable hearsay**, and should be treated as such by the Court.

Complaint Counsel should not be permitted to shoehorn additional opinion evidence into this case through non-expert, non-testifying witnesses, while misrepresenting that same opinion as an objective "test" that showed no biodegradation.

CCX 170; 2007 Aerobic Biodegradation Test of Plastic Bag Under Composting Conditions:

ECM renews and reiterates here fully all previous concerns noted above with the OWS laboratory testing featured in Complaint Counsel's Proposed FOF No. 174. As with the remaining documents, Complaint Counsel presented no testimony from fact witnesses or experts concerning the contents of this document. The study authors provided no data from the study that would be necessary to verify or determine the amounts of biodegradation recorded in the study. (CCX 170). For example, unlike ECM's gas evolution tests that revealed positive data, this OWS test did not report total gas volume data, provide percentages of carbon dioxide, or provide information concerning their calculation of the theoretical gas yields from the sample. (CCX 170). OWS reported no information concerning the test plastic itself, including, for example, the load rating of the ECM additive, or if the ECM additive was even involved. (CCX 170). Nothing in the test report identifies the ECM additive. Put simply, Complaint Counsel had the burden to support its documentary record with testimony or, at very least, a more robust recitation of facts, particularly where the documents have major information gaps. They failed to do so.

CCX 171; OWS 2012 Anaerobic Biodegradation Study for Shields:

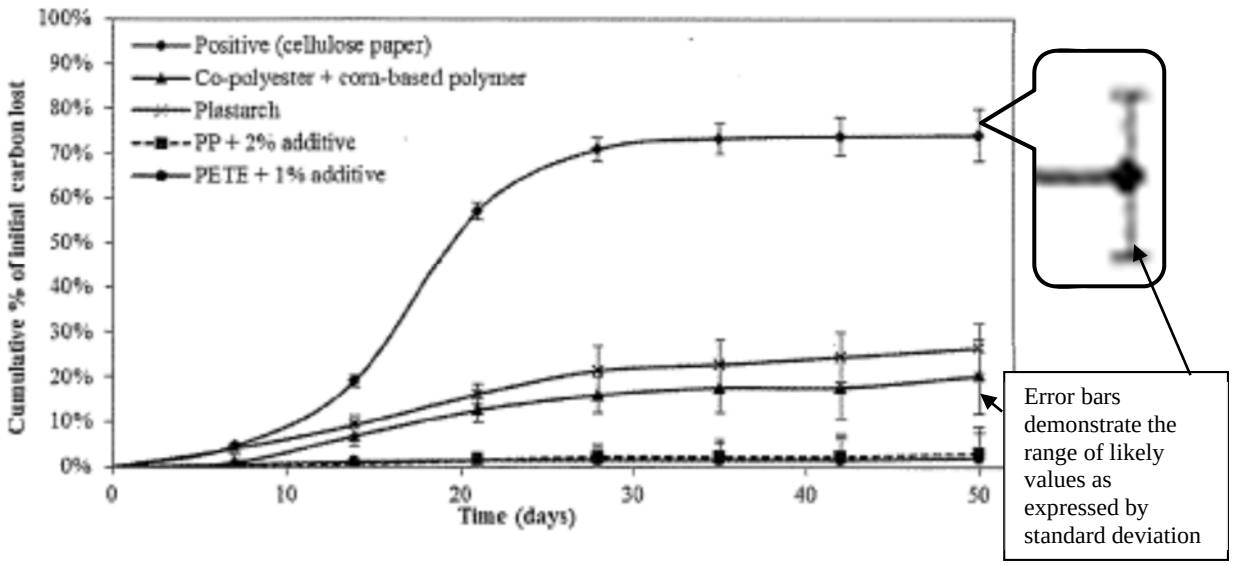
ECM renews and reiterates here fully all previous concerns noted above with the OWS laboratory testing featured in Complaint Counsel's Proposed FOF No. 174, including the lack of

supporting data provided, particularly the absence of any methane data. (CCX 171). The test also failed to use a negative control, which is significant because the reported biodegradation in the sample vessel was -4.4%, meaning that the test plastic actually *inhibited* rather than promoted biodegradation. (CCX 171 at ECM114222). As explained, *supra*, Complaint Counsel has conceded that the ECM additive is biodegradable. *See* CC's Amended Post Trial Brief at 1. In fact, Complaint Counsel has argued that the ECM additive is so biodegradable that it will produce a "priming effect" in the background inoculum that actually *stimulates* methane production. *Id.* at 71. Complaint Counsel has no support for its priming effect theory, and assuming the ECM additive was properly manufactured in the test plastic, this test would disprove that theory. The test reveals a high likelihood that the test plastic contained a component that was inhibitory to biodegradation, or that the test plastic was not properly manufactured with the ECM additive. (Sahu, Tr. 1828-1836, 1938-39). Complaint Counsel did not support this document with any fact witness or expert testimony of any kind (at deposition or at the hearing). The document is therefore **unreliable hearsay**, and should be discounted as such.

CCX 164; Dr. Michel's 2012 OSU D5511 Test of Various Plastics:

Complaint Counsel is simply incorrect that this test produced "no biodegradation," as the test revealed 3.1% biodegradation as an average of the test vessels. (CCX 164). In fact, the data projected in Dr. Michel's test report demonstrates a progressive, steady increase in biodegradation of the ECM test plastic over time, until the entire laboratory system fails around the 30 day period. (CCX 164 at 2590 (showing system-wide plateau)). When factoring the *error bars* that report the statistical range in the data points, it is obvious that every test vessel, including the cellulose (cellulose has been shown in other tests to biodegrade beyond 90%),

plateaued right around the exact same time in the test—at about 30 day—which would be an extraordinary coincidence if that ostensibly system-wide plateau did not relate to the environmental conditions in the test:



(CCX 164 at 2590). ECM's experts explained, and Dr. Michel agreed, that the plateau in a test environment means that the test is simply no longer capable of sustaining biodegradation testing. (Sahu, Tr. 1931-32; Burnette, Tr. 2401-02; Michel, Tr. 2959). Unlike a landfill environment, the closed-system laboratory tests cannot sustain life over the prolonged period necessary to maintain biodegradation testing. (Burnette, Tr. 2401-03). It is therefore impossible to determine, based on CCX 164 alone, whether the ECM test plastic would have continued to biodegrade had the test systems not collapsed at the 30 day mark.

Moreover, Dr. Michel does not report his raw data in CCX 164. (CCX 164). He does not report the methane levels, the percentages of total gas composition, or the triplicate data. (CCX 164). That absence of data would have precluded the peer reviewers from assessing the accuracy of his test. Dr. Michel also performed this test on behalf of an ECM competitor who was not a long-time ECM customer, did not manufacture the product with ECM's assistance, and thus had

no experience manufacturing plastics with the ECM additive. (Michel, Tr. 2931-32). The risk that the ECM additive was not properly included in test plastic is high. *See* Michel, Tr. 2933-36 (testimony showing that Dr. Michel never determined whether the product was properly manufactured with the ECM additive, that he received no certificate of ingredients regarding the samples, and that he did nothing to verify whether the additive was properly incorporated in the plastic by the ECM competitor). Dr. Michel did not perform any scientific evaluation to determine the actual cause of the inconclusive test result. (Michel, Tr. 2935–36, 2938, 2961–63). Consequently, he lacks a basis for concluding that his inconclusive test is the same as a negative test. (Sahu, Tr. 1937–43; Barlaz, Tr. 2272–74, 2335–38; Burnette, Tr. 2440–46). The presence of a few inconclusive biodegradation tests do not outweigh or diminish the clear, competent, and reliable scientific evidence showing that ECM plastics are anaerobically biodegradable, in the form of more than two dozen favorable tests. (*See, e.g.*, RX 248; RX 254; RX 263; RX 265; RX 266; RX 268; RX 273; RX 276; RX 392; RX 393; RX 394; RX 395; RX 396; RX 398; RX 399; RX 401; RX 403; RX 402; RX 405; RX 465; RX 467; RX 468; RX 836; RX 838; RX 839; CCX 534; CCX 546; CCX 547; CCX 548; CCX 952).

175. According to Dr. Barlaz, the "BMP is an appropriate screening tool for biodegradability in landfills although the actual volume of methane generated in a landfill may well be less than that measured by a BMP test." (CCX-952 at 1).

Response to Finding No. 175:

ECM objects to this Proposed FOF No. 175 because it mischaracterizes Dr. Barlaz's testimony and scientific opinions. At the hearing, citing his test report (CCX 952), Dr. Barlaz testified that his BMP tests were not appropriate for testing slower degrading materials, and that the amount of biodegradation observed through the BMP testing is likely to be only a fraction of the total biodegradation possible. (Barlaz, Tr. 2270-72 (stating that "I don't have confidence that

we captured 80 percent of the methane. And in retrospect, I think a longer test could have given us more methane"). Dr. Barlaz's testimony expressly contradicts the proffered fact statement and, so, Complaint Counsel has not adequately supported the proposed fact, and, when taken in context, it misleads.

176. ECM experts Drs. Burnette and Barlaz concede that they are not polymer scientists and do not have the expertise to opine specifically on the biodegradability of plastics. (*See* RX-840 (Burnette, Dep. at 65-66, 68, 204-5) (Dr. Burnette: (1) admitting he does not understand the role crystallinity plays in polymer biodegradation; (2) identifying "oxobiodegradable" as a "slang term"; and (3) admitting not being offered as a polymer expert); CCX-943 (Barlaz, Dep. at 26-27, 142) (Dr. Barlaz discussing (1) that he is not a polymer chemist, so he cannot speak to whether a non-homogenous polymer could be considered biodegradable; and (2) how one would need to be a polymer chemist to understand whether a plastic could be abiotically transformed at the temperatures of the ASTM D5511)).

Response to Finding No. 176:

ECM objects to Proposed FOF No. 176 because it mischaracterizes the experts' testimony. ECM's experts Drs. Burnette and Barlaz limited their opinions to areas where they had expertise (unlike Complaint Counsel's Dr. Tolaymat). (Burnette, Tr. 2418; Barlaz, Tr. 2166 (expert in biodegradation)). For instance, Dr. Burnette explained that his analysis of nucleophilic attacks on polymer structures was "a fundamental of biochemistry." (Burnette, Tr. 2418). Dr. Burnette earned an undergraduate degree in biochemistry, with a minor in chemistry. (Burnette, Tr. 2360). He earned a Ph.D. in biochemistry and molecular biology. (Burnette, Tr. 2361). Dr. Barlaz has an undergraduate degree in chemical engineering and a Ph.D. in environmental engineering. (Barlaz, Tr. 2168). Dr. Barlaz focused his Ph.D. research on the microbiology of solid waste decomposition. (Barlaz, Tr. 2168). Complaint Counsel's expert has described Dr. Barlaz as an authority in the field. (Barlaz, Tr. 233). Dr. Tolaymat cited Dr. Barlaz's work throughout his expert report, and relied on Dr. Barlaz as an authority when answering questions

at his deposition. (RX 893; RX 851 (Tolaymat, Dep. at 85, 87, 90, 107, 108, 131, 133, 148, 172, 193, 214-15, 224-25, 260)). Furthermore, in most of the published articles by Dr. Tolaymat that actually concern biodegradation in landfills, Dr. Barlaz is a lead- or co-author. (RX 893 at 51 (Tolaymat CV)). Dr. Barlaz limited his expert opinions to the scientific areas in which he is expert. Dr. Barlaz based his opinion on the biodegradability of ECM plastics on sound science and methodology, to which Complaint Counsel has not rebutted through testimony or fact. (RX 968; Barlaz, Tr. 2246-70).

Finally, ECM objects to the use of deposition testimony to establish record findings of fact related to expert witnesses who testified live at the hearing, particularly where, as here, the deposition testimony cited is not offered for impeachment.

177. Dr. Barber's test looks to measurements of free chloride as an indicator of biodegradation. (CCX-892 at 12).

Response to Finding No. 177:

Respondent has no specific response.

178. Dr. Barlaz stated that he was skeptical of the ASTM D5511 test. (CCX-948).

Response to Finding No. 178:

ECM Objects to this Proposed FOF No. 178 because it misconstrues and mischaracterizes Dr. Barlaz's expert opinion. Dr. Barlaz reviewed the relevant data in this case, including more than two dozen D5511 gas evolution studies. (RX 968; Barlaz, Tr. 2246-70). He testified in detail that those studies were competent and reliable evidence proving that the ECM plastics were anaerobically biodegradable. (RX 968; Barlaz, Tr. 2246-70). Dr. Barlaz also testified that the temperatures in D5511 would only affect the rate of biodegradation, and not the

intrinsic biodegradability of the test plastics. (Barlaz, Tr. 2228). He further testified that intrinsic biodegradability (and not "rate") was the primary concern, because the rates in a landfill will fluctuate considerably and cannot be predicted based on laboratory data. (Barlaz, Tr. 2193).

Otherwise, to the extent that Dr. Barlaz was specifically "skeptical" of D5511 testing in CCX 948, it was because he had concerns that the test would be difficult to operate, and that the test would be run for too short a time period. (CCX 948). Dr. Barlaz's subsequent testimony clarifies his concerns and explains that the ASTM D5511 test was competent and reliable evidence in this case. (Barlaz, Tr. 2264-65).

179. ECM expert Dr. Burnette concedes that the presence of a biofilm does not indicate that the microorganisms are using the plastic as a food source. (RX-840 (Burnette, Dep. at 41-43)).

Response to Finding No. 179:

ECM hereby renews and reiterates in full its response to Proposed FOF No. 152, which is identical in substance to this proffered fact in FOF No. 179.

180. Dr. Stephen Joseph, a 3M chemist, consulted with colleagues who were immediately suspicious of ECM's claims. (CCX-821 (3M, Dep. at 43, Ex. 7)).

Response to Finding No. 180:

ECM objects to Proposed FOF No. 180 because it is irrelevant and includes unreliable hearsay. Here Complaint Counsel seeks to introduce for the truth of the matter asserted a document that was introduced as an exhibit during the deposition of 3M, a one-time prospective ECM customer. The document is a hearsay transmission to the nonparty witness. Those individuals were without the benefit of the factual record developed in this case. The initial opinions and reaction of certain customers to ECM's claims is not relevant, Complaint Counsel

has not explained the relevancy, or introduced this information during the hearing. Finally, statements like this are inherently and unfairly prejudicial. Complaint Counsel relies on hearsay statements spoken by declarants not shown to be in a position of knowledge and access to information sufficient to communicate credibly or reliably.

181. Based on their suspicions of ECM's claims, 3M conducted its own test to determine if ECM's additive would make a plastic blend biodegrade to any extent. (CCX-821 (3M, Dep. at 60, Ex. 17)).

Response to Finding No. 181:

ECM does not dispute that 3M performed its own test of products purportedly containing the ECM additive. 3M Corporation's designee did not know if 3M manufactured the products for testing, and it is unknown where the finished products used in the 3M test came from. (CCX 821 (3M, Dep. at 11)). 3M's corporate designee had no personal knowledge of the 3M test that is in the record as CCX 754. (CCX 821 (3M, Dep. at 116)). 3M's designee, Mr. Joseph, testified at deposition that he was not the best person to discuss the 3M biodegradation testing. (CCX 821 (3M, Dep. at 117)). Complaint Counsel produced no sponsoring fact witness at the hearing to discuss testing performed by 3M Corporation, and Complaint Counsel's experts did not address that testing in their testimony.

182. ECM's expert concedes aerobic tests (with oxygen) are irrelevant to claims of biodegradation in landfills. (RX-853 (Barlaz Report at 7) ("To begin, for purposes of biodegradability under landfill conditions, only anaerobic biodegradability is of relevance.")).

Response to Finding No. 182:

ECM's experts have stated that anaerobic testing is the predominant form of degradation in MSW landfills and so anaerobic conditions are the primary focus when assessing landfill

biodegradation. ECM objects to this Proposed FOF No. 182 to the extent Complaint Counsel claims that aerobic testing is irrelevant to the case. First, Dr. Barlaz testified that aerobic biodegradation occurs in MSW landfills, particularly in the early stages after waste disposal. (Barlaz, Tr. 2214-15). Dr. Sahu testified that both aerobic and anaerobic studies are useful when evaluating whether the ECM additive renders conventional plastics biodegradable. (Sahu, Tr. 1917-18). Aerobic studies are significant, in part, because the conventional plastics at issue in this case are not generally considered biodegradable either anaerobically or aerobically. (Tolaymat, Tr. 245; McCarthy, Tr. 414). Dr. Burnette also testified that the process of aerobic biodegradation shares many of the same biological and metabolic characteristics (including certain pathways) as anaerobic biodegradation. (Burnette, Tr. 2423-26). Accordingly, tests that show ECM infused plastics rendered otherwise non-biodegradable conventional plastics into biodegradable materials is highly relevant to understanding whether the ECM additive is an efficacious technology. (Burnette, Tr. 2426). ECM has introduced evidence of at least seven (7) aerobic composting tests which prove that the ECM infused plastics biodegraded substantially under aerobic conditions. (RPFF ¶¶ 2130–2179).

183. ECM expressly claims that its additive enables conventional, non-degradable plastic to fully biodegrade in nine months to five years in a landfill since at least 2005. (CCX-274A; CCX-701).

Response to Finding No. 183:

ECM objects to the Proposed FOF No. 183 because it mischaracterizes the record. ECM agrees that it once claimed that its technology might enable conventional plastics to biodegrade within 9 months to 5 years. In 2012 ECM permanently discontinued that claim. (Sinclair, Tr. 770-71). Furthermore, ECM has always informed its customers that the rate of biodegradation for each piece of plastic is dependent on many variables that cannot be predicted with certainly.

(Sinclair, Tr. 769). To the extent the proffered FOF No. 183 is written in the present tense (i.e., "ECM expressly *claims*"), the purported fact is false and unsupported by the record.

184. ECM's technical data sheets contained the unqualified biodegradable claim. (RX-683; RX-327 at 3; RX-326 at 5).

Response to Finding No. 184:

ECM has no specific response, and agrees that its technical data sheets truthfully identified the ECM additive as a product "for use in plastic resins for manufacturing biodegradable plastic products." (RX 683).

185. ECM's pricing sheets contain the unqualified biodegradable claim. (RX-330; RX-331).

Response to Finding No. 185:

ECM has no specific response, and agrees that its pricing sheets truthfully identified the ECM additive "for Manufacturing Biodegradable Plastic Packaging and Products." (RX 330).

186. ECM's customers used unqualified biodegradable claims to market their products. (CCX-30-31 (APM marketing); CCX-33 (Earth Aware marketing materials); CCX-39 (CHAMP marketing materials); CCX-40 (Good Earth marketing materials); CCX-41 (Crayex marketing materials); CCX-43 (D&W marketing materials); CCX-46 (photo of Green Natura bottle with unqualified biodegradable claim); CCX-47 (photo); CCX-49 (Epsilon Plastics marketing materials); CCX-50 at 2 (Flambeau); CCX-51 (Flexible Plastic); CCX-52; CCX-56, RX-229, RX-15, RX-16 (IPB); CCX-59 (Medical Arts Press); RX-00 (AMPAC); RX-02 (Sentry Green); RX-26 (Eaton)).

Response to Finding No. 186:

ECM has no specific response except to state that Complaint Counsel has failed to prove that any of biodegradation contained in the materials identified appeared in the market, or if they did, that they resulted in any consumer purchase of the plastics involved. (RPFF ¶¶ 732–34).

Moreover, Complaint Counsel has failed to prove that any consumer has ever purchased a plastic product based on a biodegradation claim concerning an ECM product. (RPFF ¶¶ 732–34).

187. ASTM D5511 is a screening-level test designed to evaluate whether the test specimen is capable of biodegrading under optimal conditions. (CCX-891 ¶¶ 51-53 (ASTM D5511 is conducted under optimal conditions)).

Response to Finding No. 187:

ECM objects to this Proposed FOF No. 187 because it mischaracterizes the record. All experts have agreed that gas evolution laboratory reactor testing (like the ASTM D5511) is competent and reliable to prove biodegradability. (*See* ECM's RPFF ¶¶ 1608–1628). Each of Complaint Counsel's experts have performed the same type of testing when attempting to assess biodegradability of plastics, including, Dr. McCarthy. (*See* ECM's RPFF ¶¶ 1608-1628). None of the experts in this case has performed testing such as radiolabeled gas evolution tests, or *in situ* landfill studies, when assessing biodegradability of plastics, nor have they seen those types of tests used within industry to support biodegradable claims. (McCarthy, Tr. 563; Michel, Tr. 2096; Barlaz, Tr. 2245-46 (testifying that Dr. Barlaz would be "surprised" if any expert had performed carbon-14 testing on plastics because it very difficult to find a company that could properly make the test article, and the impracticalities outweighed any benefit). Radiolabeled gas evolution tests are not generally accepted in the scientific community as proof of biodegradation of plastics. (Sahu, Tr. 1794–95; Barlaz, Tr. 2246; Michel, Tr. 2907).

ECM's experts each testified that the D5511 gas evolution studies were competent and reliable evidence of the anaerobic biodegradability of plastic materials. (RX 853 at 7-8; Barlaz, Tr. 2219, 2245-46; Sahu, Tr. 1895-96; Burnette, Tr. 2373; *see also* Michel, Tr. 2907). They further testified that any differences between the D5511 test environment and the landfill environment were immaterial, and would only influence the "rate" of biodegradation, not

intrinsic biodegradability of the test plastic, or the ability of the plastic to biodegrade in a landfill environment substantially faster than an untreated product. (Sahu, Tr. 1924-26; Barlaz, Tr. 2219; Burnette, Tr. 2410-13).

188. Dr. Sahu's report and testimony estimate biodegradation times anywhere from 30 years to as long as 100 years for the thinnest of plastic films that contain ECM Additive. (RX-855 at 44); (Sahu Tr., 1953-1954).

Response to Finding No. 188:

ECM hereby renews and reiterates its objections and responses to Proposed FOF No. 132, which is identical in substance to this Proposed FOF No. 188.

189. ECM concedes that conventional plastics are not biodegradable. (CCX-818 (Sinclair, Dep. at 56)).

Response to Finding No. 189:

ECM objects to the reliance on deposition testimony to establish factual findings where the same witness testified fully at the hearing, particularly where the proffered deposition testimony is not offered for impeachment. ECM further objects to this proposed FOF No. 189 because it calls for expert opinion testimony by a non-expert, ECM's President Robert Sinclair. Mr. Sinclair testified to the commonly understood position that plastics are not biodegradable. Dr. Sahu, by contrast, explained that the viewpoint expressed by Mr. Sinclair is owed to the fact that plastics take many years to biodegrade, not because they do not actually biodegrade. (Sahu, Tr. 1758-59). Complaint Counsel has conceded that point, as they wrote *supra* under Proposed FOF No. 7 that "given enough time, all things 'biodegrade.'"

190. Scientists view claims of biodegradable plastic with great skepticism. (CCX-891, ¶ 37; *See also* CCX-892).

Response to Finding No. 190:

ECM objects to Proposed FOF No. 190 because it is unsupported by record evidence or facts, and also irrelevant. In support of this statement, Complaint Counsel offers only Dr. McCarthy's expert report and rebuttal report. (CCX 891; CCX 892). The word "skepticism" is not expressed anywhere in either document. (CCX 891; CCX 892). Dr. McCarthy offers no evidentiary or documentary support for the concept that scientists generally view these claims with skepticism. Dr. Sahu testified in detail concerning the many peer reviewed articles (hundreds) that he reviewed which discussed the biodegradability of conventional plastics. (Sahu, Tr. 1858-59; RX 855 at 24-40; ECM RPFF ¶¶ 1729-1731). This proffered FOF No. 190 is therefore an argument of counsel unsupported by the record, and it should be disregarded.

191. ECM's expert David Stewart testified as follows:

> QUESTION: Assume that plastics manufactured with the ECM additive will not in fact biodegrade in landfills in less than five years. . . . Given that assumption, you would agree with me, wouldn't you, that prohibiting that claim would serve consumer welfare?
>
> STEWART: If it's not true, yes, prohibiting that specific claim would serve consumer welfare.
>
> QUESTION: Assume that plastics manufactured with the ECM additive will not in fact biodegrade in landfills in less time than plastics made without the additive. . . . Given that assumption, you would agree with me, wouldn't you, that allowing that claim would not serve consumer welfare; correct?
>
> STEWART: I would agree with that, yes.
>
> QUESTION: . . . . In this regard, you views with respect to policy really turn on the science; correct?
>
> STEWART: That is correct, yes. (Stewart, Tr. 2804-2805).

Response to Finding No. 191:

Complaint Counsel mischaracterizes Dr. Stewart's testimony. First, to clarify Complaint Counsel's proposed finding of fact, the line of questioning Complaint Counsel cites is based on Question 5B of Dr. Stewart's survey. (Stewart, Tr. 2796–2805; RX 847). Question 5B asked respondents what the following claim meant in the respondent's own words: "Plastic products manufactured with our additive will biodegrade in any biologically-active environment (including most landfills) in some period greater than a year." (Stewart, Tr. 2796; RX 847).

Second, Complaint Counsel's questions were based on a number of assumptions with which Dr. Stewart disagreed that Dr. Stewart was asked by Complaint Counsel to accept as true nevertheless as a predicate for the questions. (Stewart, Tr. 2804). Complaint Counsel asked Dr. Stewart "to assume that Stewart Demonstrative 1 reflects all of the answers that can properly be coded within that category [respondents provided an answer of one year or less to question 5B] …" (Stewart, Tr. 2803). Complaint Counsel then asked Dr. Stewart to ignore all respondents who did not provide an answer in terms of rate or time of biodegradation. (Stewart, Tr. 2804 ("You're ignoring the rest of the sample, but yes, as you framed it, that is correct.")). Next, Complaint Counsel asked Dr. Stewart to assume that 1) "plastics manufactured with the ECM additive will not in fact biodegrade in landfills in less than five years …" and 2) that "plastics manufactured with the ECM additive will not in fact biodegrade in landfills in less time than plastics made without the additive …" (Stewart, Tr. 2804-05). Only after piling assumption on top of assumption did Dr. Stewart testify as quoted by Complaint Counsel.

Third, Dr. Stewart disagreed with the way Complaint Counsel was using his data in this situation. (Stewart, Tr. 2782–83 ("I object to what you're doing with the data. It's an inappropriate use of the data that we collected … Just know that when you're done with the computation, it's your computation, not mine.")). Now, for Complaint Counsel to go back and selectively quote Dr. Stewart for factual propositions based on assumptions and manipulation of

data disapproved of by Dr. Stewart—the researcher who obtained the data—misleads and states as a fact that which is not accepted as such by the testifying witness.

"Most consumers didn't give specific times in their responses to questions – to question 5B." (Stewart, Tr. 2803). Furthermore, regarding questions 5A, 5B, and 5C generally, Dr. Stewart concluded that given "consumers' lack of detailed knowledge of biodegradability, it is not surprising that a common response among end-use consumers was a lack of understanding, expressions of confusion, expressions of skepticism or disbelief, or **just a restatement of the claim.**" (RX 856 (Stewart, Rep. at 26) (emphasis added)). So, because Question 5B states "**greater than a year**" in the question itself, and given the respondents' lack of detailed knowledge of biodegradability, it is not surprising that 24% of respondents answered question 5b with a response that fit into the category of "Gone/decomposed/biodegrade in **one year**" reiterating the time frame in the question. (RX 846) (emphasis added).

192. "Convergent validity" refers to the degree that studies employing different methodologies yield similar results. (Frederick, Tr. 1057-1058); (*See also* CX-865 at 13).

Response to Finding No. 192:

The definition for "convergent validity" in Finding No. 192 is unique to Dr. Frederick, and Dr. Frederick does not 1) define convergent validity in CCX 865, and cited no source for "convergent validity" at hearing. (Frederick, Tr. 1057–58; CCX 865 (Frederick, Rebuttal Rep. at 13)).

193. Professor Shane Frederick gave the following example regarding convergent validity:

> There's a genuine question [in fisheries about whether tuna fish] have a body temperature which is higher than the external water in which they swim. And so one could imagine trying to ascertain the [answer] to this by embedding thermometers . . .

> inside of a live tuna fish. And suppose that you had three different thermometers constructed by three different companies using three different designs, and you embedded all three in the tuna fish, and . . . . suppose that you got back the results from these three different designs: 75 degrees, 73 degrees, 74 degrees. You can conclude with a considerable degree of certainty that that tuna fish's temperature is around 74 degrees because . . . they are different[ly] designed thermometers. They're all yielding essentially the same result. That's convergent validity. (Frederick, Tr. 1058-1059).

Response to Finding No. 193:

ECM does not dispute that Dr. Frederick testified as quoted. However, ECM notes that two "surveys that are both flawed don't produce an unflawed and valid survey … They may all even produce the same outcome, but that outcome could be produced because they all share the same flaw." (Stewart, Tr. 2620). Furthermore, regarding the specific example Dr. Frederick provided, it is possible that all three thermometers have the same or similar flaws, thereby rendering each temperature reading invalid.

194. In 2006, the American Plastics Council ("APCO") conducted an approximately 1000-respondent telephone survey. (Frederick, Tr. 1037); (CCX-860 at 7).

Response to Finding No. 194:

The referenced survey was conducted by APCO Insight, but commissioned by the American Plastic Council, two separate and distinct entities. (RX 596).[11]

195. The survey focused primarily on plastic products; and 60% said that packages labeled "biodegradable" should biodegrade within one year or less. (Frederick, Tr. 1037); (RX-597 at 2).

Response to Finding No. 195:

[11] *Compare* http://www.apcoinsight.com/ (last visited September 29, 2014) *with* http://plastics.americanchemistry.com/ (last visited September 29, 2014).

Complaint Counsel mischaracterizes the APCO survey results. The question referenced by Complaint specifically asked "If a package is labeled 'biodegradable,' what should be the maximum amount of time that it should take for that package to decompose?" (RX 597, at 2). That actual question is in stark contrast to the way it is framed by Complaint Counsel in this proposed finding of fact, in which Complaint Counsel implies that consumers interpret the naked term "biodegradable" to necessarily denote a rate of biodegradation. However, the question itself, which is a leading closed-ended multiple choice question, specifically asks for a rate of biodegradation, therefore leading the respondent to conclude that "biodegradable" necessarily denotes a rate of biodegradation, and provides respondents with only six substantive responses, four of which are time spans of one year or less. (RX 856 (Stewart, Rep. at 7–8) ("Given the lack of balance in the answers available to the respondents, it is not surprising that 60% of the respondents selected an answer of one year or less. Random responses spread among six options, four of which are one year or less, would result in 66% of the responses falling in one of the four responses related to one year or less.")). In addition, no survey respondent to the referenced question "said" anything, as the proposed finding misleadingly states, because the referenced question was a closed ended question wherein respondents had to select one of the provided, limited response options. (RX 597, at P. 2).

196. In 2010, a company (EcoLogic) manufacturing a plastic additive similar to ECM's product engaged a survey firm (Synovate) to conduct a 2000-respondent internet panel survey. (Frederick, Tr. 1046-1047).

Response to Finding No. 196:

Respondent has no specific response.

197. In the Ecologic study, 25% stated that "less than one year" was a reasonable amount of time for a "biodegradable" package to decompose in a landfill. (RX-673 at 4; CCX-860 at 11).

Response to Finding No. 197:

Complaint Counsel mischaracterizes the Synovate survey results. The question referenced by Complaint Counsel specifically asked "What do you believe is a reasonable amount of time for a 'biodegradable' plastic pack to decompose in a landfill?" (CCX 860 (Frederick, Rep. at 11)). However, the question itself, which is a leading closed-ended multiple choice question, specifically asks for a time frame of biodegradation, therefore leading the respondent to conclude that "biodegradable" necessarily denotes a limited time for biodegradation—a conclusion buttressed by the fact that respondents had 6 answers to choose from, all of which contained only a time frame. (CCX 860 (Frederick, Rep. at 11)). In addition, no respondent to the question referenced in this proposed finding "stated" anything; the referenced question was a closed ended question wherein respondents had to select one of the provided, limited response options.

198. In 2014, Complaint Counsel engaged Professor Frederick to conduct surveys through Google Consumer Surveys ("GCS") to assess how much time consumers believe plastic products labelled "biodegradable" will take to biodegrade. (Frederick, Tr. 1114).

Response to Finding No. 198:

In support of this proposed finding of fact, Complaint Counsel cites only to page 1114 of the hearing transcript, which is part of an offer of proof. (Chappell, Tr. 1113 ("you're allowed to question him on this offer of proof"); Cohen, Tr. 1115–16 ("Your Honor, this concludes the offer of proof")). Therefore, Finding No. 198 violates this Court's September 3, 2014 Order. ECM therefore moves to strike the finding.

Further, this fact is not supported by the record insofar as it implies that Complaint Counsel retained Dr. Frederick in order to conduct Google Consumer Surveys. Rather, the record supports the notion that Dr. Frederick unilaterally chose to conduct Google Consumer Surveys, not because Complaint Counsel hired or instructed him to do so, but in order to save money and because of his familiarity with Google Consumer Surveys. (Frederick, Tr. 1205–06).

199. Professor Frederick conducted twelve GCS surveys addressing this issue—each employing different wording an images—and the results ranged from 20%-52%. (CCX-860 at 30-32).

Response to Finding No. 199:

Like the questions cited by Complaint Counsel in Proposed Findings of fact 195 and 197, the questions Dr. Frederick asked are leading by virtue of the fact that they instruct the respondent to answer with a time frame, as opposed to asking the respondents what the term "biodegradable" means. (CCX 860 (Frederick, Rep. at 30–32)). Furthermore, the data cited by Dr. Frederick in his report is wholly unreliable. The survey research Dr. Frederick performed for this litigation cannot be characterized as a survey. (Stewart, Tr. 2596). The purpose of Dr. Frederick's surveys was to demonstrate that despite its flaws, the APCO survey produced valid and reliable results. (Stewart, Tr. 2616; RX 856 (Stewart, Rep at 8 n. 4)).

Dr. Frederick's Google Consumer Surveys do not meet the requirements of a valid survey as defined in the fields of marketing and survey research. (Stewart, Tr. 2596). Dr. Frederick did not follow the principles for survey research explained in the Manual for Complex Litigation, Fourth Edition in conducting his Google Consumer Surveys. (Stewart, Tr. 2596–97). Dr. Frederick did not follow the Standards for Scientific Evidence, Third Edition in conducting his Google Consumer Surveys. (Stewart, Tr. 2597).

In short, Dr. Frederick's Google Consumer Surveys do not meet generally accepted standards for survey research. (Stewart, Tr. 2598; RX 856 (Stewart, Rep. at 10)). There are seven characteristics of acceptable survey research: 1) the population was properly chosen and defined; 2) the sample chosen was representative of that population 3) the data gathered were accurately reported; 4) the data were analyzed in accordance with accepted statistical principles; 5) the questions asked were clear and not leading; 6) the survey was conducted by qualified persons following proper interview procedures; and 7) the process was conducted so as to ensure objectivity (the study was double blind). (Stewart, Tr. 2599; RX 856 (Stewart, Rep. at 10)). Dr. Frederick's Google Consumer Survey fails to satisfy all of the seven characteristics of acceptable survey research. (Stewart, Tr. 2599-2604).

Dr. Frederick's Google Consumer Survey failed to properly choose and define a population because it is not clear what the population was that he was analyzing; while it appears to be some subset of the American population, it's not defined by an age and there is no lower bound. (Stewart, Tr. 2600). Dr. Frederick's Google Consumer Survey is defined in terms of who participated in the survey, which is not an appropriate way to define a population. (Stewart, Tr. 2600). Dr. Frederick collected no demographic information from his respondents. (Stewart, Tr. 2600). Therefore, Dr. Frederick is confused as to who the relevant population was for his survey, whether it is "any adult that would buy a plastic product" or "any person who would buy a plastic product." (Frederick, Tr. 1232). As a result of Dr. Frederick's population being poorly defined and the inability to know the characteristics of people who may visit the particular website where Dr. Frederick's survey questions were posted, there is no way to develop an assessment of whether or not the respondents to Dr. Frederick's Google Consumer Survey were appropriate, interested, or even willing to give sincere responses. (Stewart, Tr. 2608).

Dr. Frederick's Google Consumer Survey failed to implement a sample that was representative of the population. (Stewart, Tr. 2600). Dr. Frederick's sampling methods were haphazard and inconsistent. (Stewart, Tr. 2607–08; RX 856 (Stewart, Rep. at 11). Google provides only indirect circumstantial evidence or information on Google Consumer Survey's respondents' demographics. (Frederick, Tr. 1229). According to Dr. Frederick, "there are several reasons why it would be difficult for Google to make, you know, a really accurate imputation of various demographic characteristics." (Frederick, Tr. 1230). Dr. Frederick has no way of knowing whether someone who would not buy a plastic product participated in his Google Consumer Surveys. (Frederick, Tr. 1235–36). There is no way to ascertain the degree to which the sample of respondents used in Google Consumer Surveys is representative of any identifiable population; the sample itself is unknown and unknowable, because there is no verification of respondents with Google Survey; rather, information on respondents is merely inferred by Google from information associated with or that resides on a computer. (Frederick, Tr. 1228; RX 856 (Stewart, Rep. at 10–11)). In fact, Dr. Frederick admits that his Google survey population is not representative of the target population; stating that there are "two populations here…the population about which we're trying to draw inferences... [and] the people who answered the surveys that I posted on Google Consumer Surveys." (Frederick, Tr. 1234).

Dr. Frederick failed to gather and accurately report the data obtained in his Google Consumer Survey. (Stewart, Tr. 2601). Dr. Frederick ignored some data because some respondents did not offer the time frames he was looking for. (Stewart, Tr. 2601). By ignoring significant portions of the data obtained in his Google Consumer Surveys, Dr. Frederick is misrepresenting the data. (Stewart, Tr. 2602).

Dr. Frederick failed to appropriately use the editing process in his Google Consumer Surveys. (Stewart, Tr. 2616). Dr. Frederick inappropriately used the editing process to edit out

responses which did not fit his prior notion of the structure that acceptable answers should fit. (Stewart, Tr. 2616). Dr. Frederick inappropriately used the editing process to push the responses in a direction consistent with what he was looking for as opposed to an honest reporting of the responses of the participants in the survey. (Stewart, Tr. 2616).

It is not appropriate for a researcher not to code a response because that response does not fit into a desirable structure. (Stewart, Tr. 2602). The coding in Dr. Frederick's Google Consumer Surveys was not double blind. (Stewart, Tr. 2615). Importantly, in Dr. Frederick's Google Consumer Surveys, the people doing the vast majority of the coding were fully aware of what was being sought from the survey. (Stewart, Tr. 2615; Frederick, Tr. 1285). The coding in Dr. Frederick's Google Consumer Surveys therefore lacked objectivity. (Stewart, Tr. 2615). Proper interview procedures as understood in generally accepted standards of survey research were not followed in Dr. Frederick's Google Consumer Surveys. (Stewart, Tr. 2603). Dr. Frederick did not ask any questions in his Google Consumer Surveys to prevent those who lack knowledge of, or an interest in, the subject matter of plastic biodegradation from participating in his surveys. (Frederick, Tr. 1228).

Moreover, the process of Dr. Frederick's Google Consumer Survey was not conducted so as to ensure objectivity. (Stewart, Tr. 2603). Dr. Frederick's coding process was not double-blinded; the people involved in the actual coding were not blind. (Stewart, Tr. 2604). Furthermore, no single person was ever presented with more than one question in Dr. Frederick's Google Consumer Surveys. (Frederick, Tr. 1224). When there is only one question asked of a respondent, a researcher cannot know what the response indicates, whether it is a sincere response, whether it is a response that would be subject to qualification if there were a follow-up question. (Stewart, Tr. 2605). A researcher cannot address the question of what a consumer's perception of "biodegradable" is with a single question. (Stewart, Tr. 2606).

In addition, Dr. Frederick does not contend that all responses to his Google Consumer Surveys were given sincerely. (Frederick, Tr. 1248–49). Dr. Frederick does not contend that all respondents who answered his Google Consumer Survey questions actually read the questions. (Frederick, Tr. 1253). Dr. Frederick does not contend that all respondents to his Google Consumer Surveys comprehended every term in his questions. (Frederick, Tr. 1254). Dr. Frederick thinks "it's a certainty" that some respondents to Google Consumer Survey questions will answer questions randomly. (Frederick, Tr. 1257). According to Dr. Frederick, Google Consumer Survey respondents sometimes give random answers to questions. (Frederick, Tr. 1320). In sum, Dr. Frederick's Google Consumer Survey is not reliable, not valid. (Stewart, Tr. 2604), and no conclusions can be drawn from Dr. Frederick's Google Consumer Surveys. (Stewart, Tr. 2604).

200. Professor Frederick estimated that, overall, 35% believe plastic products will biodegrade in one year or less. ("Q: Based on your research and expertise, in your professional opinion, what percentage of American consumers believe that a plastic product labelled 'biodegradable' will biodegrade completely within a year in a landfill?" A: I would say 35 percent."). (Frederick, Tr. at 1180-1081).

Response to Finding No. 200:

The research Dr. Frederick's opinion is based upon is fatally flawed and cannot be relied upon. *See supra*, Response to Finding No. 199.

201. In 2014, ECM's expert, Dr. Stewart, supervised a 400-participant landline survey. (Stewart, Tr. 2687); (RX-856 at 18, 23).

Response to Finding No. 201:

Respondent has no specific response.

202. Dr. Stewart never asked respondents to estimate how long it would take plastic products labelled "biodegradable" to biodegrade. (Stewart, Tr. 2629-2630).

Response to Finding No. 202:

Dr. Stewart did not ask that question because he "was interested in the broader topic of biodegradability." (Stewart, Tr. 2630). Further, the question referenced by Complaint Counsel in this proposed finding of fact, which Dr. Stewart did not ask, is leading as it informs the respondent that a length of time for biodegradation is necessarily the answer to the question. (Stewart, Tr. 2793).

203. Dr. Stewart's landline callers asked (without specifying a material or that the product was labelled "biodegradable"): "If something is biodegradable, how long do you think it would take for it to decompose or decay?" (Stewart, Tr. 2777).

Response to Finding No. 203:

Respondent has no specific response.

204. Of the 400 respondents, 206 gave codeable estimates, and of those 206, 33% gave estimates of one year or less. (Stewart, Tr. 2790).

Response to Finding No. 204:

This is a blatantly incorrect statement of the record. Dr. Stewart coded all 400 of the responses to Q4 of his survey. (RX 846, at 20; Stewart, Tr. 2780). In addition, Complaint Counsel's cited page does not support the stated proposition; based on page 2790 of the hearing transcript, it is not possible to tell how many, if any, of the respondents to Dr. Stewart's survey answered Q4 with an estimate of "one year or less." (Stewart, Tr. 2790). Furthermore, regarding what Complaint Counsel attempted to do at the cited transcript page—misinterpret Dr. Stewart's data—Dr. Stewart was unequivocal when he stated that "I object to what you're doing with the data. It's an inappropriate use of the data that we collected… Just know that when

you're done with your computation, it's your computation, not mine." (Stewart, Tr. 2782–83).

205. Many respondents gave nonspecific responses such as "I don't know," "it depends," or other responses not quantifiable as a specific biodegradation time estimate. (Stewart, Tr. 2790).

Response to Finding No. 205:

Respondent has no specific response.

206. Dr. Stewart's landline callers read ECM's "some period greater than a year" disclaimer to respondents, and asked: "In your own words, what does this claim mean to you?" (Stewart, Tr. 2796).

Response to Finding No. 206:

Respondent has no specific response.

207. Although Dr. Stewart did not ask respondents to estimate biodegradation times, 150 respondents still gave estimates. Of those respondents—and notwithstanding the disclaimer—50% (75 respondents) gave estimates of a year or less. (Stewart, Tr. 2796); (Stewart, Tr. 2804).

Response to Finding No. 207:

The statement is belied by the actual record. In the line of questioning Complaint Counsel cites on page 2804 of the hearing transcript, Complaint Counsel's questions were based on a number of assumptions with which Dr. Stewart disagreed but was asked to accept as true. Complaint Counsel asked Dr. Stewart "to assume that Stewart Demonstrative 1 reflects all of the answers that can properly be coded within that category [respondents provided an answer of one year or less to question 5B] …" (Stewart, Tr. 2803). Complaint Counsel then asked Dr. Stewart to ignore all respondents who did not provide an answer in terms of rate or time of

biodegradation. (Stewart, Tr. 2804 ("You're ignoring the rest of the sample, but yes, as you framed it, that is correct.")).

Furthermore, Dr. Stewart disagreed with the way Complaint Counsel manipulated the data. (Stewart, Tr. 2782–83 ("I object to what you're doing with the data. It's an inappropriate use of the data that we collected … Just know that when you're done with the computation, it's your computation, not mine.")). Now, for Complaint Counsel to go back and quote Dr. Stewart for factual propositions based on assumptions and manipulation of data in a manner explicitly disapproved of by Dr. Stewart—the researcher who obtained the data—misleads and presents a false finding. "Most consumers didn't give specific times in their responses to questions – to question 5B." (Stewart, Tr. 2803). Furthermore, regarding questions 5a, 5b, and 5c generally, Dr. Stewart concluded that given "consumers' lack of detailed knowledge of biodegradability, it is not surprising that a common response among end-use consumers was a lack of understanding, expressions of confusion, expressions of skepticism or disbelief, or **just a restatement of the claim.**" (RX 856 (Stewart, Rep. at 26) (emphasis added)). So, because Question 5b states "**greater than a year**" in the question itself, and given the respondents' lack of detailed knowledge of biodegradability, it is not surprising that 24% percentage of respondents answered question 5b with a response that fit into the category of "Gone/decomposed/biodegrade in **one year**." (RX 846) (emphasis added). Dr. Stewart asked the question "whether there were differences in how long it takes for products to biodegrade decompose or decency," and "98 percent of the respondents said that there were difference." (Stewart, Tr. 2576–77).

208. Professor Frederick cited the convergent validity between these different studies to conclude that, overall, the conclusion that at least a substantial minority of consumers believe that plastic products labelled "biodegradable" will biodegrade within one year. (Frederick, Tr. 1043-1044 ("[O]ften in cases like this where the construct of interest is not something readily determinable by some other method, you need to

compare the results of one survey to the results of other surveys and see whether . . . those results are giving you the same result, the same fact. That's sort of known as convergent validity. And as you do different surveys—if different surveys using different designs conducted by different people at different times, independent surveys, are yielding the same results, then you can gain confidence that those results are valid, that they're measuring what they intend to measure.")); (Frederick, Tr. 1145 ("[T]his is a study that was done at a different time using a different methodology. We call it APCO. It was a telephone study. This is a Google Consumer Survey. I did this survey, not APCO. It was done eight years later, and so forth, and yet you're getting responses that are not too different from the ACPO study.")); (Frederick, Tr. 1155 ("Q: How [do the results of your GCS study] relate to . . . convergent validity? . . . . This can be an illustration [] that when you have different studies using different methodologies conducted by different investigators at different times using slightly different question wording, different images, and so forth, and yet in all these cases you're getting estimates that are on the order of a third [of year-or-less responses]")); (Frederick, Tr. 1173 ("We have an issue again where there's three different studies conducted independently by different people using different designs—phone, Internet survey, Google Consumer Surveys—that are yielding results which are qualitatively comparable to one another and therefore I think providing evidence of convergent validity of the results obtained.")).

Response to Finding No. 208:

ECM objects to this proposed finding of fact as ambiguous as to what "these different studies" refers to, and therefore ECM cannot properly respond to this proposed fact. Notwithstanding, "[t]wo surveys that are both flawed don't produce an unflawed and valid survey. Two flawed surveys are still both flawed, and the fact that they might reflect something similar may simply reflect the fact that they share the same flaw … You could give me three, four, five [surveys]. If they're all flawed, they're – you know, they're not valid. They may all even produce the same outcome, but that outcome could be produced because they all share the same flaw." (Stewart, Tr. 2620).

209. An already overwhelming argument becomes even stronger if one moves the benchmark to five years. In APCO, 65% of respondents believe that packages labelled "biodegradable" should biodegrade within four years. (RX-597 at 2).

Response to Finding No. 209:

Complaint mischaracterizes the APCO survey results. The question referenced by Complaint specifically asked "If a package is labeled 'biodegradable,' what should be the maximum amount of time that it should take for that package to decompose?" (RX 597, at 2). That actual question is in stark contrast to the way it is framed by Complaint Counsel in this proposed finding of fact, in which Complaint Counsel implies that consumers interpret the naked term "biodegradable" to necessarily denote a rate of biodegradation. However, the question itself, which is a leading closed-ended multiple choice question, specifically asks for a rate of biodegradation, therefore leading the respondent to conclude that "biodegradable" necessarily denotes a rate of biodegradation, and provides respondents with only six substantive responses, five of which are time spans of four years or less. Therefore, it is not surprising that 65% of respondents provided an answer of four years or less, when, if respondents were answering randomly, 83% would have chosen four years or less. (RX 856 (Stewart, Rep. at 7–8) ("Given the lack of balance in the answers available to the respondents, it is not surprising that 60% of the respondents selected an answer of one year or less. Random responses spread among six options, four of which are one year or less, would result in 66% of the responses falling in one of the four responses related to one year or less.")). Moreover, 65% of respondents to the APCO survey do not necessarily "believe" that biodegradable on a product necessarily means that product should decompose within four years; rather, when asked to select a rate of biodegradation from a limited number of response options, 65% of respondents chose one of the four options containing a time frame of four years or less.

210. Of 206 respondents in Dr. Stewart's survey who gave specific estimates about how long an unspecified material would take to biodegrade, 58% estimated within five years. (Stewart, Tr. 2791).

Response to Finding No. 210:

The cited transcript page does not support the proposition stated. The record states that 58% of respondents **who provided a time**, provided a time of five years or less. (Stewart, Tr. 2791). Only 206 of the 400 respondents provided a time. (RX 846, at PP. 20–21). Furthermore, regarding what Complaint Counsel attempted to do at the cited transcript page—misinterpret Dr. Stewart's data—Dr. Stewart was unequivocal when he stated that "I object to what you're doing with the data. It's an inappropriate use of the data that we collected… Just know that when you're done with your computation, it's your computation, not mine." (Stewart, Tr. 2782–83). Dr. Stewart also asked the question "whether there were differences in how long it takes for products to biodegrade decompose or decency," and "98 percent of the respondents said that there were difference." (Stewart, Tr. 2576–77). Dr. Stewart explained that that data:

> means [] that 98 percent of the respondents indicated that they would have to qualify any answer about the amount of time it would take for something to biodegrade based on the material. That is, their answer here would suggested that they didn't believe there was a uniform rate of materials biodegrading and it really would depend on the material.

(Stewart, Tr. 2577).

211. According to Synovate, 45% of consumers believe that "less than five years" is a reasonable amount of time for a "biodegradable" package to decompose in a landfill. (RX-673 at 4; CCX-860 at 11).

Response to Finding No. 211:

Complaint mischaracterizes the Synovate survey results. The question referenced by Complaint specifically asked "What do you believe is a reasonable amount of time for a 'biodegradable' plastic pack to decompose in a landfill?" (CCX 860 (Frederick, Rep. at 11)). However, the question itself, which is a leading closed-ended multiple choice question, specifically asks for a time frame of biodegradation, therefore leading the respondent to conclude

that "biodegradable" necessarily denotes a limited time for biodegradation—a conclusion buttressed by the fact that respondents had 6 answers to choose from, all of which contained only a time frame. (CCX 860 (Frederick, Rep. at 11)). Moreover, 45% of respondents to the Synovate survey do not necessarily "believe" that biodegradable on a product necessarily means that product should decompose within four years in a landfill; rather, when asked to select a rate of biodegradation from a limited number of response options, all of which included a time frame, 45% of respondents chose one of the options containing a time frame of five years or less.

212. In Professor Frederick's GCS research, depending on the type of question and the wording, from 40% to 76% of respondents understood that a plastic product labelled "biodegradable" would biodegrade within five years. (CCX-860 at 30-33).

Response to Finding No. 212:

No valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

213. Of the twelve questions Professor Frederick asked directly addressing this subject, more than 50% of respondents understood that a plastic product labelled "biodegradable" would biodegrade within five years in nine of twelve cases. (CCX-860 at 30-33).

Response to Finding No. 213:

No valid conclusions from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

214. Dr. Stewart's attempt to rebut convergent validity reflects his confusion:

> QUESTION: Is it, in your view, possible to rehabilitate a survey that is flawed by reliance on another survey you regard as also flawed?
>
> . . . .
>
> STEWART: Two surveys that are both flawed don't produce an unflawed and valid survey. Two flawed surveys are still both flawed, and the fact that they might reflect something similar may simply reflect the fact that they share the same flaw.
>
> QUESTION: What if I gave you three flawed surveys? Would that make a difference?
>
> STEWART: You could give me three, four, five. If they're all flawed, they're—you know, they're not valid. They may all even produce the same outcome, but that outcome could be produced because they all share the same flaw. (Stewart, Tr. 2619-2620).

Response to Finding No. 214:

ECM does not dispute that Dr. Stewart testified as quoted, however the cited content fails to provide any factual support for the conclusion that Dr. Stewart was "confused." (Stewart, Tr. 2619–20).

215. Dr. Stewart acknowledged that "[n]o study is perfect." (Stewart, Tr. 2766).

Response to Finding No. 215:

ECM has no specific response.

216. Professor Frederick is an academic who has not testified before, and who focuses primarily on research and teaching. (Frederick, Tr. 1026).

Response to Finding No. 216:

ECM has no specific response.

217. When asked, on cross-examination, "[w]hat do you consider to be the generally accepted survey principles that define a valid survey?," Professor Frederick

responded: "A valid survey is one which produces accurate results." (Frederick, Tr. 1187).

Response to Finding No. 217:

ECM does not dispute that Dr. Frederick testified as quoted, but ECM notes that Dr. Frederick admits to being unaware of the criteria required to be present in a survey in order for a survey to be valid. (RPFF ¶¶ 881–83).

218. Professor Frederick collected approximately 29,000 responses to approximately sixty different questions he designed and paid GCS to pose. As he explained at trial, Google pays approximately 340 mainstream internet content providers to present survey questions to internet users who would otherwise need to pay to receive the content. Put differently, GCS gives internet users the opportunity to obtain content from behind a paywall in exchange for answering the GCS survey question. To the extent possible, GCS then infers certain demographic information (gender, approximate age, geographic region, urban density (whether the respondent resides in an urban, suburban, or rural area), and income range based on the respondent's IP address and browsing history. GCS then reports this demographic information, along with the exact results of the survey, back to the researcher (in this case, Professor Frederick). (Frederick, Tr. 1062-1064); (CCX-863 (results); CCX-867 (product overview); CCX-868 at 3 (product summary); CCX-976 (GCS illustration Professor Frederick prepared and testified about); CCX-1074 (Google promotional video explaining GCS); CCX-865 at 3 (discussing Professor Frederick's teleconferences with Google)).

Response to Finding No. 218:

Dr. Frederick's Google Consumer Surveys cannot properly infer any demographic information because they do not identify which user of a computer is actually using the computer at the time the survey question is posed and because many users mask their IP addresses or use other software such as Google Chrome's anonymous browsing feature. (RPFF ¶¶ 1004, 1005, 1006 (Frederick, Tr. 1230 ("there are several why it would be difficult for Google to make, you know, a really accurate imputation of various demographic characteristics")), 1011, 1012, 1071–75).

Furthermore, Dr. Frederick does not know which websites his questions were posted on, so it is incorrect for Complaint Counsel to claim those websites are "mainstream." (RPFF ¶¶ 986, 989). In reality, Google survey generally works by giving internet users access to "premium content" in exchange for answering a question, as opposed to paying for a subscription; therefore, the questions are at best a distraction and barrier to respondents whose objective is to access information, not complete a survey. (RPFF ¶ 1095). For a complete list of inherent problems associated with Dr. Frederick's one question per survey respondent Google Consumer Survey, see (RPFF ¶¶ 878–1104).

219. Every piece of data collected in response to each of Professor Frederick's questions is in the record (in Excel format). (CCX-863).

Response to Finding No. 219:

Complaint Counsel does not define "data." Therefore, ECM cannot properly respond to Finding No. 219, other than stating that if Complaint Counsel's definition of "data" includes demographic information, that Google Consumer Surveys does not, and cannot, provide accurate demographic information on respondents. *See supra*, Response to Finding No. 218.

220. Based on this data, and as noted above, Professor Frederick opined that 35% of consumers believe that a plastic product labelled 'biodegradable' will biodegrade completely within a year in a landfill." (Frederick, Tr. at 1180-1081).

Response to Finding No. 220:

No valid conclusions can be drawn from Dr. Frederick's survey. *See supra*, Response to Finding No. 199. Dr. Frederick's survey is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

221. "Psychographic representativeness" means that the sample reflects the psychological characteristics (such as beliefs, opinions, or attitudes) of the population at large. (Frederick, Tr. 1395).

Response to Finding No. 221:

The definition of "psychographic representativeness" stated in Finding No. 221, and stated at transcript page 1395, is only Dr. Frederick's definition, and Dr. Frederick provides no support for that definition. (Frederick, Tr. 1395).

222. Although demographic representativeness is correlated with psychographic representativeness, the differences between the two measures are particularly important in survey because a survey sample may match the demographics of American consumers perfectly, yet come nowhere close to matching the beliefs and attitudes of American consumers. (Frederick, Tr. at 1066); (Frederick, Tr. 1065-1066).

Response to Finding No. 222:

The cited pages do not stand for the proposition stated. (Frederick, Tr. 1065–66). Rather, Dr. Frederick merely testified that "[d]emographic representativeness I think is correlated with, helps to ensure, but is no means a guarantee of psychographic representativeness, as your example illustrates." (Frederick, Tr. 1066). Dr. Frederick makes no mention that the "the differences between the two measures are particularly important in survey [sic] because a survey sample may match the demographics of American consumers perfectly, yet come nowhere close to matching the beliefs and attitudes of American consumers." Therefore, Finding No. 222, without a citation to the record, cannot properly be characterized as a finding of fact.

223. The differences between psychographic and demographic representativeness is pertinent because people who use the internet and are willing to respond to a single

Google survey question are more likely to be psychographically representative than people with landlines who are willing, without compensation, to take an approximately twelve-minute survey. (Frederick, Tr. 1395-1396 (opining that GCS has greater psychographic representativeness than telephone surveys, in-person research, or internet panel studies)); (Stewart, Tr. 2698-2699) (testifying that, in his study, the average call length was twelve minutes, with an approximate range from five to twenty minutes)).

Response to Finding No. 223:

The cited pages do not stand for the proposition stated. (Frederick, Tr. 1395–95; Stewart, Tr. 2698–99). The cited pages do not state that why the differences, if any exist, between psychographic and demographic representatives are pertinent. (Frederick, Tr. 1395–96; Stewart, Tr. 2698–99). Therefore, Finding No. 223, without a citation to the record, cannot properly be characterized as a finding of fact.

Notwithstanding, even assuming *arguendo* that psychographic differences exist between the general population and the population who participate in telephone surveys, Complaint Counsel has supplied no evidence that those differences relate in any way to views on biodegradation or biodegradable products. Dr. Stewart even explained that it is unlikely that people willing to participate for free in a telephone survey have different psychological profiles than the population of American consumers at large where data is collected "over several weeks and during all parts and all days." (Stewart, Tr. 2709). Dr. Stewart's survey collected data over the course of approximately five weeks and during all parts of the day. (RX 609).

224. The population of American internet users is more demographically and psychographically representative of the population of American consumers than other potential survey media, such as internet panels, landline surveys, or "mall intercept"-style face-to-face interviews. (Frederick, Tr. 1395-1396).

Response to Finding No. 224:

The cited pages do not stand for the proposition stated. (Frederick, Tr. 1395–95; Stewart, Tr. 2698–99). In the cited pages, Dr. Frederick only states that psychographic representativeness is higher in Google Consumer Surveys than in telephone surveys, in-person surveys, or in internet panel research . (Frederick, Tr. 1395–96; 2698–99). Dr. Frederick makes no statement about American internet users as a whole and makes no statement about mall intercept or face-to-face interviews. (Frederick, Tr. 1395–96).

Notwithstanding, even assuming *arguendo* that the population of American internet users is more demographically and psychographically representative of the population of American consumers than other potential survey media, Complaint Counsel has supplied no evidence that those differences relate in any way to views on biodegradation or biodegradable products. Moreover, no evidence has been presented to establish that Dr. Frederick's survey, in particular, was representative of the population of American consumers, nor could it be because Dr. Frederick admits that he does not know precisely who answered his survey questions on line. (Frederick, Tr. 1239–40). Concerning his own survey, Dr. Stewart explained that it is unlikely that people willing to participate for free in a telephone survey have different psychological profiles than the population of American consumers at large where data is collected "over several weeks and during all parts and all days." (Stewart, Tr. 2709). Dr. Stewart's survey collected data over the course of approximately five weeks and during all parts of the day. (RX 609).

225. This is true partly because the survey mechanism is much less intrusive than other types of surveys, and partly because the percentage of the population that uses the internet is enormous (85% in 2013). (Frederick, Tr. 1067); (CCX-865 at 4).

Response to Finding No. 225:

Once again, the cited page and document do not support the proposition stated. Dr. Frederick on page 1067 of the hearing transcript and on page 4 of his rebuttal report makes no

statement about the "intrusiveness" of Google Consumer Surveys, let alone the intrusiveness of Google Consumer Surveys as compared to other types of surveys. (Frederick, Tr. 1067); (CCX 865 (Frederick, Rebuttal Rep. at 4). In reality, a telephone phone call, which need not be answered and can be ended by simply hanging up, is no more intrusive than a pop up window interfering with an internet user's desire to access a website. (RPFF ¶ 1095).

226. 40% of Americans do not have a landline. (CCX-865 at 4).

Response to Finding No. 226:

Proposed Finding No. 226 does not state how many Americans have access to landlines, versus how many actually pay the bill for a landline. Dr. Frederick does not know the number of people with cell phones who live in households that have landlines or the number of adult children who live with their parents or grandparents in the United States, and didn't know these facts when he drafted CCX 865, his rebuttal report. (Frederick, Tr. 1324–25).

227. Shortly after Google introduced GCS in 2012, the independent Pew Research Center compared the results of its own telephone survey of internet users with GCS respondents. (CCX-874).

Response to Finding No. 227:

All content in this article is unreliable hearsay and irrelevant without any foundation. (CCX 874).

228. Pew concluded: "A comparison of several demographic questions asked by Pew Research indicates that the Google Consumer Surveys sample appears to conform closely to the demographic composition of the overall internet population." (CCX-874 at 2).

Response to Finding No. 228:

All content in this article is unreliable hearsay and irrelevant without any foundation. (CCX 874).

229. Pew reported the following demographic data:

	Pew (percentages)	GCS (percentages)
Gender		
Male	49	53
Female	51	47
Age		
18-24	16	20
25-34	24	20
35-44	43	53
45-54	--	--
55+	26	28
Race-ethnicity		
White	69	68
Black or African American	11	10
Asian or Asian American	3	5
Hispanic or Latino	13	10
Other or mixed race	4	7
Marital Status		
Married	52	48
Widowed	4	5
Divorced/Separated	12	12
Never married	25	27
Living with a partner	6	8
Don't know	1	--
Homeownership		
Own	63	63
Rent	33	37
Other/Don't know	4	--
Church Attendance		
Weekly or more	38	35
Less often	60	65
Don't know	2	--

(CCX-874 at 5).

Response to Finding No. 229:

Finding no. 229 contains inaccurate quote from CCX 874. For example, under the "Age Category," the 25–34 category should read "20" and "18" and not "24" and "20" as Complaint Counsel states. (CCX 874, at P. 5). There are other similar mistakes under the "Age" category. (CCX 874, at P. 5). Further, content in this article is unreliable hearsay and irrelevant without any foundation. (CCX 874).

230. As a practical matter, the demographics of Pew's respondents and the demographics of GCS respondents are the same. (Frederick, Tr. 1070).

Response to Finding No. 230:

The cited testimony does not support the proposition stated. Dr. Frederick, in the cited page, does not opine on the demographics of Pew's respondents and the demographics of GCS respondents generally, as Complaint Counsel states in Finding No. 230, but only on "the degree of conformance between the two sets of data" contained within CCX 874. (Frederick, Tr. 1070 ("I'm going to get my glasses out if it's okay. But they look very similar without my glasses. The font here is very small … So if you compare the two columns [in CCX 874, at P. 5], well, for all intents and purposes they're identical.")). Further, content in this article is unreliable hearsay and irrelevant without any foundation. (CCX 874).

231. PEW compared its telephone survey respondents with GCS respondents along dozens of different measures of opinions and attitudes. (Frederick, Tr. 1069); (CCX-874 at 2).

Response to Finding No. 231:

All content in this article is unreliable hearsay and irrelevant without any foundation.

(CCX 874).

232. Although PEW noticed differences depending on the precise question, "the median difference between 43 results obtained from Pew Research surveys and using Google Consumer Surveys was 3 percentage points," and mean difference was six points. (CCX-874 at 2).

Response to Finding No. 232:

All content in this article is unreliable hearsay and irrelevant without any foundation.

(CCX 874).

233. In general, the percentage who said they owned particular devices and engaged in various online activities were fairly similar in Pew Research surveys and the Google Consumer surveys. (CCX-874 at 6).

Response to Finding No. 233:

All content in this article is unreliable hearsay and irrelevant without any foundation.

(CCX 874).

234. "Views about the size and role of government were similar in a Pew Research survey and the Google survey." (CCX-874 at 7).

Response to Finding No. 234:

All content in this article is unreliable hearsay and irrelevant without any foundation.

(CCX 874).

235. "Reported frequency of voting also was little different in the Google Consumer Surveys and the Pew Research survey." (CCX-874 at 7).

Response to Finding No. 235:

All content in this article is unreliable hearsay and irrelevant without any foundation.

(CCX 874).

236. With respect to opinion about the health care legislation passed by Obama and Congress in 2010, the results of the two surveys were similar. (CCX-874 at 8).

Response to Finding No. 236:

All content in this article is unreliable hearsay and irrelevant without any foundation.

(CCX 874).

237. "[T]he percentage of people saying that [global] warming is occurring mostly because of human activity was similar in the two surveys." (CCX-874 at 8).

Response to Finding No. 237:

All content in this article is unreliable hearsay and irrelevant without any foundation.

(CCX 874).

238. "Across a variety of foreign policy issues, results from the Pew Research surveys and those obtained using the Google Consumer Surveys method were quite comparable." (CCX-874 at 8).

Response to Finding No. 238:

All content in this article is unreliable hearsay and irrelevant without any foundation.

239. ECM's expert, Dr. Stewart, never questioned PEW's findings. (Stewart, Tr. 2491-2820); (RX-856; RX-843); (Stewart, Tr. 5-308).

Response to Finding No. 239:

Dr. Stewart was not asked to opine on the validity of Pew's findings and any conjecture by Dr. Stewart about those findings, just like any conjecture by Dr. Frederick and Complaint Counsel, would be irrelevant as Dr. Stewart does not know the details of how the results were obtained in the surveys mentioned in CCX 874.

240. With respect to the 2012 presidential election in particular, Pew noted: "In a series of tests after each presidential debate, the Pew Research surveys and Google Consumer surveys produced similar reactions." (CCX-874 at 8).

Response to Finding No. 240:

All content in this article is unreliable hearsay and irrelevant without any foundation. (CCX 874). In addition, Dr. Frederick states that "as the election nears more people are surfing the Web regarding information about the election" and that during the time Dr. Frederick conducted his surveys, there was no national story that riveted public attention and opinion over whether plastic biodegrade. (Frederick, Tr. 1340–41). So, it is reasonable to assume that Google Consumer Surveys may have been accurate regarding the 2012 presidential election because the respondents were thinking about reading about the presidential election; however, there is no evidence that respondents to Dr. Frederick's survey were thinking about or reading about the biodegradability of plastics.

241. Nate Silver studied GCS's impressive performance in predicting the 2012 presidential election results. (Frederick, Tr. 1071-1075).

Response to Finding No. 241:

The cited pages do not support the stated proposition. (Frederick, Tr. 1071–75). Further, while Dr. Frederick claims that Mr. Silver's article is connected to his expert report, Dr. Frederick was not aware of Mr. Silver's article when he drafted his expert report, and that

Complaint Counsel drafted the reference to Mr. Silver's article in Dr. Frederick's expert report. (Frederick, Tr. 1195–96).

242. In his well-known New York Times column, Silver compared the accuracy of twenty-three polling entities that had conducted at least five polls in advance of the 2012 election. (CCX-872 at 2).

Response to Finding No. 242:

There are no facts in the record, and Complaint Counsel cites none, that establish that Mr. Silver's article is "well-known." Furthermore, Complaint Counsel misleads when it states that Mr. Silver's article is a New York Times column, as it is actually a blog post. (CCX 872 (ECM also notes that Complaint Counsel identifies this exhibit as "N Silver Blog")). Furthermore, all content in this blog post is unreliable hearsay and irrelevant without any foundation. (CCX 872). Finally, Dr. Frederick was unaware of the Silver article at the time he drafted his expert report; Complaint Counsel drafted the reference to Mr. Silver's article in Dr. Frederick's expert report. (Frederick, Tr. 1195–96).

243. GCS tied for second place overall, conducting twelve pre-election polls with an average error relative to the actual results of only 1.6%. (CCX-872 at 2).

Response to Finding No. 243:

The cited page does not support the stated proposition. The words "Google" or "GCS" do not appear at all on page 2 of CCX 872. (CCX 872, at 2). Furthermore, all content in this blog post is unreliable hearsay and irrelevant without any foundation. (CCX 872).

244. GCS finished ahead of better-known entities including CNN, Reuters, and Gallup. (CCX-872 at 2).

Response to Finding No. 244:

The cited page does not support the stated proposition. The words "Google" or "GCS" do not appear at all on page 2 of CCX 872. (CCX 872, at 2). Furthermore, all content in this blog post is unreliable hearsay and irrelevant without any foundation. (CCX 872).

245. Mr. Silver wrote: "The final poll conducted by Google Consumer Surveys had Mr. Obama ahead in the national popular vote by 2.3 percentage points—very close to his actual margin, which was 2.6 percentage points. . . . Perhaps it won't be long before Google, not Gallup, is the most trusted name in polling." (CCX-872 at 3, 6).

Response to Finding No. 245:

All content in this blog post is unreliable hearsay and irrelevant without any foundation. (CCX 872).

246. Professor Frederick explained the importance of Google's performance in the 2012 election: "[T]he fact that Google Consumer Surveys is doing so well [compared] with all these other opinion polling firms in predicting the presidential election across twelve different tests [] suggests to me . . . that the population is both psychographically and demographically representative. Otherwise, I don't think they'd be able to accurately predict who people are going to vote for." (Frederick, Tr. 1074-1075).

Response to Finding No. 246:

Dr. Frederick's statement, quoted in Finding No. 246, is based on a blog post which is wholly unreliable hearsay and irrelevant without any foundation. (CCX 872).

247. ECM's expert, Dr. Stewart, offered no testimony regarding Mr. Silver's conclusions, or Professor Frederick's evaluation of them. (Stewart, Tr. 2491-2820); (RX-856; RX-843); (Stewart, Tr. 5-308).

Response to Finding No. 247:

Dr. Stewart was not asked to opine on the validity of Mr. Silver's findings and any conjecture by Dr. Stewart about those findings, just like any conjecture by Dr. Frederick and

Complaint Counsel, would be irrelevant as Dr. Stewart does not know the details of the surveys referenced in CCX 872.

248. Google engaged two different survey research firms to administer identical questionnaires to internet panels intended to represent American adults. Google also administered the same survey thirteen times through GCS. (CCX-872 at 5).

Response to Finding No. 248:

The cited page does not support the stated proposition. The words "Google," "GCS," or "administer" do not appear at all on page 5 of CCX 872. (CCX 872, at 5).

249. The results of the three surveys were compared to established benchmarks related to media usage (established by a 200,000 respondent survey) and health data (established by Centers for Disease Control ("CDC") surveys with response rates above 80%). (CCX-872 at 5).

Response to Finding No. 249:

The cited page does not support the stated proposition. Page 5 of CCX 872 bears no relation to what finding No. 249 states. (CCX 872, at 5).

250. Significantly, the GCS surveys performed as well or better than the internet panel surveys, and—perhaps most important—the GCS surveys deviated from the established benchmarks by only approximately 4%. (CCX-872 at 5).

Response to Finding No. 250:

The cited page does not support the stated proposition. Page 5 of CCX bears no relation to what finding No. 250 states. (CCX 872, at 5).

251. Dr. Stewart's report apparently references Google's study, and dismisses it solely on the grounds that Google has an interest in promoting its product. (RX-856 at 17).

Response to Finding No. 251:

The cited page does not support the stated proposition. Page 17 of RX 856, Dr. Stewart's report, discusses the sampling frame and sampling method Dr. Stewart used in his survey. (RX 856 (Stewart, Rep. at 17)).

252. ECM's expert, Dr. Stewart, did not testify regarding this study. *See* (Stewart, Tr. 2491-2820); (RX-843); (Stewart, Tr. 5-308).

Response to Finding No. 252:

ECM does not, and cannot, know what Complaint Counsel refers to by "this study" from either Proposed Finding No. 252 or from the cited sources. (Stewart, Tr. 2491–2820; RX 843 (Stewart, Dep. at 5–308)). Therefore, ECM cannot properly respond to Finding No. 252.

253. Through direct communications with Google, Professor Frederick verified GCS' bona fides himself. Specifically, Professor Frederick conferred telephonically with Google's representatives twice to confirm the mechanics and methodology GCS employs. (Frederick, Tr. 1261); (CCX-865 at 3 ("Such interviews with data collectors are regularly conducted in my field to ascertain the reliability of data-gathering techniques.")).

Response to Finding No. 253:

The first sentence of Finding No. 253 is nonsensical, and ECM can therefore not properly respond to its contents. As for the second sentence, while it is true that Dr. Frederick claims to have had two telephonic conversations with Paul McDonald to confirm the mechanics and methodology Google Consumer Survey employs, Dr. Frederick, at the time of the hearing, was still unaware of how Google Consumer Survey actually works. For example, Dr. Frederick does not know what percentage of internet users rely on Google Chrome's feature that allows you to browse privately. (Frederick, Tr. 1334–35). Dr. Frederick does not know whether Google accepts a response from a user browsing anonymously. (Frederick, Tr. 1337). Dr. Frederick

does not know whether people can access a Google Consumer Survey on a mobile device. (Frederick, Tr. 1329).

254. Although relying on GCS is relatively new, relying on a third party to ask questions and gather data from a representative sample is not. As ECM's expert opined, "it's quite common to make an assumption that a research organization follows a particular protocol or procedure." (Stewart, Tr. 2663); (Stewart, Tr. 2664) (agreeing that "[i]t is typical in survey research" to rely "on the belief that a survey research firm is operating as you would expect them to operate with respect to the gathering of data").

Response to Finding No. 254:

Complaint Counsel mischaracterizes Dr. Stewart's testimony. Dr. Stewart did not testify that it is acceptable to rely on third parties generally to ask questions and gather data. Rather, Dr. Stewart testified only that a **research organization** or a **research firm** must use proper procedures and protocols that are verified. (Stewart, Tr. 2663–64 ("it's quite common to make an assumption that a **research organization** follows a particular protocol or procedure. Those procedures or protocols are often documented, either verbally or in writing. They can often be observed.") (emphasis added)).

255. Through his conversations with Google, Professor Frederick concluded that, "[b]ased on Internet protocol (IP) addresses and browsing history, GCS uses dynamic imputation algorithms to help ensure [the] demographic representativeness of [its] sample data." (CCX-865 at 3).

Response to Finding No.255:

Dr. Frederick makes these conclusions without knowing the difference between a static IP address and a dynamic IP address, (Frederick, Tr. 1332), without knowing whether people can access a Google Consumer Survey on a mobile device, (Frederick, Tr. 1329), without being familiar with dynamic host configuration protocol, (Frederick, Tr. 1333), without knowing how dynamic host configuration protocol assigns IP addresses, (Frederick, Tr. 1333), without

knowing what percentage of internet users block cookies. (Frederick, Tr. 1335), without knowing what percentage of internet users mask their identities online, (Frederick, Tr. 1335), without knowing what percentage of internet users rely on Google Chrome's feature that allows you to browse privately, (Frederick, Tr. 1334–35), and without knowing whether Google accepts a response from a user browsing anonymously. (Frederick, Tr. 1337). (RPFF ¶¶ 1065, 1068–74).

256. Dr. Stewart never communicated with anyone associated with GCS. (RX-843 at 162).

Response to Finding No. 256:

ECM has no specific response.

257. Dr. Stewart never testified that, as an expert in the survey research field, it was somehow inappropriate for Professor Frederick to rely on his communications with Google regarding GCS' methodology. (*See* Stewart, Tr. 2491-2820); (RX-843); (Stewart, Tr. 5-308)).

Response to Finding No. 257:

Dr. Stewart was never asked to opine whether it was appropriate for Dr. Frederick to rely on his communications with Google regarding GCS' methodology.

258. Because Google delivers advertising to users partly based on their demographic information, Google has high incentives to get that information reasonably correct. (Frederick, Tr. 1398).

Response to Finding No. 258:

In violation of this Court's September 3, 2014 Order, Complaint Counsel is "cit[ing] to expert testimony to support factual propositions that should be established by fact witnesses or documents." Dr. Frederick has no expertise to determine what incentives Google Consumer

Surveys has to get demographic information correct. Dr. Frederick is not an economist or expert on economic incentives, but only an expert "in the fields of marketing and consumer decision-making, including the effect of numeric referents or 'anchors' on judgments and decisions." (CCX 890 (Frederick, Rep. at 5)). So, to the extent that Finding No 258 is a factual proposition that should have been supported by a fact witness or by documents, Complaint Counsel cannot cite to expert testimony; and to the extent that Finding No. 258 is based on expert opinion, Dr. Frederick does not have the expertise to make such a determination.

259. Professor Frederick opined that "[a]dvertisers value online advertising only to the extent that it works, which give Google strong incentives to accurately ascertain the demographic characteristics of respondents advertisers target." (CCX-865 at 3).

Response to Finding No. 259:

Dr. Frederick has no expertise to determine what incentives Google Consumer Surveys has to get demographic information correct or what advertisers "value" and to what extent advertisers value the things that they do value. Dr. Frederick is not an economist or expert on economic incentives, but only an expert "in the fields of marketing and consumer decision-making, including the effect of numeric referents or 'anchors' on judgments and decisions." (CCX 890 (Frederick, Rep. at 5)). So, to the extent that Finding No 259 is based on expert opinion, Dr. Frederick does not have the expertise to make such a determination.

260. GCS is highly representative both demographically and psychographically. (Frederick, Tr. 1410).

Response to Finding No. 260:

Regardless of whether Google Consumer Surveys is both demographically and psychographically in general, Dr. Frederick's Google Consumer Surveys used in this case polled

a population that is unknown, is unknowable, and impossible to verify. (RPFF ¶ 1090; *see also* supra, Response to Finding No. 199).

261. APCO, Synovate, and Dr. Stewart's studies each surveyed ostensibly representative samples in various ways. Accordingly, the conformance between those results and GCS further supports the conclusion that GCS respondents are representative. (Frederick, Tr. 1369).

Response to Finding No. 261:

The results in APCO, Synovate, Dr. Frederick's surveys, and Dr. Stewart's survey are not in conformance in any way. (Stewart, Tr. 2617–18 ("the results of my own survey which produces quite different results when the survey is properly designed, the questions are appropriately asked and provide a wide latitude of opportunities for response. So not only does Dr. Frederick's survey not meet the standards of acceptable survey research, **it produces a different result**.") (emphasis added); RX 597 (APCO study showing that when specifically asked "If a package is labeled 'biodegradable,' what should be the amount of time that it should take for the package to decompose?" that 60% of consumers chose a response of less than one year from the universe of limited response options); CCX 890 (Frederick, Rep. at 11) (quoting the Synovate study showing that when specifically asked "What do you believe is a reasonable amount of time for a 'biodegradable' plastic pack to decompose in a landfill?" that only 25% of consumers chose a response of less than 1 year from the universe of limited response options)). ECM is at a lost as to how 60% and 25% are in conformance in any way.

262. Dr. Stewart's report repeatedly uses scare quotes when discussing Professor Frederick's GCS research (referring to it as a "survey"). (RX-856 at 8, 13-14).

Response to Finding No. 262:

ECM has no specific response other than to state that Dr. Frederick's Google Consumer Surveys research does not meet generally accepted standards for survey research. (RPFF ¶ 915).

263. Dr. Stewart testified about Professor Frederick's article, The Limits of Attraction. (Stewart, Tr. 2681-2682).

Response to Finding No. 263:

Respondent has no specific response.

264. Dr. Stewart initially denigrated the portion of the article reporting GCS as a "footnote" involving a "partial replication" on GCS of data obtained through other sources; he later conceded that the article contained a table of GCS data, and that the article itself (containing GCS data) was published in a well-regarded peer-reviewed journal, THE JOURNAL OF MARKETING RESEARCH. (Stewart, Tr. 2682); (Stewart, Tr. 2818); (Stewart, Tr. 2681).

Response to Finding No. 264:

The table containing data from Google Consumer Surveys is not in the article itself, but is appended to the article in Appendix A. (Stewart, Tr. 2817; CCX 977).

265. Dr. Stewart also emphasized criticisms of the article (Stewart, Tr. 2681), but later conceded that "[n]one of those criticisms of th[e] article had anything to do with its use of GCS." (Stewart, Tr. 2816).

Response to Finding No. 265:

Respondent has no specific response.

266. Dr. Stewart also pronounced that no "serious scholar" would conclude that GCS is "in the legitimate market research business." (Stewart, Tr. 2683-84).

Response to Finding No. 266:

Respondent has no specific response.

267. ECM also compiled blog posts criticizing GCS. Most of the blog posts are from other survey researchers (i.e., competitors), the overwhelming majority have nothing to do with whether or not GCS is reasonably representative, and nineteen were compiled by ECM's counsel approximately one week before trial). (RX-823; RX-877-95); (*see also* RX-877 at 5 (evidence of collection by counsel and July 27, 2014 retrieval date)).

Response to Finding No. 267:

ECM objects to the characterization that the blog posts as from "competitors." The statement is an assumption void of factual support; survey researchers are not in competition Google Consumer Surveys. (Stewart, Tr. 2665 (noting that there is not much competition between Google Consumer Surveys and market researchers)).

268. Dr. Stewart's report referenced alleged instances in which GCS "has been far off the mark." (RX-856 at 17).

Response to Finding No. 268:

The cited page of Dr. Stewart's Report does not support the stated proposition. Page 17 of RX 856, Dr. Stewart's report, discusses the sampling frame and sampling method Dr. Stewart used in his survey. (RX 856 (Stewart, Rep. at 17)).

269. Dr. Stewart admitted at trial that his source for the claim that GCS "has been far of the mark" is a tweet (and, indeed, he acknowledged that his report failed to disclose that the source was a tweet). (Stewart, Tr. 2687).

Response to Finding No. 269:

Respondent has no specific response.

270. Dr. Stewart also admitted that he had never "done any type of systematic analysis" to determine GCS' accuracy. (Stewart, Tr. 2685-2686).

Response to Finding No. 270:

Dr. Stewart made an effort to identify efforts made by others to assess the accuracy of Google Consumer Surveys. (Stewart, Tr. 2686).

271. Consistent with basic survey research principles, precise demographic information about each individual survey respondent is unnecessary if the sample is representative. (Frederick, Tr. 1079-80; 1360-1363).

Response to Finding No. 271:

The cited pages do not stand for the proposition that it is "consistent with basic survey research principles …" Rather, the cited pages merely state Dr. Frederick's opinion, without any mention by Dr. Frederick, let alone any citation, that his opinion is consistent with basic survey research principles. (Frederick, Tr. 1079–80, 1360–63). Because all demographic information obtained by Google in Dr. Frederick's Google Consumer Surveys is inferential, there is no way to know whether Dr. Frederick's population was representative or not and there is no way to know precise demographic information about any individual respondent, let alone each individual respondent. (RPFF ¶¶ 922, 1004–06, 1011 (Dr. Frederick admitting that people who are not adults may have responded to his survey), 1013 (Dr. Frederick admitting that he cannot know the demographics of any respondent to any of his questions)).

272. Professor Frederick testified:

> QUESTION: Speaking in general, to what extent, if any, is it necessary to know the demographic characteristics of individual respondents in order to be able to draw valid conclusions [] about a population as a whole?
>
> FREDERICK: No, that's—it's not necessary.

. . . .

QUESTION: Does the absence of [demographic] information impair your ability to draw reasonably valid conclusions about the population as a whole?

FREDERICK: No, it does not.

QUESTION: [W]hy is that?

FREDERICK: That's the essence of random sampling, because we have no reason to believe that those characteristics differ between the sample and the population at large as long as the same has been randomly selected or something very close to that.

QUESTION: . . . . [T]o what extent, if at all, does it matter if you do not know anything else about an individual Google Consumer Survey respondent as long as you know that he or she was drawn from a pool that is reasonably representative of the population you are attempting to sample?

FREDERICK: It makes no difference whatsoever. (Frederick, Tr. 1079-80; 1360-1363).

Response to Finding No. 272:

ECM acknowledges that Dr. Frederick testified as quoted, but ECM notes that the population of Dr. Frederick's Google Consumer Surveys is not a "pool that is reasonably representative of the population [Dr. Frederick was] attempting to sample." (RPFF ¶¶ 918, 921, 922, 1090, 1094 (Dr. Frederick admitting that that there are "two populations here…the population about which we're trying to draw inferences... [and] the people who answered the surveys that I posted on Google Consumer Surveys")).

273. When possible, GCS infers five important demographic features (gender, approximate age, geographic region, urban density (whether the respondent resides in an urban, suburban, or rural area). With respect to age and gender, Google infers demographic information based on the respondent's browsing history as recorded in a DoubleClick advertising cookie. (CCX-874 at 3; CCX-868 at 3).

Response to Finding No. 273:

Both documents cited contain only unreliable hearsay that is irrelevant without any foundation. (CCX 868; CCX 874). Further, Google Consumer Surveys does not actually infer any demographic data on the actual respondent answering the survey question, but only infers demographic information based on the browsing history memorialized in the computer and not from any specific respondent. (RPFF ¶ 1005). So, if a family of four shares one computer, and one of those users answers a Google Consumer Survey question, neither Google nor the surveyor can know which of those four users answered the survey question. (RPFF ¶ 1075).

274. Google infers the respondent's location based on the computer's IP address, and then infers the respondent's income and urban density "by mapping the location to census tracts and using the census data to infer income and urban density." (CCX-868 at 3; *see also* CCX-874 at 3).

Response to Finding No. 274:

Both documents cited contain only unreliable hearsay that is irrelevant without any foundation. (CCX 868l CCX 874). Further, Google Consumer Surveys does not actually infer any demographic data on the actual respondent answering the survey question, but only infers demographic information based on the browsing history memorialized in the computer and not from any specific respondent. (RPFF ¶ 1005). So, if a family of four shares one computer, and one of those users answers a Google Consumer Survey question, neither Google nor the surveyor can know which of those four users answered the survey question. (RPFF ¶ 1075).

275. GCS then uses this information "to ensure each survey receives a representative sample." (CCX-868 at 3).

Response to Finding No. 275:

ECM cannot know what Complaint Counsel is referring to when it states "this information," so ECM cannot properly respond to Finding No. 275. Notwithstanding, the

document cited contains only unreliable hearsay that is irrelevant without any foundation. (CCX 868).

276. In Professor Frederick's data, when GCS lacked sufficient information about a particular respondent to draw an inference regarding a given demographic characteristic, GCS (and Professor Frederick) reported that characteristic as "unknown." (*See* CCX-863 (data set)).

Response to Finding No. 276:

All demographic inferences drawn by Google Consumer Survey may be incorrect, and none can be known for sure, (RPFF ¶¶ 1005, 1090), so all demographic characteristics of Dr. Frederick's surveys should be reported as "unknown."

277. "For approximately 30-40% of [GCS] users, demographic information is not available—either because their cookies are turned off but more often because the [GCS] algorithm cannot determine a trend from the websites visited as recorded in their DoubleClick advertising cookie that would suggest what gender or age they are." (CCX-874 at 3).

Response to Finding No. 277:

The document cited contains only unreliable hearsay that is irrelevant without any foundation. (CCX 874).

278. Geographic information is potentially significant because—as Dr. Stewart conceded—"beliefs regarding the importance of purchasing environmentally-friendly products might vary" between people "living in cities and people living in rural environments," or between people living in different regions of the country. (Stewart, Tr. 2742).

Response to Finding No. 278:

Dr. Stewart merely conceded that the beliefs "could" vary between people living in cities and people living in rural environments, and that "it's possible" that the beliefs vary between

people living in different regions of the country. (Stewart, Tr. 2742). "[A]s we all know, anything is possible." (Chappell, Tr. 2640).

279. In contrast to Professor Frederick's GCS survey, Dr. Stewart's 400-respondent landline survey collected no data at all regarding income, geography, or urban density. (Stewart, Tr. 2739, 2742-2743, 2745).

Response to Finding No. 279:

Dr. Frederick's GCS survey collected no actual demographic data at all, including demographic data regarding income, geography, or urban density; rather, Dr. Frederick received inferred guesses from Google Consumer Survey as to the demographics of his respondents. (RPP ¶¶ 1005, 1142, 1058, 1090; Stewart, Tr. 2743 (Dr. Frederick "did not collect that [demographic] information. He obtained it from Google, which inferred it and did not collect it directly. There was no direct collection of any demographic data in Professor Frederick's survey.").

280. Put differently, each of those three demographic characteristics (income, geography, and urban density) is entirely unknown regarding 100% of Dr. Stewart's respondents. (Stewart, Tr. 2739, 2742-2743, 2745).

Response to Finding No. 280:

Respondent has no specific response. Dr. Stewart did collect the following demographic information directly from respondents to his survey: Age and Gender. (RX 603, at PP. 2–3).

281. Dr. Stewart testified "that consumers' views regarding biodegradation times don't vary much based on gender[.]" (Stewart, Tr. 2738).

Response to Finding No. 281:

Respondent has no specific response.

282. Regarding gender, there was no evidence presented at trial that Dr. Stewart's callers asked respondents to provide their gender when the callers were uncertain based on a particular respondent's voice. (Stewart, Tr. 2735).

Response to Finding No. 282:

In Dr. Stewart's telephone survey, trained researchers recorded gender based on interaction with respondents over the phone. (Stewart, Tr. 2527 (noting that the interviewers recording the data in Dr. Stewart's survey "were well-trained professional interviewers"), 2735).

283. Without an inquiry in such situations, the error rate is about 5%. (Stewart, Tr. 2735).

Response to Finding No. 283:

ECM cannot know what Complaint Counsel intends by "in such situations," and ECM can therefore not properly respond to Finding No. 283.

284. Dr. Stewart also did nothing to verify that the gender "recorded by observation" over the phone was correct. (Stewart, Tr. 2735).

Response to Finding No. 284:

ECM has no specific response. However, ECM notes that Complaint Counsel provides no evidence that any recording of gender was incorrect in Dr. Stewart's survey.

285. Although Dr. Stewart conceded that "[s]ometimes people lie about their age," he did nothing to verify that his landline respondents' self-reported age was correct. (Stewart, Tr. 2739).

Response to Finding No. 285:

Dr. Stewart conceded that people sometimes lie about their age generally, but not necessarily that people lie about their age in response to survey questions. (Stewart, Tr. 2738–39 ("Q. People sometimes lie about their age, don't they? A. Sometimes people lie about their

age.").

286. Dr. Stewart testified:

> QUESTION: Overall then, for 100 percent of respondents in your survey, with respect to the five demographic characteristics we've been discussing, two of the demographic traits were assessed but without any secondary verification, and three are unknown, correct?
>
> STEWART: That's correct.
>
> QUESTION: It's still possible for such a survey to produce valid results, isn't it?
>
> STEWART: Yes, it is. (Stewart, Tr. 2745).

Response to Finding No. 286:

ECM has no specific response.

287. Respondents' individual demographic traits are irrelevant as long as the overall pool is reasonably representative. (Frederick, Tr. 1079-1080; 1357-1363).

Response to Finding No. 287:

There is no way to know if the overall pool is reasonably representative without individual demographic traits, so Finding No. 287 is nonsensical. (Stewart, Tr. 2562). We cannot know what the composition of Dr. Frederick's sample was. (Stewart, Tr. 2671–72). Furthermore, because all demographic information obtained by Google in Dr. Frederick's Google Consumer Surveys is inferential, there is no way to know whether Dr. Frederick's population was representative or not and there is no way to know any precise demographic information about any individual respondent, let alone each individual respondent. (RPFF ¶¶ 922, 1004–06, 1011 (Dr. Frederick admitting that people who are not adults may have responded to his survey), 1013 (Dr. Frederick admitting that he cannot know the demographics of any

respondent to any of his questions)).

288. ECM did not challenge the wording or structure of any specific question Professor Frederick asked. (*See* Stewart, Tr. 2491-2820); (RX-856; RX-843); (Stewart, Tr. 5-308).

Response to Finding No. 288:

ECM challenges the structure of all of Dr. Frederick's questions because Dr. Frederick structured the questions in a way which only allow each respondent to answer only one question, and because no screening questions were asked of any respondent. (RPFF ¶¶ 946–50, 980–81; Stewart, Tr. 2602). ECM also contests that the images Dr. Frederick used in his survey questions are not actual images of products in the marketplace, but invented photo-shopped images created electronically by a person who was probably aware of the purpose of the images and of the fact that the FTC was using the images against ECM. (RPFF ¶¶ 1024, 1049). ECM also faults Dr. Frederick's specific questions for not specifying the type of plastic to which he refers to in each question. (RPFF ¶ 1026). ECM also challenged Dr. Frederick's questions as not clear and misleading. (RX 856 (Stewart, Rep. at 16)). Regardless of whether Finding No. 288 is true, no valid conclusions can be drawn from Dr. Frederick's survey, because his survey satisfies none of the criteria required to be competent and reliable. *See supra*, Response to Finding No. 199.

289. Professor Frederick asked more than sixty different questions. (Frederick, Tr. 1060).

Response to Finding No. 289:

The cited page does not support the stated proposition. (Frederick, Tr. 1060 (stating that Dr. Frederick asked "[a]round 60 different questions")).

290. Professor Frederick's questions included twelve open-ended questions that asked respondents to estimate the time it would take for a plastic product labelled "biodegradable" to biodegrade. (CCX-860 at 30-33).

Response to Finding No. 290:

The cited page does not support the stated proposition. (CCX 860 (Frederick, Rep. at 30–33)). The cited pages do not define what open-ended questions are, and do not state how many, if any, open ended questions Dr. Frederick asked in his survey. (CCX 860 (Frederick, Rep. at 30–33)).

291. The number of different questions is significant because it enabled Professor Frederick to test what effect, if any, the wording of particular questions has. (Frederick, Tr. 1061 ("[M]y research is on framing effects . . . and I was interested in whether those things mattered. Again, this is part of the concept of convergent validity. It's also called robustness. If you ask the questions a bunch of different ways, which things matter, which things don't matter, those kinds of things can be tested by asking [] different questions.")).

Response to Finding No. 291:

The stated proposition is a legal argument about what is significant, and not a statement of fact. Further, the testimony cited by Complaint Counsel in Finding No. 291 is not sufficient to support a finding of fact on why it was significant that Professor Frederick asked the questions he posed, one per respondent, (Frederick, Tr. 1390); the cited testimony just explains why Dr. Frederick chose to ask approximately 60 different questions, but does not state why or how that is significant. (Frederick, Tr. 1061).

292. As Professor Frederick explained, "if it's the case that you get the same result despite asking questions in different ways, that . . . increases your sense of construct validity." (Frederick, Tr. 1061-1062).

Response to Finding No. 292:

Just because a researcher obtains similar results despite asking questions in different ways does not mean that the questions are valid; rather, it is an indication that the questions could be flawed in a similar manner. (Stewart, Tr. 2619–20).

293. Professor Frederick found that substantial minorities (or, sometimes, majorities) of consumers estimated that plastic products labelled "biodegradable" would biodegrade in one year or less—no matter how the question was presented. (CCX-860 at 27-35).

Response to Finding No. 293:

Complaint Counsel's Finding No. 293 is misleading because it states "no matter how the question was presented"; all of the questions asked by Dr. Frederick in the cited pages of his expert report were leading in the sense that they implied that the term "biodegradable" necessarily denotes a length of time. (CCX 860, Frederick, Rep. at 27–35 (all questions include one of the following phrases: "how long will it take to decompose," "how long with it take to biodegrade," "how long will it take to degrade," "how much time," "amount of time," "how many months," "how many years," "period of time," "took longer than this," or "how long")). In addition, no valid conclusions can be drawn from Dr. Frederick's survey. *See supra*, Response to Finding No. 199.

294. Some of Professor Frederick's questions involved the "ECM Biodegradable logo," some questions involved other "biodegradable" logos, and some involved only words. (CCX-860 at 27-35).

Response to Finding No. 294:

Finding No. 294 is misleading because Dr. Frederick's questions "involving" the ECM biodegradable logo and other biodegradable logos were not based on any actual product; rather the images were photo-shopped electronically onto images Dr. Frederick's employee found on the internet—an employee probably aware of the purpose of the images and of this lawsuit.

(RPFF ¶¶ 1024–27, 1049). The context in which Dr. Frederick used those logos in his survey is completely inaccurate as they do not relate to actual products in the marketplace. (RPFF ¶¶ 1023–26; *see, e.g.*, CCX 860 (Frederick, Rep. at 32 (image of a plastic bag with a relatively enormous "ECM Biodegradable" logo; no record evidence establishes that any similar bag has ever been produced))).

295. Sometimes the questions referred to "plastic products," sometimes to "plastic packages," sometimes to a specific object referenced in words ("a plastic water bottle"), and sometimes to an image of a plastic object (a plastic bag, or a plastic container). (CCX-860 at 30-33).

Response to Finding No. 295:

ECM cannot know what Complaint Counsel is referring to by "the questions," so ECM cannot properly respond to Finding No. 295.

296. Some questions asked "how long" the object would take to biodegrade, whereas some asked "how much time" it would take. (CCX-860 at 30-33).

Response to Finding No. 296:

ECM cannot know what Complaint Counsel is referring to by "some questions," so ECM cannot properly respond to Finding No. 296. Nevertheless, both statements in quotation marks in Finding No. 296 denote a length of time, thereby demonstrating that the questions they are a part of are necessarily leading by requiring the respondent to answer with a rate or length of time.

297. Some questions asked "how much time" it would take, whereas some questions asked "how much time do you think" it would take. (CCX-860 at 30-33).

Response to Finding No. 297:

ECM cannot know what Complaint Counsel is referring to by "some questions," so ECM cannot properly respond to Finding No. 296. Nevertheless, both statements in quotation marks in Finding No. 297 denote a length of time, thereby demonstrating that the questions they are a part of are necessarily leading.

298. For nine of the twelve questions asking consumers to estimate biodegradation times for plastic materials labelled "biodegradable," at least 30% of consumers estimated the product would biodegrade in one year or less—and in no case did fewer than 20% of consumers give such an estimate. (CCX-860 at 30-33).

Response to Finding No. 298:

ECM cannot know what Complaint Counsel is referring to by "nine of the twelve questions," so ECM cannot properly respond to Finding No. 298. All of the questions at the cited pages, however, are leading because they specifically ask for some period of time. (CCX 860 (Frederick, Rep. at 30–33)). In addition, no valid conclusions can be drawn from Dr. Frederick's survey because the survey satisfies none of the requirements for a valid survey. *See supra*, Response to Finding No. 199.

299. Depending on phrasing of the question, a majorities ranging from 53% to 68% of consumers would consider it misleading if a plastic product labelled biodegradable did not biodegrade within one year. (CCX-860 at 35).

Response to Finding No. 299:

ECM cannot know what Complaint Counsel is referring to by "the question," so ECM cannot properly respond to Finding No. 299. All of the questions at the cited page, however, are leading because they specifically ask for some period of time. (CCX 860 (Frederick, Rep. at 35)). In addition, no valid conclusions can be drawn from Dr. Frederick's survey because it is

unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

300. When asked: "A company should be allowed to label its plastic packaging material as 'biodegradable' if it biodegrades within what amount of time," 68% responded with one year or less, and only 9% of consumers thought periods longer than five years gave numbers greater than five years. (CCX-860 at 35).

Response to Finding No. 300:

The cited question is leading because it specifically asks for some period of time. (CCX 860 (Frederick, Rep. at 35)). In addition, no valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

301. Hardly any consumers believe it is appropriate for a company to label a product "biodegradable" if it takes that long to biodegrade. Specifically, if the responses to Questions 4A-4E are aggregated, less than 5% of consumers believe companies should be allowed to label as "biodegradable" products that take longer than twenty-five years to biodegrade. (CCX-860 at 35).

Response to Finding No. 301:

ECM cannot properly respond to the first sentence of Finding No. 301 because it is nonsensical; ECM cannot know what Complaint Counsel intends by "takes that long to biodegrade." The cited questions, 4A–4E, are leading because they specifically ask for some period of time. (CCX 860 (Frederick, Rep. at 35)). In addition, no valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

302. Additionally, consistent with the Commission's Green Guides, at least a substantial minority of consumers believe that generic "products" (as opposed to plastic products) will biodegrade in one year or less. Again, Professor Frederick asked the relevant question numerous different ways, and "one year or less" responses ranged from 42% to 74%. (CCX-860 at 27-28).

Response to Finding No. 302:

The cited pages do not support the stated proposition. CCX 860, at pages 27 and 28, does not mention the Green Guides at all. (CCX 860 (Frederick, Rep. at 27–28)). Moreover, the questions on the cited pages are leading because they specifically ask for some period of time. (CCX 860 (Frederick, Rep. at 27–28)). In addition, no valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

303. This range includes two questions (1I and 1J) that Professor Frederick intended to test the effect of the use of the word "years" in the question, which suggests a longer process. Notably, even when consumers were asked: "If a package is labelled 'biodegradable,' how many years will it take to biodegrade," 25% of consumers still estimated one year or less. (Frederick, Tr. 1143); (CCX-860 at 28).

Response to Finding No. 303:

ECM cannot know what Complaint Counsel intends by "this range," and ECM therefore cannot properly respond to Finding No. 303. Moreover, the questions on the cited pages are leading because they specifically ask for some period of time. (CCX 860 (Frederick, Rep. at 28)). The two cited questions in particular are problematic because, based only on what is provided on page 28 of Dr. Frederick's report,[12] it is possible that respondents simply answered both questions with "1" or "one" 25% of the time. (CCX 860 (Frederick, Rep., at 28)). In addition, no valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable,

[12] Dr. Frederick presumably coded all responses of "12" or "twelve" or a smaller number as less than one year in response to question 1I.

not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

304. Professor Frederick also compared ECM's prior qualifier ("nine months to five years") with its new attempt to qualify its biodegradable claim ("some period greater than a year"). Significantly, "nearly half, 40%-50%, of consumers construe the qualifier 'some period greater than a year' as implying faster biodegradation than the qualifier 'nine months to five years.'" (Frederick, Tr. 1161); (CCX-860 at 16-18).

Response to Finding No. 304:

The cited line of questioning is a perfect example of why no valid conclusions can be drawn from Dr. Frederick's survey. *See supra*, Response to Finding No. 199. For the question regarding "9 months to five years," how can any respondent who actually reads the questions and provides a sincere response provide a response of more than 5 years? Nevertheless over 20% of respondents provided an answer of more than 5 years. (CCX 860 (Frederick, Rep. at 17)). No valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

305. There is a typo in Appendix A to Professor Frederick's expert report. Specifically, the results to Question 14A, reproduced at CCX-860 at 45, should reflect 60% of consumers thought "nine months to five years" conveyed longer biodegradation times, and 40% of consumers thought it conveyed shorter biodegradation times. (Frederick, Tr. 1159-1160).

Response to Finding No. 305:

Dr. Frederick is not sure that the typo in Appendix A of CCX 860 at page 45 is as Complaint Counsel claims in Finding No. 305. While the two response options to Question 14A should equal 100%, Dr. Frederick does not know one way or the other whether 60%—as opposed to 50%—of respondents thought "nine months to five years" conveyed longer

biodegradation times, or whether 50%—as opposed to 40%—of respondents thought it conveyed shorter biodegradation times. (Frederick, Tr. 1160 ("they should add to a hundred percent, and in the top case they don't, so I'm thinking that it's 60 and 40, not 50 and 40 … Go back to the data and double-check that … It's my belief – I'm not entirely certain. It's my belief that the first bold 5 that you see, that is, the 50 percent in brackets to the right of the first option, package A, that number should be a 6, 60 and 40, not 50 and 40.").

306. Notably, Professor Frederick is an expert on the anchoring effect, which is the "assimilation of a judgment" toward "a concurrent numeric standard," or toward "a prior numeric standard previously presented." (Frederick, Tr. 1029-1032); (CCX-860 at 3).

Response to Finding No. 306:

ECM has no specific response other than ECM is at a loss why Dr. Frederick's particular expertise in anchoring is notable given that the cited transcript pages and document do not support the fact that it is "notable." (Frederick, Tr. 1029–32; CCX 860 (Frederick, Rep. at 3)).

307. Significantly, Professor Frederick attributed the failure of ECM's new qualifier to produce meaningfully longer estimated biodegradation times in part due to the anchoring effect, because the representation presents consumers with "one year" as the starting point, and consumers may "infer that [one year] has some significance[.]" (Frederick, Tr. 1167).

Response to Finding No. 307:

Finding No. 307 is based solely on Dr. Frederick's Google Consumer Surveys. No valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

308. Thus, although the new "some period greater than a year" qualifier increases the number of estimates above five years, it also "move[s] some respondents to give lower estimates." (Frederick, Tr. 1167); (*see* also CCX-860 at 18 ("The specified minimum value ('one year') likely functioned as a numeric referent towards which some respondents' subsequent estimates assimilate.")).

Response to Finding No. 308:

Finding No. 307 is based solely on Dr. Frederick's Google Consumer Surveys. No valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

309. Specifically, changing the language from "nine months to five years" to "some period greater than a year" "significantly increases the fraction [of consumers] who believe [the product] will biodegrade within two years (from 17% to 29%[])." (CCX-860 at 18); (*see also* Frederick, Tr. 1167 ("If you compare . . . people who gave estimates less than or equal to two years, that number increases from . . . 17 percent to 29 percent, perhaps because the one year is functioning as an anchor of sorts.")).

Response to Finding No. 309:

Finding No. 307 is based solely on Dr. Frederick's Google Consumer Surveys. No valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

310. Dr. Stewart did not challenge (or even address) Professor Frederick's conclusion that ECM's "some period greater than a year" language did not materially increase consumers' estimated biodegradation times. (*See* Stewart, Tr. 5-308; 2491-2820); (RX-856; RX-843).

Response to Finding No. 310:

Dr. Stewart specifically asked respondents to his survey to describe what the promotional statement "Plastic products manufactured with our additives will biodegrade in any biologically

active environment (including most landfills) in some period greater than a year" means to them. (Stewart, Tr. 2796; RX 856 (Stewart, Rep. at 26)). Dr. Stewart concluded that consumers lacked an understanding, expressed confusion, expressed skepticism or disbelief, or just restated the claim in response to that question. (RX 856 (Stewart, Rep. at 26)).

311. ECM did not dispute other facts that "biodegradable" implies. As Professor Frederick testified, his study, APCO, and Synovate establish that most consumers believe plastic products labelled "biodegradable" will biodegrade in landfills. (Frederick, Tr. 1172); (CCX-860 at 13 (citing APCO and Synovate, as well as GCS)).

Response to Finding No. 311:

The first sentence of Finding No. 311 is nonsensical and ECM can therefore not properly reply, as ECM is not sure what Complaint Counsel intends by "other facts that 'biodegradable' implies." ECM has no specific response to the second sentence, other than the fact that no valid conclusions can be drawn from Dr. Frederick's survey because it is unreliable, not having satisfied any of the criteria required for competent and reliable consumer survey research. *See supra*, Response to Finding No. 199.

312. Additionally, across eight different GCS surveys with varied wording and question type, between 37% and 50% of consumers understood that a plastic product labelled "biodegradable" will biodegrade completely into elements found in nature. (Frederick, Tr. 1172); (CCX-860 at 16).

Response to Finding No. 312:

First, it is unclear what eight different questions Dr. Frederick and Complaint Counsel are referring to. Page 1172 of Dr. Frederick's transcript and page 16 of his expert report refer to questions F6, F7, and F8A–F8F. (Frederick, Tr. 1172: CCX 860 (Frederick, Rep. at 16)). Upon closer inspection, however, there are no questions in Dr. Frederick's Report labeled as 8D, 8E, or 8F. (CCX 860 (Frederick. Rep. at 37–45)).

Second, all of the questions Complaint Counsel and Dr. Frederick appear to be referring to at the cited pages are binary questions, where the respondent must either click yes or no in order to obtain access to the webpage the respondent wanted to get to. (CCX 860 (Frederick, Rep. at 16, 37–45)). So, this is another conclusive example of why no valid conclusions can be drawn from Dr. Frederick's survey, as Respondents are simply clicking "yes" or "no" without any evidence that the respondents read the questions or gave sincere response. (CCX 977 (Dr. Frederick's peer-reviewed paper, at n. 5, stating that respondents who answer questions from Google Consumer Surveys "answer randomly to regain access to the webpage as quickly as possible"); RPFF ¶¶ 1015–16; *See supra*, Response to Finding No. 199).

313. Professor Frederick employed a "bright line" coding rule designed to avoid any "value judgments about which responses are 'too inaccurate' to count." (CCX-865 at 6).

Response to Finding No. 313:

Dr. Frederick attempted to employ a "bright line" coding rule; however "the coding rules were not applied consistently." (RX 856 (Stewart, Rep. at 13)). For example, Dr. Frederick coded "forever," "immediately," "minutes," and "never." (RPFF ¶¶ 1043–44).

314. Professor Frederick's bright-line rule was that "any response containing both a numeric specification and an accompanying temporal unit" was coded, and other responses were not. (CCX-865 at 6); (*see* also Frederick, Tr. 1128).

Response to Finding No. 314:

What is stated in Finding No. 314 may have been Dr. Frederick's attempted bright line rule, but that rule was not executed properly. (RX 856 (Stewart, Rep. at 13 ("In some cases respondents who gave a range [were] not coded at all while in other cases they were assigned the

mid-point of the range")); RPPF ¶¶ 1043 (Dr. Frederick coded "forever," "immediately" and "minutes");1044 (Dr. Frederick coded "never")).

315. As Professor Frederick explained, five types of responses were excluded: (1) numeric responses lacking a temporal unit (for instance, "1"); (2) responses lacking a specification of quality (for instance, "months"); (3) responses indicating unwillingness to answer without further clarification ("it depends"); (4) responses indicating an unwillingness to a aver a response about which they are uncertain ("I don't know"); and (5) "bypass" or "protest" responses intended to circumvent the survey wall (e.g., "go away"). (CCX-865 at 6); (Frederick, Tr. 1122-1128).

Response to Finding No. 315:

What is stated in Finding No. 315 may have been what Dr. Frederick's intended to exclude from coding in accordance with his supposed bright line rule; but that rule was not executed properly or as indicated in Finding No. 315. (RX 856 (Stewart, Rep. at 13 ("In some cases respondents who gave a range [were] not coded at all while in other cases they were assigned the mid-point of the range")); RPPF ¶¶ 1043 (Dr. Frederick coded "forever," "immediately" and "minutes"); 1044 (Dr. Frederick coded "never")).

316. As Professor Frederick explained, he did not code these responses because there is no way to translate them into a specific estimate of biodegradation time. (CCX-865 at 6); (Frederick, Tr. 1122-1128).

Response to Finding No. 316:

It is unclear what Complaint Counsel refers to by "these responses" as there are no responses stated in Finding No. 316, and ECM can therefore not properly respond to Finding No. 316. Dr. Frederick did in fact code responses such as "forever," immediately," "never," and "minutes." (RPPF ¶¶ 1043 (Dr. Frederick coded "forever," "immediately" and "minutes"); 1044 (Dr. Frederick coded "never")).

317. The omission of these responses would only affect the results if respondents who gave such responses hold different views concerning biodegradation that the rest of the population, but "there is no reason to believe that any of the people whose responses [Professor Frederick] did not code hold a view of biodegradation that differs from the rest of the population[.]" (CCX-865 at 6); (*see also* Frederick, Tr. 1122-1128).

Response to Finding No. 317:

It is unclear what Complaint Counsel refers to by "these responses" as there are no responses stated in Finding No. 317, and ECM can therefore not properly respond to Finding No. 317. Furthermore, Finding No. 317 appears to be a legal argument that Dr. Frederick's decision not to code certain answers does not affect the validity of his survey. Dr. Frederick's statement in Finding No. 317 is nonsensical as ECM has no idea what Dr. Frederick means by "differs from the rest of the population." What population is Dr. Frederick referring to? The responses he failed to code obviously are different from the responses he chose to code—otherwise he would have coded them—so there is reason to think that the people whose responses he did not code hold different views from those people whose responses he did in fact code, rendering the quoted statement utterly worthless.

318. Survey respondents with views as to the correct answer sometimes state "I don't know" because they lack sufficient confidence in their view, or because they fear embarrassment if they give an incorrect response. (Stewart, Tr. 2666-2667).

Response to Finding No. 318:

The cited pages do not support the stated proposition. The relevant testimony established that a respondent could provide an answer of "I don't know" to a question for which the respondent may have a view but lacks sufficient confidence in that view or fears embarrassment if they give an incorrect response. (Stewart, Tr. 2666–67). However, the testimony does not establish, as Finding No. 318 states, that respondents with views as to the **correct** answer

sometimes state "I don't know." Further, Complaint Counsel fails to provide any evidence that any respondent to Dr. Stewart's survey answered "I don't know" to any question because of a lack of confidence or out of fear of embarrassment.

319. Furthermore, Dr. Stewart conceded it was "generally true" that "there's a literature on the 'I don't know' response [in survey research], and that literature generally finds that you don't change the distribution of responses substantially by forcing responses by preventing people from saying 'I don't know.'" (Stewart, Tr. 2669-2670).

Response to Finding No. 319:

Finding No. 319 mischaracterizes Dr. Stewart's testimony. Dr. Stewart clarified that the literature Complaint Counsel refers to in Finding No. 319 dealt with questions asking for factual knowledge. (Stewart, Tr. 2670 ("Generally when you're asking people for factual knowledge, it does not make a difference, that is correct.")).

320. Similarly, Professor Frederick testified there was no reason to conclude "that as a group, people who give 'I don't know responses' to questions asking for beliefs regarding biodegradation time have different beliefs than people who gave [specific estimates]." Accordingly, omitting "I don't know" responses does not "affect the conclusions of the research." (Frederick, Tr. 1125).

Response to Finding No. 320:

There is in fact reason to believe that people who answer "I don't know" as a group have a different distribution of views than people who express their view immediately. (Stewart, Tr. 2668). Dr. Stewart explained that the "their distribution would be different because some of those people actually don't know, and so the fact that they don't know will change the overall distribution even if there are a few people who say 'don't know' because they are less certain. But the overall distribution would be quite different." (Stewart, Tr. 2668).

321. To provide a second example, Professor Frederick compared the distribution of (uncodeable) numeric responses that did not have an accompanying unit (for instance, "1") with the distribution of (coded) responses that had an accompanying unit ("for instance, "1 year"). (Frederick, Tr. 1127); (CCX-865 at 6).

Response to Finding No. 321:

First, ECM is unsure what Complaint Counsel intends by a "second example"—a second example of what? Further, this line of "analysis" by Dr. Frederick is completely theoretical, all conclusions drawn from it are wholly inferential, and there is no direct evidence that respondents who replied with "1" or "one" intended to convey a length of time of 1 year or less. (Frederick, Tr. 1127; CCX 865 (Frederick, Rebuttal Rep. at 6)). It is also possible that "1" was given as a response because it is the first number that comes to respondents' minds, and respondents were merely pressing "1" in order to gain quick access to the desired internet content. (RPFF ¶ 1095; CCX 977 (Dr. Frederick's peer reviewed article, at P. n. 5 stating that some respondents who answer questions from Google Consumer Surveys "answer randomly to regain access to the webpage as quickly as possible")).

322. As Professor Frederick testified, the distribution of responses was "very similar . . . [t]herefore, I have every reason to believe that these people [who gave uncodable responses] have the same distribution of beliefs as the people who provided a unit." (Frederick, Tr. 1127); (CCX-865 at 6).

Response to Finding No. 322:

Again, this line of "analysis" by Dr. Frederick is completely theoretical, all conclusions drawn from it are wholly inferential, and there is no direct evidence that respondents who replied with "1" or "one" intended to convey a length of time of 1 year or less. (Frederick, Tr. 1127; CCX 865 (Frederick, Rebuttal Rep. at 6)). It is also possible that "1" was given as a response because it is the first number that comes to respondents' minds, and respondents were merely pressing "1" in order to gain quick access to the desired internet content. (RPFF ¶ 1095; CCX

977 (Dr. Frederick's peer reviewed article, at P. n. 5 stating that some respondents who answer questions from Google Consumer Surveys "answer randomly to regain access to the webpage as quickly as possible")).

323. Because the people whose responses Professor Frederick excluded very likely have distribution of beliefs regarding biodegradation time than those who gave codeable responses, excluding them does not "affect[] the inferences drawn from the data." (CCX-865 at 6).

Response to Finding No. 323:

There is no support for the proposition that the responses to Dr. Frederick excluded "very likely have distribution of beliefs regarding biodegradation than those who gave codeable responses." (CCX 865 (Frederick, Rebuttal Rep. at 6)). In fact, as Dr. Stewart explained, by "ignoring significant portions of the data in computing statistics, you're really misrepresenting the data. If a large number of people are uncoded because they gave a response that doesn't fit a desirable structure, you don't report data statistics based only on what was convenient and fit your definition of an appropriate response. You need to report all of the data and the statistics accordingly." (Stewart, Tr. 2602). Dr. Stewart also explained that "if you're going to compute any statistics, then you need to include those individuals [who provided uncoded answers] within the total sample. You can't ignore them because they didn't give the type of response that you were looking for." (Stewart, Tr. 2614).

324. Out of approximately 20,000 responses Professor Frederick collected to open-ended questions, a very small fraction (less than one percent) gave insincere "protest" responses intended solely to bypass the GCS survey wall. Professor Frederick testified that excluding such responses would have no material effect because there is "no reason to believe that the people who [give protest responses] actually have different views about biodegradation times than the people who g[a]ve responses which are codeable." (Frederick, Tr. 1123-24; 1136, 1138); (CCX-865 at 5).

Response to Finding No. 324:

Dr. Frederick is defining "protest response" very narrowly in the cited transcript pages. For example, Dr. Frederick says that "ASDF" is a protest response. (Frederick, Tr. 1123). Dr. Stewart explained that Dr. Frederick coded a number of protest responses that is impossible to quantify. (Stewart, Tr. 2666 ("an individual who, in order to make something go away [Dr. Frederick's Google Consumer Survey], actually enters data that's a protest response that actually becomes incorporated in the larger data set and is ultimately used in an analysis")). There is no way to know, for example, in response to Dr. Frederick's binary questions—where respondents must choose one of two images, or click yes or no—whether each and every response was in fact a protest response. (CCX 860 (Frederick, Rep. at 37–45)). Some of Dr. Frederick's questions also forced respondents to answer with a number if the respondent wanted to access the desired internet content, so there is now way to tell whether each respondent who answered with "1" was simply submitting a protest response and wanted to gain access to the content as quickly as possible. (Frederick, Tr. 1414–15 (noting that some of Dr. Frederick's questions were "numeric questions in which you could only enter a number, no units, no alphabetic characters, and that number essentially represents the response")).

325. Dr. Stewart did not challenge this conclusion. (*See* Stewart, Tr. 5-308; 2491-2820); (RX-856; RX-843).

Response to Finding No. 325:

While ECM cannot know for certain what Complaint Counsel intends by "this conclusion," as no conclusion is stated in Finding No. 325, Dr. Stewart did in fact explain that omitting responses materially affects the data and renders conclusions invalid. As Dr. Stewart explained, by "ignoring significant portions of the data in computing statistics, you're really

misrepresenting the data. If a large number of people are uncoded because they gave a response that doesn't fit a desirable structure, you don't report data statistics based only on what was convenient and fit your definition of an appropriate response. You need to report all of the data and the statistics accordingly." (Stewart, Tr. 2602). Dr. Stewart also explained that "if you're going to compute any statistics, then you need to include those individuals [who provided uncoded answers] within the total sample. You can't ignore them because they didn't give the type of response that you were looking for." (Stewart, Tr. 2614). Dr. Stewart also explained that he has "a basis for believing that their distribution [certain respondents whose answers Dr. Frederick chose not to code] would be different…" (Stewart, Tr. 2668).

326. Professor Frederick also testified that GCS takes steps to ensure that people who respond randomly do not receive future surveys by periodically asking questions with obvious answers (for instance, how many states are there in the United States?), and removing persons who respond incorrectly from the pool who may receive future surveys. (Frederick, Tr. 1099-1100).

Response to Finding No. 326:

There is no evidence that Google Consumer Surveys used any such screening questions in Dr. Frederick's survey, and Dr. Frederick in fact did not ask any such screening questions in his survey. (Frederick, Tr. 1224–25 (Dr. Frederick admitting that he "[doesn't know] whether Google asked any prescreening questions of any of Dr. Frederick's respondents)).

327. Indeed, there is no reason to think that the less than one percent of respondents who react to a GCS survey with a bypass response (random typing) or a protest response (a snide remark) are psychographically different from the population at large in any respect relevant here. If, for example, the GCS question asked for respondents' views about paywalls limiting access to line content, then excluding bypass/protest respondents from the data might be problematic. In this context, however, there is no reason to think that bypass/protest responders, as a group, would give different biodegradation time estimates than people who give sincere responses. (Frederick, Tr. 1123-1124).

Response to Finding No. 327:

As Dr. Stewart explained, there is no way to know which responses were bypass or protest responses, and some bypass and protest responses were surely coded and guided Dr. Frederick's conclusions. (Stewart, Tr. 2666 ("an individual who, in order to make something go away [Dr. Frederick's Google Consumer Survey], actually enters data that's a protest response that actually becomes incorporated in the larger data set and is ultimately used in an analysis")). There is no way to know, for example, in response to Dr. Frederick's binary questions—where respondents must choose one of two images, or click yes or no—whether each and every response was in fact a protest response. (CCX 860 (Frederick, Rep. at 37–45)). Some of Dr. Frederick's questions also forced respondents to answer with a number if the respondent wanted to access the internet content, so there is now way to tell whether each respondent who answered with "1" was simply submitting a protest response and wanted to gain access to the content as quickly as possible. (Frederick, Tr. 1414–15 (noting that some of Dr. Frederick's questions were "numeric questions in which you could only enter a number, no units, no alphabetic characters, and that number essentially represents the response")).

328. In his report, Professor Stewart briefly alleged that a "disinterest bias" exists, wherein GCS respondents will allegedly give random answers to bypass the survey wall. (RX-856 at 14).

Response to Finding No. 328:

ECM has no specific response other than to note that Dr. Stewart discussed disinterest bias on page 11, not 14, of his expert report. (RX 856 (Stewart, Rep. at P. 11)).

329. Dr. Stewart's report references only a blog post from a GCS competitor regarding alleged "disinterest bias." (RX-856 at 14).

Response to Finding No. 329:

The blog post Complaint Counsel refers to in Finding No. 329 is a post from the GreenBook Blog, which is a publication that is well-known in the practicing market research community and among well-read researchers. (RX 856 (Stewart, Rep. at P. 11, n. 7); RPFF ¶ 957)). In addition, Dr. Stewart explained that the author of the blog post, Katrina Lerman, is not in competition with Google Consumer Surveys, because Ms. Lerman is a market researcher and Google Consumer Surveys is not used by legitimate market researchers. (Stewart, Tr. 2665).

330. Indeed, Professor Frederick testified that alleged "disinterest bias" has not been studied in the academic survey research literature, and his search for the term produced no results. (Frederick, Tr. 1092).

Response to Finding No. 330:

Dr. Stewart clarified that "disinterest bias had been discussed in the GreenBook Blog. The GreenBook is a publication that's well-known in the practicing market research community; "well-read by researchers … [disinterest bias is] a well-known bias." (Stewart, Tr. 2611–12).

331. Additionally, the fact that less than one percent of respondents gave protest responses provides additional evidence that the overwhelming majority of GCS respondents gave thoughtful answers. (Frederick, Tr. 1093 ("The vast majority of people gave answers which were very reasonable given the questions.")).

Response to Finding No. 331:

Because Dr. Frederick asked only one question per respondent, there is no way to know whether any given response was sincere. As Dr. Stewart explained, "with one question, you know, even if an individual gave a seemingly reasonable response, we really don't know what the response indicates, whether it's a sincere response, whether it's a response that would be

subject to qualification if there was a follow-up question. We just don't know what the responses mean." (Stewart. Tr. 2605–06).

Furthermore, it is not a "fact that less than one percent of respondents gave protest responses" in Dr. Frederick's survey. As Dr. Stewart explained, there is no way to know which responses were bypass or protest responses, and some bypass and protest responses were surely coded and guided Dr. Frederick's conclusions. (Stewart, Tr. 2666 ("an individual who, in order to make something go away [Dr. Frederick's Google Consumer Survey], actually enters data that's a protest response that actually becomes incorporated in the larger data set and is ultimately used in an analysis")). There is no way to know, for example, in response to Dr. Frederick's binary questions—where respondents must choose one of two images, or click yes or no—whether each and every response was in fact a protest response. (CCX 860 (Frederick, Rep. at 37–45)). Some of Dr. Frederick's questions also forced respondents to answer with a number if the respondent wanted to access the internet content, so there is now way to tell whether each respondent who answered with "1" was simply submitting a protest response and wanted to gain access to the content as quickly as possible. (Frederick, Tr. 1414–15 (noting that some of Dr. Frederick's questions were "numeric questions in which you could only enter a number, no units, no alphabetic characters, and that number essentially represents the response")).

332. Furthermore, the fact that average response times for GCS respondents were generally above 20 seconds (meaning that the average respondent took 20 seconds before responding) provides additional "evidence that people are thinking about the question." (Frederick, Tr. 1152).

Response to Finding No. 332:

The evidence referred to in Finding No. 332 by Complaint is completely inferential. (Frederick, Tr. 1342–43). In reality, when an internet user is faced with a Google Consumer

Survey question, like Dr. Frederick's questions, the question pops up in front of the desired internet content. (Frederick, Tr. 1343). The website content is still available to the respondent, albeit in the background "behind" the pop up question. (Frederick, Tr. 1343). So, common sense dictates that the most probable reason, or at least a very likely reason, that the average response time to Dr. Frederick's questions was 20 seconds is that the respondents were trying to read the content in the background, behind the pop up question—as that background content can be the only reason why the respondent was visiting that particular website. (Frederick, Tr. 1343). In addition, as Dr. Frederick admits, a number of things could have happened to cause respondents to take on average 20 seconds to answer his questions. (Frederick. Tr. 1342–43). So, the fact that the average response time to Dr. Frederick's questions was 20 seconds is not evidence that respondents were thinking about the question.

333. As Professor Frederick testified, "[i]t wouldn't make any sense . . .for someone to see a question, to sit there and do nothing, and then key in a nonsense response [after] 22 seconds[.]" (Frederick, Tr. 1152); (*see also* CCX-865 at 5).

Response to Finding No. 333:

While it may not make sense for someone "to sit there and do nothing, and then key in a nonsense response after 22 seconds," it would make sense that someone would attempt to read the actual content of the website that they were attempting to visit before deciding whether or not to even answer the question. (Frederick, Tr. 1343).

334. ECM attempts to account for the response time by suggesting that respondents might have become distracted between when GCS presented the question stem and when they responded. (Frederick, Tr. 1331-1334).

Response to Finding No. 334:

Respondents may have become distracted or may in fact just have been reading the content in the background, behind the pop up question, on the website they were trying to access. (Frederick, Tr. 1331–34).

335. As Professor Frederick testified, "obviously [this] does happen sometimes," but "I don't think it's common that people would be interrupted between reading the question stem and answering[.]" In short, atypical distractions might account for a few response times of twenty seconds or more, but not hundreds or thousands. (Frederick, Tr. 1342).

Response to Finding No. 335:

Dr. Frederick has no idea and cannot know how many people were distracted when answering his questions or were reading the content behind the pop up question. (Frederick, Tr. 1342). Those factors could in fact account for thousands of responses taking more than a few seconds. (RPFF ¶ 1076).

336. In fact, as Professor Frederick testified, and Dr. Stewart conceded, a question in which the consumer gives a response in twenty seconds much better replicates the actual consumer experience when confronted with a "biodegradable" claim on a store shelf than a telephone interview taking ten minutes or more. (Frederick, Tr. 1091 ("[I]f a question is embedded at the end of a ten-minute survey, that's not replicating . . . the decision experience of the consumer itself. A consumer in a store might just spend a few seconds deciding between products.")); (CCX-865 at 5); (Stewart, Tr. 2700 (admitting that his landline survey "doesn't simulate the shopping experience)).

Response to Finding No. 336:

Dr. Stewart did not concede that "a question in which the consumer gives a response in twenty seconds much better replicates the actual consumer experience when confronted with a 'biodegradable' claim on a store shelf than a telephone interview taking ten minutes or more." (Stewart, Tr. 2700). Dr. Stewart made no comparison between his survey and Dr. Frederick's survey as to what extent, if any, they each simulate a consumer shopping experience. (Stewart,

Tr. 2700). Browsing the internet and being ambushed by a pop up question on biodegradation, and prohibiting access to the desired internet content does not simulate the consumer shopping experience. (RPFF ¶¶ 988, 991, 1095).

337. ECM characterizes consumers' short biodegradation time estimates (including days and weeks) as "absurd" and "ludicrous." (Stewart, Tr. 2749-2755); (RX-856 at 15).

Response to Finding No. 337:

Dr. Stewart actually testified that when he was referring to those estimates as being absurd and ludicrous, he "was referring not only to the response but the way [Dr. Frederick] coded them." (Stewart, Tr. 2754).

338. ECM emphasizes extremely small estimates, for instance, "a nanosecond." In reality, out of approximately 20,000 responses to open-ended questions, only two consumers responded with "a nanosecond." (Frederick, Tr. 1377).

Response to Finding No. 338:

The cited transcript page does not support the stated proposition that "ECM emphasizes extremely small estimates, for instance, 'a nanosecond.'" (Frederick, Tr. 1377). ECM has no specific response to the second sentence of Finding No. 338.

339. During his cross-examination, ECM confirmed that Professor Frederick coded approximately 26 responses of seconds, minutes, or hours, but this represents only approximately .001% of the data collected. (Frederick, Tr. 1302-1305).

Response to Finding No. 339:

The cited transcript pages do not support the stated proposition. First, the cited transcript pages do not claim that Dr. Frederick coded only approximately 26 such responses, but instead illustrate some examples of answers Dr. Frederick chose to code. (Frederick, Tr. 1302–05).

Second, the cited transcript pages do not state that those responses represented approximately .001% of the data Dr. Frederick collected. (Frederick, Tr. 1302–05).

340. These 26 responses might represent people who mistook "biodegradation" for dissolution, people who misunderstood the question as asking when the biodegradation process begins, or people who did not take the question seriously. Regardless, the number of these responses is too small to affect the data. (Stewart, Tr. 2757-2758); (RX-843 at 39).

Response to Finding No. 340:

The cited transcript pages and document do not support the fact that "the number of these responses is too small to affect the data." (Stewart, Tr. 2757–58; RX 843 (Stewart, Dep. at 39)). Further, the first sentence is irrelevant as ECM is not sure what 26 responses Complaint Counsel is referring to. ECM agrees with Complaint Counsel that, because Dr. Frederick asked only one question of each respondent in his survey, Dr. Frederick can have no idea why people answered in the way that they did, or what people meant by their answers.

341. ECM fails to explain why making value judgments about consumers' beliefs is appropriate (it is not). (CCX-865 at 6).

Response to Finding No. 341:

ECM is unsure how to respond to Proposed Finding No. 341 insofar as it implies that ECM believes it is appropriate to make "value judgments" about consumers' beliefs'. Finding No. 341 fails to cite to any contention by ECM that making "value judgments" is appropriate, so ECM cannot properly respond to Finding No. 341. ECM does contend that Dr. Frederick's coding was inappropriate, because, among other reasons, he failed to code responses that did not fit a desirable structure. (Stewart, Tr. 2602). Furthermore, ECM does not know what Complaint

Counsel even means by "value judgments," as Complaint Counsel was unable to even define it at the hearing when questioning Dr. Stewart. (Stewart, Tr. 2747–48).

342. ECM fails to acknowledge that, like Professor Frederick, Dr. Stewart coded very short biodegradation time estimates and included them in his data. (Stewart, Tr. 2755-2756); (CCX-865 at 6-7).

Response to Finding No. 342:

Dr. Stewart coded "very short" biodegradation times for what they were. (Stewart, Tr. 2749). Dr. Stewart, unlike Dr. Frederick, "did not attempt to force-fit [the very short biodegradation times] into a specific time frame." (Stewart, Tr. 2749).

343. ECM fails to note that Professor Frederick coded both extremely long responses as well as extremely short ones—again, he implemented a "bright line" rule intended to avoid value judgments. (Stewart, Tr. 2755-2756); (CCX-865 at 6-7).

Response to Finding No. 343:

The cited pages and document do not support the proposition stated. Dr. Stewart, at the cited pages, explicitly acknowledges that Dr. Frederick coded both extremely long and extremely short answers. (Stewart, Tr. 2755–56 ("Q. Professor Frederick also coded extremely high numbers, didn't he? A. Yes, he did.")).

344. Neither GCS respondents (who provided data) nor GCS itself (who collected the data) knew who sponsored Professor Frederick's study. (Stewart, Tr. 2745-2746); (Frederick, Tr. 1132).

Response to Finding No. 344:

ECM has no specific response.

345. The coding of numeric responses generally does not have any significant subjective component. (Frederick, Tr. 1132-1133).

Response to Finding No. 345:

As Dr. Stewart explained, the fact that both Dr. Frederick and Mr. Meyer, who coded nearly all of the responses, "were very much aware of the sponsor of the sponsor of the research, the purpose of the research, had an understanding of what was sought as a result in the research … [is] inconsistent with a double-blind procedure where the people involved in the actual coding of the research would be blind." (Stewart, Tr. 2604). Dr. Frederick's decision to use the purported bright line rule when coding was purely subjective. (Stewart, Tr. 2601). As Dr. Stewart explained, "Dr. Frederick appears to want to force-fit his data into a preexisting structure. That is, he was interested in identifying very specific time frames for biodegradation." (Stewart, Tr. 2601).

346. Professor Frederick produced the entirety of his data (including both the original responses and how those responses were coded) to ECM. (Frederick, Tr. 1133-1134); (CCX-863).

Response to Finding No. 346:

ECM has no specific response.

347. Although ECM criticized Professor Frederick for not using so-called "screening questions" to exclude people who reported not knowing what "biodegradation" was, the evidence at trial was clear that such questions are ineffective. Initially, the evidence established that, despite using screening questions in his survey, Dr. Stewart still included dozens of respondents who understood that "biodegradable" meant that the product was recyclable, that it would not degrade, that it would "self-destruct," and even that it was digestible. (Stewart, Tr. 2764-2770).

Response to Finding No. 347:

The first sentence of Finding No. 347 is a legal argument not appropriate for a proposed finding of fact, and contains no citation. While Dr. Stewart's respondents may have included some respondents who understood "biodegradable" to mean the things Complaint Counsel lists, Dr. Stewart's screening questions fulfilled their purpose, and screening questions are necessary "to qualify respondents," to "assure that a certain variability exists," to "eliminate certain kinds of people from participating in the survey, people who might be atypical in terms of their response," and to ensure that responses would not be "at best, random responses and guessing." (Stewart Tr. 2534–36). Dr. Frederick's surveys asked one question only of each respondent and included no screening questions. (Frederick, Tr. 1224, 1390).

348. In addition, Dr. Stewart admitted that screening questions can remove people who do understand what "biodegradation" means, but who are not confident in their understanding, or who have decided that they no longer want to participate in the survey. (Stewart, Tr. 2761-2763).

Response to Finding No. 348:

Dr. Stewart testified that it's "possible" that screening questions "may remove people who actually do have an understanding of what the term [biodegradable] means but aren't confident enough to represent that they do." (Stewart, Tr. 2762). "[A]s we all know, anything is possible." (Chappell, Tr. 2640). Complaint Counsel provided no evidence that any people were removed from Dr. Stewart's survey who understood what "biodegradation" means but who were not confident in their understanding of the term.

Furthermore, Complaint Counsel's contention that respondents who did not want to participate in the survey said they did not understand "biodegradable" because they did not want to participate in the survey is unsupported and absurd. Unlike Dr. Frederick's surveys, where respondents had to answer questions in order to obtain access to internet content, respondents to

Dr. Stewart's survey had no incentive to actually complete the survey—they simply could have hung up the telephone at any time, without any repercussion, if they decided they did not want to participate in the survey. In addition, as Dr. Stewart explained, "[a] respondent would not know whether an answer yes or no would include them in the sample for further questioning. And as far as any respondent would know at the point they're asked this question, a 'yes' might result in more questions; a 'no' might result in more questions." (Stewart, Tr. 2762).

349. Furthermore, as Professor Frederick testified, the population of American consumers who might be misled by a false biodegradable claim includes the many consumers whose understanding of "biodegradation" is mistaken or incomplete, or consumers who believe "biodegradability" is a positive attribute even if they do not know precisely why. (Frederick, Tr. 1422-1424).

Response to Finding No. 349:

It is also necessarily true that American consumers whose understanding of "biodegradation" is mistaken or incomplete, or who believe "biodegradability" is a positive attribute even if they do not know precisely why, might also be misled by a **true** biodegradable claim. So, Finding No. 349 is wholly irrelevant.

350. Indeed, ECM's own expert reluctantly concurred that a consumer might purchase a product "because he or she thinks biodegradation is a positive attribute even if his or her understanding of the term is scientifically incorrect," and such a consumer "can still be misled if the product doesn't biodegrade has he or she understands the term[.]" (Stewart, Tr. 2760).

Response to Finding No. 350:

There is no evidence in the cited page that Dr. Stewart "reluctantly concurred." (Stewart, Tr. 2760 ("Yes. I would agree with that … That's possible.").

351. ECM also criticized Professor Frederick for not screening out respondents who reported not purchasing anything made out of plastic within the past month, or who work in the plastics industry. Even assuming some minuscule number of the 29,000 GCS respondents fall within these categories, the presence of a tiny number of these outliers would not affect the data. (Frederick, Tr. 1411 ("Q: To what extent is it possible that consumers who never purchase plastic products might have responded to your survey questions? A: I testified yesterday that it was possible. Q: And how likely do you consider that to be? A: Approximately never.")).

Response to Finding No. 351:

There is no citation for the first sentence of Finding No. 351, so ECM cannot properly respond to the first sentence. Dr. Frederick's testimony on page 1411 of the transcript is not based on any data or evidence, so Dr. Frederick has no idea how many people who never purchased plastic products responded to his survey. (Frederick, Tr. 1411). In fact, the evidence shows that 68 potential respondents in Dr. Stewart's much smaller survey were excluded because they reported not having purchased any product that came in a plastic container or that was made of plastic in the past month, so Dr. Frederick should have then inferred that amongst his approximately 20,000 respondents, hundreds if not thousands had not purchased anything made out of plastic in the month prior to being asked Dr. Frederick's question. (Stewart, Tr. 2710–11).

352. In 2014, ECM's expert, Dr. Stewart, supervised a 400-participant landline survey. (Stewart, Tr. 2687); (RX-856 at 18, 23).

Response to Finding No. 352:

The cited transcript page and cited pages of Dr. Stewart's Report do not support the proposition stated. (Stewart, Tr. 2687; RX 856 (Stewart, Rep. at 18, 23)). On page 2687 of the hearing transcript, Dr. Stewart testified that he "took a landline telephone survey in this case," not that he "supervised" it. (Stewart, Tr. 2687).

353. Although Dr. Stewart never asked respondents to estimate how long it would take plastic products labeled "biodegradable" to biodegrade, he did collect data bearing upon this issue. (Stewart, Tr. 2629-2630).

Response to Finding No. 353:

The cited transcript pages do not support the proposition stated. (Stewart, Tr. 2629–30). Dr. Stewart testified that he collected data on consumers' perceptions of "the broader topic of biodegradability." (Stewart, Tr. 2630).

354. Dr. Stewart's landline callers asked (without specifying a material or that the product was labeled "biodegradable"): "If something is biodegradable, how long do you think it would take for it to decompose or decay?" (Stewart, Tr. 2777); (RX-602 at 16).

Response to Finding No. 354:

ECM has no specific response.

355. Of the 400 respondents, a majority (206) gave codeable estimates, and of those respondents, 33% gave estimates of one year or less. (Stewart, Tr. 2790).

Response to Finding No. 355:

Finding No. 355 is an incorrect statement because all 400 of the respondents to Dr. Stewart's survey provided "codeable estimates," and Dr. Stewart in fact coded all 400 responses. (RX 846, at PP. 20–21). Further, regarding the entire line of questioning during the cited portion of Dr. Stewart's cross-examination, Dr. Stewart made it clear that he had "an objection to the whole exercise," (Stewart, Tr. 2783) and that he "object[ed] to what [Complaint Counsel was] doing with the data," explaining that "[i]t's an inappropriate use of the data that [Dr. Stewart] collected." (Stewart, Tr. 2782–83).

356. As with all four surveys at issue, many respondents gave nonspecific responses such as "I don't know," "it depends," or other responses not quantifiable as a specific biodegradation time estimate. (Stewart, Tr. 2790).

Response to Finding No. 356:

ECM has no specific response, other than it is impossible for respondents to the Synovate survey to provide any response other than a time frame. (CCX 860 (Frederick, Rep. at 11) (quoting the pertinent question from the Synovate survey))).

357. Additionally, Dr. Stewart's landline callers read ECM's biodegradable in "some period greater than a year" disclaimer to respondents, and asked: "In your own words, what does this claim mean to you?" (RX-602 at 20).

Response to Finding No. 357:

ECM has no specific response.

358. Although Dr. Stewart notably did not ask respondents to estimate biodegradation times, 150 respondents still gave estimates. Of those respondents—and notwithstanding ECM's disclaimer—50% (75 respondents) gave estimates of a year or less. (Stewart, Tr. 2804).

Response to Finding No. 358:

ECM disputes that it is "notable" that Dr. Stewart did not ask respondents to estimate biodegradation times; that statement is not a factual statement but a legal argument and not appropriately inserted into a proposed finding of fact. Furthermore, to get the computation cited by Complaint Counsel in Finding No. 358, Complaint Counsel "ignor[ed] the rest of the sample," (Stewart, Tr. 2804), Dr. Stewart made it clear that he had "an objection to the whole exercise," (Stewart, Tr. 2783) and that he "object[ed] to what [Complaint Counsel was] doing with the data," explaining that "[i]t's an inappropriate use of the data that [Dr. Stewart] collected." (Stewart, Tr. 2782–83).

359. Notably, Dr. Stewart did not personally check the coding of the 400 responses his landline callers reported. (Stewart, Tr. 2798).

Response to Finding No. 359:

The cited transcript page does not support the proposition stated. On page 2798 of the hearing transcript, Dr. Stewart only states that he "did not" "check the coding that led to this 24 percent number," but says nothing about whether or not he personally checked the coding of the 400 responses his landline callers reported generally. (Stewart, Tr. 2798). Furthermore, if Dr. Stewart did code the responses to his survey himself, "[i]t would be problematic" because it would be "introduc[ing] into the research design a point where there wasn't a blind participant." (Stewart, Tr. 2555).

360. Stewart's landline callers coded 95 responses as falling within the category "gone/decomposed/biodegrade in one year." (Stewart, Tr. 2796); (RX-846 at 27).

Response to Finding No. 360:

The cited page and document do not support the stated proposition. Finding No. 360 is an incorrect statement of fact because Dr. Stewart's landline callers did not code any responses; the coding in Dr. Stewart's "survey was done by professional coding personnel at California Survey Research Services." (Stewart, Tr. 2554).

361. Complaint Counsel located 75 responses that, when properly coded, fell within that category, and Dr. Stewart confirmed that the 75 responses we identified fell within the category "gone/decomposed/biodegrade in one year." (Stewart, Tr. 2800).

Response to Finding No. 361:

ECM cannot properly respond to Finding No. 361 because ECM does not know what Complaint Counsel intends by "that category" and whether it is different from the category "gone/decomposed/biodegrade in one year."

362. Dr. Stewart was adamant that the 95 respondents was "an accurate count" of those who gave responses properly coded as "gone/decomposed/biodegrade in one year", that any errors by his coders were "highly unlikely", and that the Court can rely on the figure he reported (95 respondents). (Stewart, Tr. 2797-98).

Response to Finding No. 362:

Dr. Stewart explained that the Court can rely on the figure "in the context of the totality of the survey. This is one specific figure reporting answers to one specific question in the context of multiple questions that need to be interpreted together." (Stewart, Tr. 2797).

363. However, Complaint Counsel could not locate the additional twenty "year or less" responses that Dr. Stewart alleges exist. (*See* RX-844 (actual responses entered into evidence)).

Response to Finding No. 363:

ECM has no specific response.

364. Accordingly, at trial, Complaint Counsel asked Dr. Stewart to assume that there were only 75 such responses. (Stewart, Tr. 2803).

Response to Finding No. 364:

ECM has no specific response.

365. Before issuing the Green Guides, the Commission evaluated two existing studies concerning estimates of biodegradation time: APCO and Synovate. (RX-348 at 122).

Response to Finding No. 365:

The cited page of RX 348 does not support the proposition stated. Page 348 of RX 348 only mentions one study and does not contain the terms "APCO" or "Synovate." (RX 348, at P. 122).

366. The 2006 APCO study involved an approximately 1000-respondent telephone survey that focused primarily on plastic products. (Frederick, Tr. 1037); (CCX-860 at 7).

Response to Finding No. 366:

ECM has no specific response.

367. Sixty percent of respondents stated that packages labeled "biodegradable" should biodegrade within one year or less. (RX-597 at 2).

Response to Finding No. 367:

Finding No. 367 mischaracterizes the results of the APCO survey. When asked the closed ended question: "If a package is labeled 'biodegradable,' what should be the maximum amount of time that it should take for that package to decompose?" and where of six substantive responses, four are time frames of one year or less, 60% percent of respondents to the APCO survey selected an answer of one year or less. (RX 597 at P. 2). No respondent to the APCO survey "stated" anything, but only chose responses from a limited universe of response options, as the APCO survey only contained closed ended questions. (RX 597).

368. In 2010, a company (EcoLogic) manufacturing a plastic additive similar to ECM's product engaged a survey firm (Synovate) to conduct a 2000-respondent internet panel survey. (Frederick, Tr. 1046-1047).

Response to Finding No. 368:

ECM has no specific response.

369. In the Ecologic/Synovate study, 25% stated that "less than one year" was a reasonable amount of time for a "biodegradable" package to decompose in a landfill. (RX-673 at 4; CCX-860 at 11).

Response to Finding No. 369:

Finding No. 369 mischaracterizes the results of the Synovate survey. When asked the closed ended question: "What do you believe is a reasonable amount of time for a 'biodegradable' plastic package to decompose in a landfill?" and where respondents were given a universe of 6 response options to choose from, all of which only contained a time frame, 25% of respondents selected the answer "Less than 1 year." (CCX 860 (Frederick, Rep. at 11)). No respondent to the Synovate survey "stated" anything in response to the question referenced in Finding No. 369, as that question was a closed ended question where respondents had to choose from a limited set of response options. (CCX 860 (Frederick, Rep. at 11)).

370. Professor Frederick opined that APCO and Synovate/Ecologic, taken together, provide reasonably reliable and valid evidence that at least a substantial minority of consumers believe plastic products labelled "biodegradable" will biodegrade in one year or less. (Frederick, Tr. 1041, 1059, 1180).

Response to Finding No. 370:

The cited transcript pages do not support the stated proposition. In the cited pages, Dr. Frederick never opines that the APCO and Synovate/Ecologic, taken together, provide reasonably reliable and valid evidence that at least a substantial minority of consumers believe plastic products labelled "biodegradable" will biodegrade in one year or less. (Frederick, Tr. 1041, 1059, 1180). On page 1041 of the hearing transcript, Dr. Frederick opines that "the APCO study is reliable by virtue of the fact that it asked a thousand people," but does not opine on the validity of the APCO study, and does not opine at all on the Synovate study. (Frederick, Tr. 1041). On page 1059 of the hearing transcript, Dr. Frederick opines that "with respect to estimates of biodegradation time" that the APCO and Synovate Surveys are reasonably valid,[13]

[13] It is worth noting that Dr. Frederick comes to this conclusion because he claims that the Synovate and APCO surveys "yielded results which are almost identical." (Frederick, Tr. 1059). However, as Complaint Counsel's proposed Findings Nos. 367 and 369 make clear, the

but does not opine that they provide any evidence that any number of consumers believe plastic products labeled "biodegradable" will biodegrade in one year or less. (Frederick, Tr. 1059).

Lastly, on page 1180 of the hearing transcript, Dr. Frederick merely concludes that the APCO and Synovate studies are reasonably reliable and valid in general. (Frederick, Tr. 1180). Notwithstanding, both Dr. Stewart and Dr. Frederick opined that the APCO and Synovate surveys are flawed, that the surveys are not reasonably reliable and valid, and that they are not sufficient to support the one year rule. (RPFF ¶¶ 818–877).

371. In addition to referencing the concept of convergent validity generally, Professor Frederick testified that that APCO and Synovate have opposing biases. (Frederick, Tr. 1050, 1059).

Response to Finding No. 371:

The cited transcript pages do not support the stated proposition. Dr. Frederick did not testify that the APCO and Synovate surveys "have opposing biases." (Frederick, Tr. 1050, 1059).

372. Specifically, APCO's response options suggested shorter biodegradation times, whereas Synovate's response options suggested longer ones. Indeed, with respect to the presence of opposing biases, Dr. Stewart gave essentially identical testimony. (Frederick, Tr. 1050 (noting that Synovate suffers from a "similar type of problem" as APCO, but "in the opposite direction); Frederick, Tr. 1419-1420 (same); Stewart, Tr. 2515 ("So the same problem in terms of the use of the closed-ended format [in Synovate], same problem with respect to the bias and the options offered, but the nature of the bias would be in opposite direction, in an opposite direction from the APCO survey."); Stewart, Tr. 2520 ("[T]he same problem exists in the Synovate survey, except the nature of the bias is in the opposite direction[.]"); Stewart, Tr. 2637 (same)).

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results of the two surveys were not "almost identical" at all, with one concluding that 60% of consumers believe "biodegradable" to mean that a product should decompose within one year, and the other concluding that 25% of consumers believe that one year is a reasonable amount of time for a biodegradable plastic product to decompose in a landfill. *See* Responses to Findings Nos. 367 and 369.

Response to Finding No. 372:

The first sentence in Finding No. 372 is not a factual statement but a legal argument and not appropriately inserted into a proposed finding of fact, and contains no citations. In addition, the first sentence is vague and ambiguous because it does not define "shorter" and "longer" biodegradation times. Both surveys are principally flawed because they use closed ended questions which are not appropriate in the early exploration of a topic like biodegradation, and which produce misleading homogeneity. (RPFF ¶¶ 856–860, 865, 878).

373. As Professor Frederick testified, the presence of opposing biases helps confirm the existence of convergent validity with respect to the conclusion that at least a substantial minority of consumers believe plastic products labelled "biodegradable" will biodegrade in one year or less. (Frederick, Tr. 1420 (explaining that "having different designs, especially with opposing biases, is actually a good thing for convergent validity")).

Response to Finding No. 373:

The cited transcript page does not support the stated proposition. Dr. Frederick testified that the presence of opposing biases can "be a good thing for convergent validity" but did not testify, as Finding No. 372 states, that opposing biases "help confirm the existence of convergent validity." (Frederick, Tr. 1420).

374. Thus, based on convergent validity, and viewed together (but without the benefit of either Professor Frederick's research or Professor Stewart's research), APCO and Synovate are sufficiently reliable and probative to establish that at least a substantial minority of consumers believe plastic products labeled "biodegradable" will biodegrade in one year or less. (Frederick, Tr. 1041, 1059, 1180).

Response to Finding No. 374:

The cited transcript pages do not support the stated proposition. In the cited pages, Dr. Frederick never opines that the APCO and Synovate surveys, taken together, are sufficiently

reliable and probative to establish that at least a substantial minority of consumers believe plastic products labeled "biodegradable" will biodegrade in one year or less. (Frederick, Tr. 1041, 1059, 1180). On page 1041 of the hearing transcript, Dr. Frederick opines that "the APCO study is reliable by virtue of the fact that it asked a thousand people," but does not opine on the validity of the APCO study, and does not opine at all on the Synovate study. (Frederick, Tr. 1041). On page 1059 of the hearing transcript, Dr. Frederick opines that "with respect to estimates of biodegradation time" that the APCO and Synovate Surveys are reasonably valid.[14] (Frederick, Tr. 1059). Moreover, on page 1180 of the hearing transcript, Dr. Frederick concludes that the APCO and Synovate studies are reasonably reliable and valid in general. (Frederick, Tr. 1180).

Notwithstanding, both surveys are principally flawed because they use closed ended questions which are not appropriate in the early exploration of a topic like biodegradation, and which produce misleading homogeneity. (RPFF ¶¶ 856–860, 865, 878).

375. When he was deposed, after he wrote his expert report in this matter, Dr. Stewart was unfamiliar was the product at issue in this case (ECM Masterbatch Pellets). (Stewart, Tr. 2629).

Response to Finding No. 375:

Finding No. 375 mischaracterizes Dr. Stewart's testimony. Dr. Stewart was only unfamiliar with the fact that ECM's additive is called MasterBatch Pellets as opposed to BioFilm. (Stewart, Tr. 2629).

376. Dr. Stewart also never asked the central consumer perception question in this case: how much time will it take for plastic labeled "biodegradable" to biodegrade? (Stewart, Tr. 2629-2630).

[14] *See supra*, note 3.

Response to Finding No. 376:

The cited pages do not support the proposition stated. The cited transcript pages do not support the fact that the "central consumer perception question in this case" is "how much time will it take for plastic labeled 'biodegradable' to biodegrade." (Stewart, Tr. 2629–30). ECM also contests that the most important consumer perception question in this case is how consumers interpret the term "biodegradable."

377. At trial, Dr. Stewart stated that he "was not interested in that specific issue." (Stewart, Tr. 2630).

Response to Finding No. 377:

Dr. Stewart stated that he was not interested in the specific issue of "how much time it would take for plastic labeled 'biodegradable' to biodegrade" because Dr. Stewart "was interested in the broader topic of biodegradability." (Stewart, Tr. 2630).

378. He also denied (at trial) that this question was probative of the consumer perception in this case, although when asked in his deposition whether this question was "probative of the consumer perception question at issue in this case," Dr. Stewart responded: "It certainly is." (Stewart, Tr. 2630 and 2634); (RX-843 at 126).

Response to Finding No. 378:

At his deposition, when Complaint Counsel asked him whether the question of how much time it will take for plastic labeled "biodegradable" to biodegradable is probative of consumer perception, the question was asked in the context of the purpose of Dr. Stewart's research specifically, not in the context of consumer perception in this case generally. (Stewart, Tr. 2634; RX 843 (Stewart, Dep. at 126)). Therefore, the posited contradiction in fact does not exist.

379. In Dr. Stewart's survey, after respondents were on the phone for a considerable period answering questions about biodegradation generally, Dr. Stewart's researchers asked a final series of questions. (Stewart Tr. 2698-2699).

Response to Finding No. 379:

ECM cannot properly respond to Finding No. 379 because "considerable period" is not defined and is not mentioned at the cited transcript pages. (Stewart, Tr. 2698–99). Furthermore, ECM cannot know what Complaint Counsel refers to by "a final serious of questions;" again, "final series of questions" is not mentioned in the cited transcript pages. (Stewart, 2698–99).

380. At the beginning of this series, respondents were asked: "Do you think that there are differences in the amount of time it takes for different products to biodegrade, decompose, or decay?" (Stewart, Tr. 2688); (RX-602 at 17).

Response to Finding No. 380:

ECM cannot properly respond to Finding No. 380 because ECM cannot know what Complaint refers to by "this series." (Stewart, Tr. 2698–99). In Question 4A, Dr. Stewart's survey did ask respondents: "Do you think that there are differences in the amount of time it takes for different products to biodegrade, decompose, or decay?" (Stewart, Tr. 2688; RX 602, at P. 17).

381. Unsurprisingly, almost everyone (98%) answered affirmatively. (Stewart, Tr. 2689) (RX-614 at 22).

Response to Finding No. 381:

The cited transcript page and document do not support the stated proposition insofar as it was "unsurprising" that 98% of respondents to Dr. Stewart's survey believe that there are differences in the amount of time it takes for different products to biodegrade, decompose, or decay. (Stewart, Tr. 2689). In fact, Dr. Stewart explained "the fact that we would get 98 percent

agreement among consumers to a key question is I think a very critical element." (Stewart, Tr. 2587).

382. Next, those 98% who answered "yes" were asked to expound upon those differences: "What differences exist in the time for different types of products to biodegrade, decompose, or decay?" (Stewart, Tr. 2689); (RX-602 at 18).

Response to Finding No. 382:

ECM has no specific response.

383. Immediately thereafter, respondents were asked to give their impressions of claims similar to ECM's. (Stewart, Tr. 2689); (RX-602 at 19-21).

Response to Finding No. 383:

ECM cannot properly respond to Finding No. 383 because ECM cannot know what Complaint Counsel is referring to by "immediately thereafter"—immediately after what?

384. They were not asked to estimate biodegradation times of products labelled "ECM biodegradable"; rather, they were merely asked: "In your own words, what does this claim mean to you?" (Stewart, Tr. 2796); (RX-602 at 19-21).

Response to Finding No. 384:

ECM cannot properly respond to Finding No. 384 because ECM cannot know what Complaint Counsel is referring to by "they." In Dr. Stewart's survey, respondents were asked to interpret, in their own words, three different statements that ECM has made. (RX 602, at 19–21).

385. Thus, many respondents did not give specific estimates of biodegradation times, many gave "it depends"-type answers, many expressed confusion, and many gave answers with no direct bearing on this case (for instance, that ECM seems like a great

product, or that they would be interested in learning more about ECM). (RX-844 (full data set)).

Response to Finding No. 385:

Finding No. 385 is incoherent as a finding of fact. ECM cannot discern the question in Dr. Stewart's survey to which Finding. No. 385 refers. The only citation for Finding No. 385 is to a 97 page document with over a half dozen columns on each page, with no headings, used by Complaint Counsel at Dr. Stewart's deposition. (RX 844).

386. Although, at trial, Dr. Stewart denied that this question series "put in the mind of survey respondents that there are differences in the amount of time it takes for different types of products to biodegrade, decompose, or decay," in his deposition, Dr. Stewart offered this more candid response: "Well, I hope we did put that in their minds because we're asking them whether or not they think there are those differences, yes or no." (Stewart, Tr. 2689-2690); (RX-843 at 74).

Response to Finding No. 386:

Dr. Stewart explained that his answer at his deposition was "completely consistent with" his testimony given at the hearing. (Stewart, Tr. 2690). Dr. Stewart "did want [the respondents] to have in their mind that question. That's what [Dr. Stewart] wanted them to answer. That's what [Dr. Stewart] wanted them to address. It was not the planting of a specific answer to that question." (Stewart, Tr. 2690).

387. Dr. Stewart reported results showing that whether a package or product is biodegradable is important to 71% of respondents. Dr. Stewart interpreted this fact as establishing "that while consumers have a conceptual understanding of what biodegradability is, it is not material to a sizeable minority of consumers." Of course, it is material to a sizeable majority. (RX-856 at 24; RX-856 at 24).

Response to Finding No. 387:

The last sentence of finding No. 387 is not supported by the cited page. (RX 856 (Stewart, Rep. at 24)). Further ECM cannot discern what Complaint Counsel refers to by "it" in

the last sentence of Finding No. 387. Is Complaint Counsel referring to the contention that biodegradability is material to a sizeable majority, or to the contention that consumers' conceptual understanding of what biodegradability is is material to a sizeable majority?

388. The correct number from Dr. Stewart's data is 75%, not 71%. (*Compare* RX-856 at 24 *with* RX-614 at 10).

Response to Finding No. 388:

ECM has no specific response other than to note that it appears that Dr. Stewart made an immaterial typographical error in his expert report.

389. Dr. Stewart conducted an anachronistic landline survey, thereby excluding from the outset the 40% of the population that no longer has a landline. (Stewart, Tr. 2687); (Frederick, Tr. 1086); (CCX-865 at 4).

Response to Finding No. 389:

The cited transcript pages and document do not support the stated proposition. The word "anachronistic" is not mentioned in CCX 865, and is mentioned only once in the entire hearing transcript, which was during Complaint Counsel's opening argument. (CCX 865 (Frederick, Rebuttal Rep. at P. 4); Johnson, K. Tr. 41). As for how many Americans actually have access to a landline, Dr. Frederick does not know how many people with cell phones live in households with landlines, (RPFF ¶ 1059) and does not know how many adult children live with their parents or grandparents in the United States. (RPFF ¶ 1060). Further, Dr. Stewart employed an age-enhanced sample in order to obtain information from younger respondents. (Stewart, Tr. 2546). Dr. Stewart also set age quotas for his survey respondents in order to ensure "that each of the various age categories was well-represented in the sample." (Stewart, Tr. 2551).

390. Dr. Stewart's survey was neither psychographically nor demographically representative. From a psychographic perspective, relatively few consumers are willing to take a telephone survey lasting as long as twenty minutes without compensation; indeed, although Dr. Stewart's callers eventually located 400 participants, more than 4,000 hung up the phone when the callers introduced themselves (before they could even ask them whether the potential respondent was willing to participate in a survey). (Stewart, Tr. 2703-2704); (Stewart, Tr. 2698-2699); (Frederick, Tr. 1090-91); (Frederick, Tr. 1391).

Response to Finding No. 390:

First, none of the cited transcript pages support the proposition that Dr. Stewart's survey was not demographically representative. (Stewart, Tr. 2698, 2703–04; Frederick, Tr. 1990–91, 1391). In fact, Dr. Stewart explained, regarding his survey, that "the data we have makes clear that we have a representative sample on key demographic characteristics …" (Stewart, Tr. 2587). Dr. Stewart also explained that his survey, regarding demographics, was "broadly representative." (Stewart, Tr. 2572; *see also* Stewart, Tr. 2543 (the sample was representative")). In fact, Dr. Stewart went so far as to include screening questions that allowed him to "capture information about gender and about age category which allowed [Dr. Stewart] to make a determination of the degree to which [Dr. Stewart was] representing those demographic characteristics within the survey." (Stewart, Tr. 2551). Dr. Stewart also used a random-digit dialing sampling "to assure a more representative sample." (Stewart, Tr. 2541).

The only support for Complaint Counsel's argument stated in Finding No. 390 that Dr. Stewart's survey was not psychographically representative is from Dr. Frederick, who stated that telephone surveys generally are "probably not psychographically representative." (Frederick, Tr. 1391). Dr. Frederick provided no support for that opinion. (Frederick, Tr. 1391). Dr. Frederick then gave the example that the psychographic characteristics of respondents to a telephone survey "would likely differ in their attitudes toward technology, for instance. I would expect that

they would have less familiarity with, maybe less positive attitude, towards, you know, technology, cellular devices, web browsing, so forth." (Frederick, Tr. 1391).

Complaint Counsel therefore has supplied no evidence that Dr. Stewart's survey was not psychographically representative. Furthermore, even assuming *arguendo* that psychographic differences exist between the general population and the population who partake in telephone surveys, Complaint Counsel has supplied no evidence that those differences relate in any way to views on biodegradation or biodegradable products.

Dr. Stewart even explained that it is unlikely that people willing to participate for free in a telephone survey have different psychological profiles than the population of American consumers at large where data is collected "over several weeks and during all parts and all days." (Stewart, Tr. 2709). Dr. Stewart's survey collected data over the course of approximately five weeks and during all parts of the day. (RX 609).

391. Because people willing to participate in this sort of survey likely have different opinions and attitudes than the population at large, Professor Frederick testified that landline surveys are less psychographically representative than GCS and other methods. (Frederick, Tr. 1391, 1395-1396).

Response to Finding No. 391:

Dr. Frederick only testified that telephone surveys generally are "probably not psychographically representative." (Frederick, Tr. 1391). Dr. Frederick provided no support for that opinion. (Frederick, Tr. 1391). Dr. Frederick then gave the example that the psychographic characteristics of respondents to a telephone survey "would likely differ in their attitudes toward technology, for instance. I would expect that they would have less familiarity with, maybe less positive attitude, towards, you know, technology, cellular devices, web browsing, so forth." (Frederick, Tr. 1391).

Complaint Counsel therefore has supplied no evidence that Dr. Stewart's survey was not psychographically representative. Furthermore, even assuming *arguendo* that psychographic differences exists between the general population and the population who partake in telephone surveys, Complaint Counsel has supplied no evidence that those differences relate in any way to views on biodegradation or biodegradable products. Dr. Stewart even explained that it is unlikely that people willing to participate for free in a telephone survey have different psychological profiles than the population of American consumers at large where data is collected "over several weeks and during all parts and all days." (Stewart, Tr. 2709). Dr. Stewart's survey collected data over the course of approximately five weeks and during all parts of the day. (RX 609).

392. Regarding demographics, Dr. Stewart admitted that "landline surveys tend to overrepresent older Americans[.]" (Stewart, Tr. 2725); (*see also* (Frederick, Tr. 1086)).

Response to Finding No. 392:

Because Dr. Stewart was aware of the fact that landline surveys tend to over represent older Americans, Dr. Stewart used an age enhanced sample and also set age quotas to ensure "that each of the various age categories was well-represented in the sample." (Stewart, Tr. 2546, 2551).

393. In fact, a 58% of Dr. Stewart's respondents were age 50 and older. (Stewart, Tr. 2728).

Response to Finding No. 393:

ECM has no specific response.

394. In reality, only 40% of the population consists of persons 15 and above (based on 2010 census data ECM offered into evidence). Specifically, according to ECM's data, the total population is approximately 308,746,000. Of those persons, approximately 61,277,000 are under age 15, leaving a population age 15 an older of 247,519,000. Of that group, approximately 99,048,000 are age 50 and above. Accordingly, persons aged 50 and above represent only 40% of persons age 15 and above (99,048,000/247,048,000 = .40). (*See* RX-867).

Response to Finding No. 394:

Finding No. 394 is irrelevant because it only discusses the percentage of Americans aged 15 and older; Dr. Stewart's survey's population "was adults in the United States age 18 and older …" (Stewart, Tr. 2532). The percentage of Americans over the age of 15 is therefore irrelevant in the context of Dr. Stewart's survey.

395. Thus, Dr. Stewart oversampled older Americans, which—as he admitted—means undersampling Hispanics and other minorities, because older Americans are disproportionately white. (Stewart, Tr. 2728-2729).

Response to Finding No. 395:

Finding No. 395 is not an appropriate factual finding because it is conclusory. Finding No. 395 fails to provide support for the first clause, that "Dr. Stewart oversampled older Americans." Dr. Stewart's survey did not oversample older Americans. (Stewart, Tr. 2572, 2573, 2587). Dr. Stewart used an age enhanced sample and also set age quotas to ensure "that each of the various age categories was well-represented in the sample." (Stewart, Tr. 2546, 2551).

396. *Intentionally Left Blank.*

397. *Intentionally Left Blank.*

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406. Dr. Stewart also excluded consumers below age 18, even though he conceded that someone as young junior high school-age "might walk into a convenience store and purchase a bottle of water," and "that purchasing decision could be influenced by the word 'biodegradable' on some of the bottles, but not [] others." (Stewart, Tr. 2720).

Response to Finding No. 406:

Dr. Stewart excluded anyone under the age of 18 from his survey because he was interested in researching individuals who had achieved majority age. (Stewart, Tr. 2720). Further, Dr. Stewart only testified that its "possible" that someone who is in junior high school could be influenced by the word "biodegradable" on some of the bottles but not on others.

(Stewart, Tr. 2720). "[A]s we all know, anything is possible." (Chappell, Tr, 2640). Complaint Counsel provided no evidence that people younger than 18 actually are influenced by the word "biodegradable" on some of the bottles but not others.

407. He testified only that he was "interested" in researching the opinions of consumers who had reached majority status. (Stewart, Tr. 2720).

Response to Finding No. 407:

ECM has no specific response.

408. *Intentionally Left Blank.*

409. Omitting consumers under 18 is significant because—as Dr. Stewart also conceded—consumers may have different opinions about the importance of purchasing environmentally-friendly products than older Americans, different levels of cognitive development, and different understandings of what "biodegradable" means. (Stewart, Tr. 2723).

Response to Finding No. 409:

Complaint Counsel provides no support for the statement that omitting consumers under 18 "is significant"; that statement is an argument and is not appropriate for a finding of fact. Dr. Stewart only testified that it's "possible" that consumers under 18 may have different opinions about the importance of purchasing environmentally-friendly products than older Americans and different understandings of what "biodegradable" means. (Stewart, Tr. 2723). "[A]s we all know, anything is possible." (Chappell, Tr, 2640). Complaint Counsel provided no evidence that consumers under 18 in fact have different opinions about the importance of purchasing environmentally-friendly products than older Americans and different understandings of what "biodegradable" means.

410. Dr. Stewart also conducted a ten-respondent pilot survey of ECM's customers, but ECM elected not to conduct a full-scale study, and (on direct examination) he emphasized that no one should "make any statistical inferences based on only ten respondents." (Stewart, Tr. 2587); (Stewart, Tr. 2588).

Response to Finding No. 410:

The cited transcript pages do not support the stated proposition. Nowhere on pages 2587 or 2588 does Dr. Stewart state "that no one should 'make any statistical inferences based on only ten respondents.'" (Stewart, Tr. 2587–88). On those transcript pages, Dr. Stewart also does not state that ECM elected not to conduct a full scale manufacturers study, but that, "[b]ecause it was a pilot, we set a limit of twenty hours of calling, and we were able to reach and talk with twenty—with ten individuals in those twenty hours." (Stewart, Tr. 2588).

411. In the manufacturer's pilot study, ECM defined the pool of companies and the particular persons at those companies whom Dr. Stewart's researchers could contact. (Stewart, Tr. 2637-2639).

Response to Finding No. 411:

ECM provided Dr. Stewart with a list of 200 customers in order to conduct the manufacturers pilot survey. (Stewart, Tr. 2637–39). Complaint Counsel has provided no evidence that ECM "defined" this pool of companies at all, as opposed to providing Dr. Stewart with a complete list of all of ECM's active customers. (Stewart, Tr. 2637–39).

412. Notwithstanding the fact that Dr. Stewart's researchers spoke only with ten people ECM nominated, three of the ten respondents gave either responses that were less than a year or referenced tests (ASTM D5511 and D6400) that are run for less than a year. (Stewart, Tr. 2644-2647); (RX-849 at 5).

Response to Finding No. 412:

The hearing transcript pages and document cited by Complaint Counsel do not support the fact that ASTM D5511 and D6400 are run for less than a year. (Stewart, Tr. 2644–47; RX

849). At pages 2644 through 2647, Complaint Counsel asked Dr. Stewart to assume "that ASTM D5511 and ASTM D6400 are both tests that are sometimes used to assess biodegradability and that both tests are run for a year." (Stewart, Tr. 2645). RX 849 is only data from Dr. Stewart's pilot survey. (RX 849).

ASTM D5511 "shall be run until no net gas production is noted for at least five days from both the positive control and the test substance reactors," and can theoretically be run for an indefinite amount of time, including exceeding one year. (CCX 84). As for ASTM D6400, that protocol "covers plastics and products made from plastic that are designed to be composted under aerobic conditions … to establish the requirements for labeling of materials and products, including packaging made from plastics, as 'compostable in aerobic municipal and industrial composting facilities.'" (CCX 91). So, the assumption Complaint Counsel asked Dr. Stewart to make at pages 2644 through 2647 is incorrect because ASTM D5511 can be run for more than one year, and ASTM D6400 is not used to assess biodegradability, but only compostability. (CCX 84; CCX 91).

413. A fourth respondent said "1-3 years." (RX-849 at 5).

Response to Finding No. 413:

ECM has no specific response.

414. Dr. Tolaymat did not represent the interest of the EPA in this matter. (Tolaymat, Tr. 121).

Response to Finding No. 414:

ECM objects to this Proposed FOF No. 414 because it is vague, ambiguous, and mischaracterizes the record. Dr. Tolaymat participated in this case as an employee of the EPA.

(Tolaymat, Tr. 118-19, 215-17). He was paid a salary by the United States EPA for his services as a witness in this case. (Tolaymat, Tr. 118-19, 215-17). He worked on this case during regular business hours, from his office at the EPA, during the time in which he was paid by the federal government to perform services for the U.S. EPA. (Tolaymat, Tr. 118-19, 215-17). Thus, Dr. Tolaymat participated as a federal employee of the EPA.

That point notwithstanding, ECM agrees that Dr. Tolaymat did "not represent the interest of the EPA" to the extent that his testimony and opinions were in direct conflict with official findings and publications of the EPA. *See* ECM's RPFF ¶¶ 2877-2885. Dr. Tolaymat's theory on landfill activity and biodegradation conflicted with the EPA's understanding of landfill gas emissions. (*See* ECM's RPFF ¶¶ 2877-2885; RX 967). Despite working on this case as a salaried EPA employee, during EPA business hours, Dr. Tolaymat never discussed his opinions in this case with colleagues at the EPA, including those EPA officials with substantially more experience in landfill gases and landfill biological activity. (Tolaymat, Tr. 216-17).

415. Dr. Tolaymat testified that plastics made with the ECM additive will not biodegrade completely in five years or less under ordinary U.S. landfill conditions. (Tolaymat, Tr. 121, 122).

Response to Finding No. 415:

Dr. Tolaymat's opinion in this case is unreliable, not credible, replete with internal inconsistencies and conflicts, inconsistent with the positions of the federal EPA, and inconsistent with Dr. Barlaz's authoritative testimony on the subject. (RPFF ¶¶ 2707–2885).

Dr. Tolaymat conceded that Dr. Barlaz is an authority on biodegradation in landfills. (Tolaymat, Tr. 233). Dr. Barlaz has been hired by the EPA to consult on issues of landfill gases and biodegradation. (Tolaymat, Tr. 233). Dr. Tolaymat has sought Dr. Barlaz's assistance on issues related to biodegradation and landfills. (Tolaymat, Tr. 233-34). Dr. Barlaz has served as

a peer-reviewer on journals in which Dr. Tolaymat has published some of his work. (RX 851 (Tolaymat, Dep. at 22-23)). Dr. Barlaz has made corrections to Dr. Tolaymat's work product. (RX 851 (Tolaymat, Dep. at 23)). Dr. Tolaymat attempted to follow Dr. Barlaz's test method when performing BMP studies at the EPA. (CX 893 at 21 n.12). Dr. Tolaymat has authored forty (40) peer-reviewed papers. (CCX 893 at 52-53 (Tolaymat CV)). Few of those publications involve biodegradation of MSW waste or landfill biological activity, but of those that do, Dr. Barlaz was an author in at least five such publications. (CCX 893 at 52-53). Dr. Barlaz has authored more than 115 peer reviewed publications, at least two thirds of which involve MSW waste, landfill science, or environmental science related to decomposition. (Barlaz, Tr. 2169-70). Dr. Tolaymat repeatedly and gratuitously referenced Dr. Barlaz's research to support his testimony at deposition. (RX 851 (Tolaymat, Dep. at 85, 87, 90, 107, 108, 131, 133, 148, 172, 193, 214-15, 224-25, 260)). For example, at times during his deposition, Dr. Tolaymat answered scientific questions based on what he thought Dr. Barlaz would consider authoritative:

> Q: Okay. Any indication, though, of specific microorganisms that we're talking about in this test environment, any indication that those microorganisms themselves are different in the Northeast Labs test than those same microorganisms that might be present in a landfill?
>
> A: If the microorganisms that are found in – that utilize household – that can break down household waste are the same, then Dr. Barlaz's BMP test would not utilize his reactor in his lab that is fed solely with MSW refuse. He would be using, what, stuff from a wastewater treatment plan, right?
>
> And the fact that, you know, one of the experts in the area has his own digesters to provide him with the inoculum of the bacteria that he would expect to see in a landfill leads me to believe that it could be a stretch to say that, you know, the inoculum has no impact at all on the decomposition process.
>
> Q: So the basis of that answer was by reference to what Dr. Barlaz would consider authoritative?
>
> A: Yeah.

(RX 851 (Tolaymat, Dep. at 224-25)).

Dr. Barlaz explained in his testimony that Dr. Tolaymat misunderstood or misrepresented his research. (Barlaz, Tr. 2236-38). Dr. Barlaz testified that Dr. Tolaymat's descriptions of MSW landfills was "misleading" and "not correct." (Barlaz, Tr. 2196-97, 2199). Dr. Barlaz was "surprised" at some of the fundamental errors made by Dr. Tolaymat, including Dr. Tolaymat's recommendation that lysimeter studies can be used to measure biodegradation based on leachate quality. (Barlaz, Tr. 2240-41) (testifying that "I cannot imagine how you would do that if you bury a test material in with municipal solid waste"). Dr. Barlaz was also surprised to see that Dr. Tolaymat had categorically rejected entire blocks of competent and reliable scientific evidence without having examined the data from those tests in any way. (Barlaz, Tr. 2247). Dr. Barlaz explained that Dr. Tolaymat's opinion conflicted with the EPA's (and the scientific community's) understanding of landfills. (Barlaz, Tr. 2196-97). Dr. Barlaz "strongly disagreed" with Dr. Tolaymat's theory that *in situ* landfill studies could be used to measure or test for biodegradation, which Dr. Tolaymat had predicated on Dr. Barlaz's research. (Barlaz, Tr. 2235-36).

Dr. Tolaymat was also hopelessly confused as to the kind and type of scientific evidence that could measure biodegradation, and he had no concept or understanding of the type of evidence required to establish a "rate" of biodegradation in landfills. (Tolaymat, Tr. 235-37). He rejected entire categories of ECM tests on grounds that they did not "simulate" or represent landfill conditions, while also testifying that *less representative* tests like the BMP (a liquid state test) would be competent and reliable (mostly because Dr. Tolaymat himself had performed and relied on BMP testing for the same purpose). (Tolaymat, Tr. 220-21, 243, 296, 314-15). Dr. Tolaymat never reviewed the relevant test data in this case, he did not perform his own statistical analyses, and he ignored Dr. Barlaz's calculations, even though Dr. Tolaymat accepted that Dr. Barlaz's methods were scientifically sound. (Tolaymat, Tr. 314-17).

Dr. Tolaymat testified inconsistently and essentially impeached himself on the use of weight loss as a measure of biodegradation. (ECM RPFF ¶¶ 2742-45). When rejecting the Environ BioPVC studies, Dr. Tolaymat testified on direct that weight loss was never an appropriate endpoint, but he reversed and defended the use of weight loss as an endpoint to measure biodegradation in landfill *in situ* studies, ostensibly because weight loss would be the only way to measure in those tests (assuming they were viable, of course). (ECM RPFF ¶¶ 2742-45).

Dr. Tolaymat recommended that he perform a BMP study of the ECM additive. (Tolaymat, Tr. 356-57). Later, in an effort justify why he did not perform the recommended research for Complaint Counsel, Dr. Tolaymat changed his sworn testimony and claimed that EPA could not test the ECM product because of hardship. (Tolamat, Tr. 353-54; *see also* ECM RPFF ¶¶ 2760-65).

Dr. Tolaymat either lacks the requisite expertise to offer a sound opinion, or he biased his opinions beyond repair to promote Complaint Counsel's case. Among the many other errors well-documented in ECM's Proposed Findings of Fact (RPFF ¶¶ 2707–85), consider the following:

- Dr. Tolaymat did not perform any research to familiarize himself with concepts relevant to the case. (RPFF ¶¶ 2720, 2789).
- He admitted to having no expertise or knowledge of the bacterial communities in landfills (even though he wrote about same in his report). (RPFF ¶¶ 2795–02).
- He admitted to having no expertise or knowledge of the enzymatic processes that occur in landfills (he could not even name the enzyme that degraded cellulose). (RPFF ¶¶ 2795–02).

- He did not consult with anyone at the EPA concerning the areas where he was lacking in knowledge. (RPFF ¶¶ 2711–16).
- He did not perform any statistical analyses of the tests or raw data relevant to the case. (RPFF ¶¶ 2853–57). He did not calculate or consider the theoretical gas yields from the ECM additive and, so, he also did not consider whether the amount of methane recorded in the ECM tests would necessarily be attributed to the test plastic. (RPFF ¶¶ 2857–64). **Indeed, none of Complaint Counsel's experts reviewed the raw data or performed statistical analyses required to interpret same**. (McCarthy, Tr. 654; Michel, Tr. 2966).
- He could not reconcile his "dry tomb" landfill theory with the undisputed evidence of methane production in landfills nationwide, including the data that comes from EPA. (RPFF ¶¶ 2877–85; RX 967).
- He recommended the use of scientific tests that had never been used by the relevant scientific community (or industry) to show biodegradation of specific materials (e.g., *in situ* studies and lysimeter studies). (RPFF ¶¶ 2733–34).
- He rejected positive ECM tests because researchers took "weekly" gas measurements, when Dr. Tolaymat himself had performed gas evolution studies using weekly gas measurements (and sometimes less frequent measurements). (RPFF ¶¶ 2872–76).
- Repeatedly in his "expert" report, Dr. Tolaymat revealed that he did not understand how "half-lives" work. (RPFF ¶¶ 2776–77). He consistently calculated the lifespan of materials by doubling the half-lives, which he later

admitted was erroneous at the hearing, but only after having been confronted with his mistake at his deposition. (RPFF ¶¶ 2776–77).

- He was unfamiliar with test standards at issue in this case. For instance, he entirely excluded D5511 studies when they exceeded 60 days, solely because he thought extended testing was not permitted by the D5511 test protocol, yet the D5511 test method does not set a durational limit and actually encourages testing to continue. (RPFF ¶¶ 2784–86).
- He discounted the use of chloride ions in the Environ BioPVC study because he thought that the chloride ions came from the ECM additive (rather than the plastic). (RPFF ¶¶ 2821–25). He held to that position despite also testifying that the ECM additive "shouldn't" contain polyvinyl chloride. (RPFF ¶ 2823).

Thus, in sum, to the extend Complaint Counsel relies on Dr. Tolaymat's "expert" opinion to establish record findings in this case, those proffered findings should be disregarded, particularly to the extent they conflict with Dr. Barlaz's well-reasoned expert opinion. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

416. Dr. Tolaymat testified that typical U.S. landfills are too dry, too cool, and have too little oxygen to enable ECM plastics to completely biodegrade within five years or less. (Tolaymat, Tr. 122-24).

Response to Finding No. 416:

ECM hereby reiterates and renews its prior response to Proposed FOF No. 415.

417. Dr. Tolaymat testified that aerobic biodegradation occurs at a faster rate than anaerobic biodegradation. (Tolaymat, Tr. 130).

Response to Finding No. 417:

ECM hereby reiterates and renews its prior response to Proposed FOF No. 415. Subject to that response, ECM has no further specific response, and agrees that aerobic biodegradation generally occurs faster than anaerobic biodegradation.

418. Dr. Tolaymat testified that anaerobic decomposition results in the production of methane and carbon dioxide. (Tolaymat, Tr. 137).

Response to Finding No. 418:

ECM hereby reiterates and renews its prior response to Proposed FOF No. 415. Subject to that response, ECM agrees that the byproducts of anaerobic biodegradation are methane and carbon dioxide. However, ECM further adds that methane gas can only be produced in anaerobic systems. (Barlaz, Tr. 2174, 2188).

419. Dr. Tolaymat testified that most U.S. landfills are required by federal regulations to operate with oxygen content below 5%. (Tolaymat, Tr. 137-139) (describing effects of EPA regulations on landfill oxygen levels)).

Response to Finding No. 419:

ECM hereby reiterates and renews its prior response to Proposed FOF No. 415. Subject to that response, ECM agrees that MSW landfill environments are predominantly anaerobic, but not exclusively so. Waste that is disposed in MSW will undergo aerobic biodegradation to some degree, particularly in the early stages after waste disposal and before the waste is compacted and covered. (Barlaz, Tr. 2214; Sahu, Tr. 1839-40).

420. Dr. Tolaymat testified that typical U.S. landfills operate at mesophilic temperatures. (Tolaymat, Tr. 139, 140).

Response to Finding No. 420:

ECM hereby reiterates and renews its prior response to Proposed FOF No. 415. Subject to that response, ECM further states that landfills operate at temperatures that widely vary and fluctuate, even within the same landfill. (Barlaz, Tr. 2206-08). The range of temperatures in MSW landfills is significant. (Barlaz, Tr. 2207). Dr. Barlaz has witnessed landfills where steam has been emitted on one side, and on the other side the temperatures might be considerably lower. (Barlaz, Tr. 2208). The variability and heterogeneity inherent to landfills makes describing a typical landfill difficult. *See* Barlaz, Tr. 2192-93 ("when one tries to describe a typical landfill, it's very, very difficult"); Barlaz, Tr. 2206 (discussing wide range of moisture conditions in landfills). Those points notwithstanding, ECM agrees that, in very general terms, the range of temperatures wherein landfills usually operate are in the mesophilic range. (Barlaz, Tr. 2208-09). However, as discussed *supra*, the only difference between mesophilic and thermophilic conditions relates to the "rate" of biodegradation, and not the ability of materials to biodegrade. (Barlaz, Tr. 2228). Based on landfill gas data, MSW landfills are capable of sustaining and promoting substantial anaerobic biodegradation even in the mesophilic range. *See, e.g.*, ECM's RPFF ¶¶ 1810-1898.

421. Dr. Tolaymat testified that typical U.S. municipal solid waste landfills are generally referred to as "dry tomb" or Subtitle D landfills. (Tolaymat, Tr. 142, 143).

Response to Finding No. 421:

ECM hereby reiterates and renews its prior response to Proposed FOF No. 415. Subject to that response, ECM further notes that Dr. Barlaz described Dr. Tolaymat's use of the phrase "dry tomb" landfill as "misleading" and incorrect. (Barlaz, Tr. 2196-97, 2199). For a full

explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

422. Dr. Tolaymat testified that "dry tomb" or Subtitle D landfills constitute approximately 98% of all landfills in the U.S. (Tolaymat, Tr. 143).

Response to Finding No. 422:

ECM hereby reiterates and renews its prior response to Proposed FOF No. 415. Subject to that response, ECM further notes that Dr. Barlaz described Dr. Tolaymat's use of the phrase "dry tomb" landfill as "misleading" and incorrect. (Barlaz, Tr. 2196-97, 2199). For a full explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

423. Dr. Tolaymat testified that moisture content in typical U.S. landfills is between 15-30%. (Tolaymat, Tr. 145).

Response to Finding No. 423:

ECM hereby reiterates and renews its prior response to Proposed FOF No. 415. Subject to that response, ECM further notes that Dr. Barlaz described the typical range of moisture conditions in landfills as highly variable, reaching over 40% in certain areas. (Barlaz, Tr. 2206). Dr. Barlaz also testified that landfills absorb considerable water through infiltration and other means. (Barlaz, Tr. 2206-08). He explained that there is no moisture level in landfills at which anaerobic biodegradation would not occur. (Barlaz, Tr. 2208). Dr. Tolaymat also conceded that

landfills have a very wide range of moisture conditions, including areas within landfills where "ponding" occurs and water content would be saturated over the fifty percent (50%) mark. (Tolaymat, Tr. 273-74). He conceded that many landfills practice spray application of liquid to waste, leachate recirculation, and other methods to increase moisture content. (Tolaymat, Tr. 273-78). For a full explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills and the variability of landfill systems, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

424. Dr. Tolaymat testified that the vast majority of Subtitle D landfills have low moisture content. (Tolaymat, Tr. 147).

Response to Finding No. 424:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415 & 423. Subject to that responses, which cover the same subject matter, ECM has nothing further to add. For a full explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

425. Dr. Tolaymat testified that federal regulations prohibit bulk liquid introduction in landfills, which makes decomposition in landfills extremely slow. (Tolaymat, Tr. 142-45).

Response to Finding No. 425:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415 & 423. Subject to those responses, which cover the same subject matter, ECM has nothing further to

add. For a full explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

426. Dr. Tolaymat testified that leachate recirculation does not significantly increase a landfill's moisture content. (Tolaymat, Tr. 147).

Response to Finding No. 426:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415 & 423. Subject to those responses, which cover the same subject matter, ECM also notes that Dr. Barlaz disagreed with Dr. Tolaymat on this point. Dr. Barlaz testified that leachate recirculation increases overall moisture content, and also helps balance the moisture levels within the same landfill. (Barlaz, Tr. 2205). Dr. Tolaymat's testimony concerning leachate recirculation conflicted with peer-reviewed literature (some co-authored by Dr. Tolaymat) that discussed the increase in biodegradation rates in landfills as a result of leachate recirculation. (RX 851 (Tolaymat, Dep. at 82-86; RX 898; RX 899; RX 900)). Dr. Tolaymat was confronted with those publications at his deposition:

> Q: You say midway through the paragraph that even with aggressive leachate recirculation, the moisture content of the typical Subtitle D landfill still remains low. Did I read that right?
>
> A: Yes.

(RX 851 (Tolaymat, Dep. at 82) (Dr. Tolaymat is then shown exhibits RX 898, RX 899, and RX 900).

> Q: These studies purport to discuss in some ways the addition of leachate recirculation to bioreactor landfills; is that correct?
>
> A: That is correct.

Q: The studies, would you also agree, conclude that the addition of leachate recirculation would seem to promote biogas production?

A: In some fashion, yes.

Q: And also increase moisture content?

A: That is correct.

(RX 851 (Tolaymat, Dep. at 85-86).

The Proposed FOF No. 426 conflicts with Dr. Barlaz's credible testimony and the peer reviewed literature, including RX 898, 899, and 900, which establish that leachate recirculation substantially increases moisture content and biological activity (evidenced through biogas production). For a full explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

427. Dr. Tolaymat testified that the rate of biodegradation in Subtitle D landfills is slower than the rate of biodegradation in bioreactor landfills. (Tolaymat, Tr. 148).

Response to Finding No. 427:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, and 426. Subject to those responses, which cover the same subject matter, ECM also notes that the "rate" of biodegradation in landfills is depended on many variables, such that rates of degradation in certain places within an MSW landfill could meet or exceed rates of degradation in bioreactor landfills. Dr. Barlaz testified that Dr. Tolaymat's distinction between "bioreactor" landfills and Subtitle D landfills was misleading and illusory. (Barlaz, Tr. 2196-2202). There are many MSW landfills that are taking the same steps to increase waste decomposition as so-

called "bioreactor" landfills, but are not calling themselves "bioreactors" according to Dr. Tolaymat's artificially narrow definition of the term. (Barlaz, Tr. 2196-2202). Dr. Tolaymat's definition of a "bioreactor" landfill is intentionally narrow for this case, and conflicts with the definition he used in peer reviewed literature. (Tolaymat, Tr. 337–38; RX 899; RX 900; RX 901).

For a full explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

428. Dr. Tolaymat testified that decay constant is the rate at which organic matter is converted to methane and carbon dioxide. (Tolaymat, Tr. 148).

Response to Finding No. 428:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415. Subject to those response, which covers the same subject matter, ECM also notes that Dr. Tolaymat was incompetent to testify as to the calculation of a "rate" of biodegradation in landfills for specific test materials. When questioned repeatedly concerning which tests, if any, can be used to prove the rate of biodegradation in an MSW Landfill, Dr. Tolaymat testified evasively, providing no clear answer. (Tolaymat, Tr. 219–21). He explained that no one test could establish the rate of biodegradability. (Tolaymat, Tr. 261–62). He made no attempt to explain what kind and quantity of evidence, if any, would support the type of rate qualifiers in Complaint Counsel's proposed Order filed earlier in this case. (RX 851 (Tolaymat, Dep. at 120)).
For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

429. Dr. Tolaymat testified that decay constants provide an estimate of how quickly materials decompose in an anaerobic environment. (Tolaymat, Tr. 148, 149).

Response to Finding No. 429:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415 & 428. Subject to those responses, which cover the same subject matter, ECM has no further response.

430. Dr. Tolaymat testified that half-lives provide an estimate of how quickly it takes for half of organic material to decompose. (Tolaymat, Tr. 149, 150).

Response to Finding No. 430:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415 & 428. Subject to those responses, which cover the same subject matter, ECM further notes that Dr. Tolaymat did not understand how "half-lives" function. In his report, he repeatedly calculated the lifespan of materials by doubling the half-lives. (CCX 893 at 16 n.9, 27 ¶67). That is a fundamental scientific error, and to which Dr. Tolaymat admitted was incorrect at the hearing, but only after having been confronted with his mistake at his deposition. (RX 851 (Tolaymat, Dep. at 97-98); Tolaymat, Tr. 246-47).

ECM further objects to the discussion of "how quickly it takes" for material to biodegrade in a landfill, or the "rate" of biodegradation, because Complaint Counsel has failed to support the relevance of that discussion, or lay a proper foundation for that discussion in context with ECM's product. ECM is a manufacturer of a plastic additive that is introduced into finished plastics. (CCX 818 (Sinclair, Dep. at 120); RX 371; RX 656; RX 681). While ECM knows much about its customers' products, ECM ultimately exercises no control over the type and kind of products that its customers manufacture. *See, e.g.,* Sinclair, Tr. 707-08; RX 471. ECM cannot control, for example, whether its customers manufacture a thin plastic grocery bag or a toilet seat. Quite obviously, the "rate" of biodegradation for those two materials will differ

substantially because the products have very different characteristics, including the mass, density, etc. (Sahu, Tr. 1828-1836, 1886; RX 855 at 27 (Sahu Rep.)). ECM's experts testified that there are many, many variables that factor into the potential rate of biodegradation for a plastic, many of those variables involve the specific characteristics of the finished plastics, and still many other variables involve the environment where that plastic is disposed. (Sahu, Tr. 1828-1836, 1886; RX 855 at 27 (Sahu Rep.)). Predicting any reasonable "estimate" for the rate of biodegradation simply cannot be done by ECM, who is only the additive manufacturer. Thus, the discussion of "rate" is entirely theoretical, abstract, and immaterial to the central issues in controversy. The only relevant scientific inquiry should be whether the ECM additive is capable of rendering conventional plastics "biodegradable" within a reasonably short period of time, calculated by comparison to the untreated conventional plastic.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

431. Dr. Tolaymat testified that plastic waste generally does not degrade. (Tolaymat, Tr. 154, 155).

Response to Finding No. 431:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 427, 428, & 430. Subject to those responses, which cover the same subject matter, ECM further notes that Dr. Tolaymat was not offered as an expert in plastics (RX 114-16), and he has no educational training in chemistry or biochemistry that would give him an understanding of the chemistry involved. (CCX 893 at 51 (Tolaymat CV)).

432. Dr. Tolaymat testified that the most biodegradable material would not completely biodegrade in a landfill within 5 years even under optimum conditions for biodegradability. (Tolaymat, Tr. 153-56) (discussing half-lives and decay rates of various types of waste).

Response to Finding No. 432:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 427, 428, 430, & 431.

433. Dr. Tolaymat testified that the liner system, leachate collection system, gas collection system, covering layers, and closure and post-closure procedures for landfills collectively reduce the moisture content, oxygen content, and temperature of landfills. (Tolaymat, Tr. 156-62).

Response to Finding No. 433:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, & 427. For a full explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

434. Dr. Tolaymat testified that approximately 2% of all U.S. landfills have been permitted by the EPA to operate as bioreactors. (Tolaymat, Tr. 164).

Response to Finding No. 434:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, & 427. Subject to those responses, which cover the same subject matter, ECM has nothing further to add. Dr. Barlaz testified that Dr. Tolaymat's distinction between "bioreactor" landfills and Subtitle D landfills was misleading, incorrect, and illusory. (Barlaz, Tr. 2196-2202). As discussed, *supra*, Dr. Tolaymat adopted an intentionally narrow and unreasonable definition of

"bioreactor" landfill in order to skew the number of "dry tomb" landfills described in his testimony. Dr. Tolaymat himself adopted a much broader definition of "bioreactor" landfill in his own published literature, which would operate to include many more landfills. (Tolaymat, Tr. 337–38; RX 899; RX 900; RX 901). Furthermore, Dr. Barlaz testified that many non-bioreactors operated to increase moisture and facilitate decomposition even though they would not be considered "bioreactors." (Barlaz, Tr. 2196-2202).

For a full explanation of Dr. Barlaz's opinion concerning the significant amount of anaerobic biodegradation that occurs in MSW landfills, *see* ECM's RPFF ¶¶ 1810-1898. For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

435. Dr. Tolaymat testified that the EPA defines bioreactors as Subtitle D landfills that have 40% moisture content or higher and that exclude leachate recirculation and gas condensate. (Tolaymat, Tr.165).

Response to Finding No. 435:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, & 434.

436. Dr. Tolaymat testified that municipal solid waste would not completely biodegrade in a bioreactor landfill within 5 years, regardless of how the term bioreactor is defined. (Tolaymat, Tr. 168, 169).

Response to Finding No. 436:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431 & 434.

437. Dr. Tolaymat testified that ECM testing data are not competent and reliable evidence that ECM plastics will fully biodegrade in five years or less in most landfills. (Tolaymat, Tr. 169).

Response to Finding No. 437:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431 & 434. Subject to those responses, which cover the same subject matter, ECM has nothing further to add. On the point of competent and reliable scientific evidence, Dr. Tolaymat contradicted himself, testified inconsistently and inaccurately, made fundamental errors of science and judgment, failed to follow his own advice, rejected entire categories of test data (regardless of whether they were methodologically perfect) for specious and unsupported reasons, failed to properly research the issues relevant to this case, and failed to properly perform a thorough analysis of the relevant data. In place of what all other experts in this case have said is competent and reliable (e.g., gas evolution tests), he also recommended scientific testing that was implausible and scientifically flawed, like lysimeter an *in situ* studies. His opinion concerning competent and reliable scientific evidence lacks any credibility or reliability and should be dismissed.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

438. Dr. Tolaymat testified that the Biochemical Methane Potential ("BMP") test can provide competent and reliable evidence of biodegradation in landfills. (Tolaymat, Tr. 171).

Response to Finding No. 438:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, and 437. Here Complaint Counsel accepts or concedes that Dr. Tolayamt supported the BMP test, even though he also admitted that the BMP test

"dramatically" differs from the typical US. Landfill, and is much farther from a landfill than a D5511 test. (Tolaymat, Tr. 238, 252-54). How Dr. Tolaymat could rely on a BMP test as competent and reliable, but reject a D5511 test, is illogical and never explained.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

439. Dr. Tolaymat testified that weight loss is not a good or accurate measurement of biodegradation. (Tolaymat, Tr. 172, 173).

Response to Finding No. 439:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, and 437. The use of weight loss to measure biodegradation is a point upon which Dr. Tolaymat patently contradicted himself at the hearing. *See* ECM RPFF ¶¶ 2742-45.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

440. Dr. Tolaymat testified that the Environ study relied on by ECM contains at least five flaws that individually make the study not competent and reliable evidence in support of ECM's claims. (Tolaymat, Tr. 183-7) (explaining that the study has flawed methodology and does not replicate typical landfill conditions).

Response to Finding No. 440:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, 437, and 439. With respect to the Environ BioPVC study, Dr. Tolaymat's opinion was contradicted and erroneous on all points. *See* ECM RPFF ¶¶ 2804-2825.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

441. Dr. Tolaymat testified that the McClaren/Hart study relied on by ECM contains at least five flaws that individually make the study not competent and reliable evidence in support of ECM's claims. (Tolaymat, Tr. 187-96) (explaining that the study has flawed methodology and does not replicate typical landfill conditions).

Response to Finding No. 441:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, 437, and 439.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

442. Dr. Tolaymat testified that the OWS Composting study relied on by ECM contains at least two flaws that individually make the study not competent and reliable evidence in support of ECM's claims. (Tolaymat, Tr. 198-202) (explaining that the study has flawed methodology and does not replicate typical landfill conditions).

Response to Finding No. 442:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, 437, and 439.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

443. Dr. Tolaymat testified that the ASTM D5511 tests relied on by ECM contains are not competent and reliable evidence in support of ECM's claims. (Tolaymat, Tr. 202-9) (explaining that the tests have flawed methodology and do not replicate typical landfill conditions).

Response to Finding No. 443:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, 437, and 439.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

444. Dr. Tolaymat testified that the Ecologica report relied on by ECM contains is not competent and reliable evidence in support of ECM's claims. (Tolaymat, Tr. 209-11) (explaining that the study has implausible data and insufficient information on methodology).

Response to Finding No. 444:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, 437, and 439. With respect to the Ecologia aerobic study, Dr. Tolaymat is not competent as an expert to address the differences between aerobic an anaerobic biodegradation at a biological level. Dr. Tolaymat admitted to having no knowledge or expertise of the bacterial communities, enzymes, or processes involved in landfill biodegradation. *See* ECM RPFF ¶¶ 2720, 2789; Tolaymat, Tr. 214, 290).

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

445. Dr. Tolaymat testified that the tests relied on by ECM identified in Appendix A of his expert report are not competent and reliable evidence in support of ECM's claims. (Tolaymat, Tr. 211-12) (explaining that the tests have flawed methodology and generally do not replicate typical landfill conditions).

Response to Finding No. 445:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, 437, and 439. Subject to those responses, which cover the same subject matter, ECM notes further that Dr. Tolaymat's opinion with respect to "competent and

reliable" scientific evidence was inconsistent, internally conflicted with his own testimony and prior work, and scientifically erroneous. All of ECM's experts, by contrast, testified credibly and uniformly that the gas evolution tests presented by ECM were competent and reliable scientific evidence that (a) ECM plastics were anaerobically biodegradable; and (b) that the test results translate into the landfill environment. *See, e.g.,* Sahu, Tr. 1792; Barlaz, Tr. 2245-46; Burnette, Tr. 2435-39.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

446. Dr. Tolaymat testified that lysimeter tests can provide competent and reliable evidence of biodegradation in landfills. (Tolaymat, Tr. 221, 354, 355).

Response to Finding No. 446:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, 437, 439, and 445. Subject to those responses, which cover the same subject matter, ECM notes further that no other expert in this case has referenced "lysimeter" studies as a sound method to test for biodegradation, and Dr. Barlaz testified that the Dr. Tolaymat's testimony concerning lysimeter studies was scientifically flawed, and predicated in part on Dr. Tolaymat's misunderstanding of Dr. Barlaz's own research. (Barlaz, Tr. 2237).

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

447. Dr. Tolaymat testified that it is inappropriate for a scientist to deviate from the D5511 protocol and then claim to have followed the protocol. (Tolaymat, Tr. 250-54).

Response to Finding No. 447:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431, 434, 437, 439, and 445. Subject to those responses, which cover the same subject matter, ECM notes further that Dr. Tolaymat was unable to explain how any so-called "deviations" from the D5511 protocol would have influenced or effected the reliability of the test data. (Tolaymat, Tr. 250-54). The BMP testing Dr. Tolaymat considered "competent and reliable" does not even have a standard that can be followed and, so, each laboratory would perform it differently. (Tolaymat, Tr. 252-53). Those points notwithstanding, Dr. Tolaymat's opinion concerning "deviations" from the ASTM D5511 protocol is based on a lack of knowledge and competence with the D5511 test. For instance, Dr. Tolaymat's primary concern with "deviations" from the D5511 standard involved studies that were longer in duration. (Tolaymat, Tr. 251-52). He testified that it was unacceptable to perform a D5511 test past 60 days. (Tolaymat, Tr. 250-53). However, Dr. Tolaymat was incorrect, as the D5511 test standard does not specify a cutoff time or duration for the test and, in fact, the method specifically contemplates tests of varying durations: "The incubation time shall be run **until** no net gas production is noted for at least five days from both the positive control and the test substance reactors." (RX 356 at 3 § 11.2.1.2) (emphasis added). Accordingly, Dr. Tolaymat was blatantly wrong on a material area of his testimony, and he was not credible to opine on the performance of D5511 tests.

For a complete factual list of Dr. Tolaymat's errors and inconsistencies in his testimony, *see* ECM's RPFF ¶¶ 2707-2885.

448. At least a substantial number of consumers extrapolate rate and extent information concerning biodegradation times. (CCX-860 at 18-19).

Response to Finding No. 448:

ECM objects to this Proposed FOF No. 448 because it is identical to proffered FOF No. 158 and thus redundant. ECM hereby reiterates and renews its prior response to Proposed FOF No. 158. Subject to that response, which covers the exact same subject matter, has no further response.

449. The evidence shows that at least 52 biodegradation studies have been conducted a variety of plastics containing ECM Additive. (CCX-153; 154; 157; 160; 161; 162; 164; 169; 173; 582; 590; 595; 669; 672; 741; 742; 743; 929; 946; 947; 952; 954; 970; 1071; 1097) (RX-248; 261; 262; 264; 265; 269; 270; 271; 273; 274; 275; 276; 278; 352; 371; 394; 395; 398; 401; 402; 403; 406; 835; 836; 838; 861; 862).

Response to Finding No. 449:

ECM agrees that a substantial number of tests have been performed on the ECM additive, the overwhelming majority of which have produced evidence that the ECM additive renders conventional plastics biodegradable in both anaerobic and aerobic environments. Of the few tests that have produced inconclusive evidence of biodegradation, many of those tests suffer from substantial methodological issues, incomplete data, likely issues with the test plastics, are "invalid" under the letter of the D5511 standard, or have other flaws that render them null and irrelevant. *See* ECM Response to CC Proposed FOF No. 174 (providing detailed analysis of inconclusive tests). Moreover, of those inconclusive tests, all but two of those studies were never discussed by Complaint Counsel's experts at the hearing, were subject to no testimony explain those tests, and, thus, have no sponsoring witness to explain some of the major flaws and information gaps. By contrast, ECM produced fact witnesses at the hearing to explain and support many of the positive ECM tests in the record.

450. Of these 52 biodegradation studies of ECM Plastic, only 5 were conducted at 37ºC. (CCX-164; 590; 946; 947; 952).

Response to Finding No. 450:

ECM has no specific response to the text of the proposed finding. ECM notes that the undisputed scientific record reflects that the temperature used in anaerobic testing (i.e., mesophilic v. thermophilic) relates only to the rate of biodegradation, and not the overall biodegradability of the test substrate, or the ability of the test to measure same. *See* Barlaz, Tr. 2228; Burnette, Tr. 2430-31 (explaining that mesophilic and thermophilic bacteria function at different temperatures and pace, but use common and universal mechanisms of action to gain access to food sources); Sahu, Tr. 1844 (stating that, at a fundamental level, there is no difference in the way thermophilic bacteria metabolize waste versus the way mesophilic bacteria metabolize waste). Finally, ECM's experts explained that the landfills have bacteria that will biodegrade plastics comparably to the way bacteria digest plastics in the thermophilic gas evolution tests. (Barlaz, Tr. 2228; Burnette, Tr. 2430-33).

451. Fourteen (14) tests were "qualitative tests" such as SEM, GPC, weathering, and toxicity tests. (CCX-153; 161; 162; 169; 173; 582; 954) (RX-264; 269; 270; 271; 274; 275; 278; 406; 835; 861).

Response to Finding No. 451:

ECM experts testified that qualitative testing is part of the totality of the scientific evidence in the case, and that qualitative evidence can provide multiple lines of proof. (Sahu, Tr. 1910-11). For instance, in the Environ BioPVC test, the measurement of free chloride ions in solution was a significant element that demonstrated the PVC molecule had broken down through biodegradation. (Sahu, Tr. 1912-14; RX 254). Although ECM experts have relied primarily on gas evolution data in this case, ECM's experts also testified that the qualitative

testing supported the efficacy of ECM's technology. (Sahu, Tr. 1912-14; *see also* ECM RPFF ¶¶ 2687-90; Burnette, Tr. 2415-17).

452. The SEM studies were not conducted by ECM, and there is no information in the record regarding who prepared the samples, how, with what load rate, duration of the test prior to examination, or any other details that enable a scientist to evaluate the information. (RX-270; 271; 278).

Response to Finding No. 452:

The qualitative tests cited in this Proposed FOF No. 452 were provided to ECM principals as part of a package of substantiation materials. (Sinclair, Tr. 749). Those tests, while not significant to ECM's expert opinions, demonstrate that other competent scientists in the field have reviewed the ECM technology and determined that it is efficacious.

453. The studies showing no biodegradation were conducted by independent or reputable labs, were well-documented, and included other necessary information (e.g., statistical information) necessary to interpret the results. (McCarthy, Tr. 465-470) (CCX-164 (Ohio State University); CCX-174-CCX-176 (Stevens Ecology); CCX-173 (Advance Materials Center); CCX-156; CCX-157; CCX-163; CCX-169-CCX-171 (O.W.S.)).

Response to Finding No. 453:

ECM hereby restates and renews in full its response to Proposed FOF No. 174, wherein ECM provides a detailed discussion of tests cited in this instant Proposed FOF No. 453. Of the few tests that have produced inconclusive evidence of biodegradation, many of those tests suffer from substantial methodological issues, incomplete data, likely issues with the test plastics, are "invalid" under the letter of the D5511 standard, or have other flaws that render them null and irrelevant. *See* ECM Response to CC Proposed FOF No. 174 (providing detailed analysis of inconclusive tests). Moreover, of those inconclusive tests, all but two of those studies were never discussed by Complaint Counsel's experts at the hearing, were subject to no testimony

explain those tests, and, thus, have no sponsoring witness to explain some of the major flaws and information gaps. By contrast, ECM produced fact witnesses at the hearing to explain and support many of the positive ECM tests in the record.

ECM objects to the characterization of the laboratories in this Proposed Fact as "independent or reputable," to the extent that classification or description is wholly irrelevant. ECM's tests were performed by both independent and reputable laboratories, including Dr. William Ullmann's laboratory in Connecticut. (Johnson, Tr. 1562). Dr. Ullman was the former Director of the State of Connecticut's Public Health Laboratory, he had a Ph.D. in microbiology, and he personally oversaw most of the ECM tests until his passing. (Johnson, Tr. 1562). ECM's experts also independently reviewed and verified the data contained in ECM tests. Very few of the positive ECM tests relevant to this proceeding were performed by ECM directly, or involved ECM. All of the tests were performed by independent laboratories.

By contrast, Dr. Michel performed his OSU study on behalf of an ECM competitor, accepted substantial funding from that competitor, and catered his research to the needs of that competitor. *See* ECM RPFF ¶¶ 2962-2984. Dr. Michel deliberately concealed the identity and funding source from that competitor (Myers Industries) during the peer review process, in violation of Elsevier's peer review rules. *See* ECM RPFF ¶¶ 2979-2983; Michel, Tr. 2941, 2951-52). Dr. Michel allowed ECM's competitor to influence research decisions and offer suggestions for conducting the research, meaning that the OSU study was not "independent" by definition. (Michel, Tr. 2946-48).

Finally, this proffered finding No. 453 is factually incorrect because, as explained *supra* in response to Proposing Finding No. 174, most of the studies Complaint Counsel cited did not report essential information like methane totals, information about the test plastic, information about the ECM additive, and other critical information (which, by contrast, ECM's other testing

did include).

454. None of the biodegradation studies supports ECM's claims, and in fact disprove them. (CCX-891 ¶¶ 68-72; CCX-891 ¶¶ 75-88); (McCarthy, Tr. 453-455).

Response to Finding No. 454:

This Proposed FOF No. 454 is not supported by the record citations, and is an argument of counsel, not a proper finding of fact. The record speaks for itself. ECM presented an overwhelming amount of documentary and testimonial evidence, backed by expert opinion, proving that the ECM technology works and renders conventional thermoplastics biodegradable. For a full statement of the facts and evidence that support that conclusion, please see ECM's RPFF ¶¶ 1629-2706. Much of that testimony was unrebutted by Complaint Counsel's witnesses. For example, Complaint Counsel has offered no answer to Dr. Barlaz's statistical analysis of test data in this case. *See* ECM RPFF ¶¶ 1964-2009. None of Complaint Counsel's experts reviewed the test data in detail, performed their own calculations, or even assessed Dr. Barlaz's calculations. (Tolaymat, Tr. 316-21; McCarthy, Tr. 654; Michel, Tr. 2966). Complaint Counsel's expert testimony was therefore incomplete and based on a partial record. For instance, Complaint Counsel's rebuttal witness (Dr. Michel) offered an opinion concerning the efficacy of the ECM additive based only on his one test and the Environ BioPVC study, without having reviewed any of the other 50+ tests and studies relevant to the ECM additive. (Michel, Tr. 2965-66).

455. Drs. McCarthy, Michel, Sahu, and Barlaz concur that ^{14}C radiolabeling would provide strong, and perhaps definitive, evidence that the plastic, and not just the additive, is biodegrading. (CCX-891 ¶¶ 59-60; CCX-895 at 12, 15; RX-855 at 47; RX-853 at 9).

Response to Finding No. 455:

ECM objects to this Proposed FOF No. 455 because it is factually incorrect, mischaracterizes the expert opinions, and misleads. The record actually contradicts the proffered finding, as ECM's experts unanimously testified that carbon-14 radiolabeled testing in plastic polymers was infeasible, impractical, and completely unnecessary. (Sahu, Tr. 112-347; Barlaz, Tr. 2244-2246). Complaint Counsel has ignored the fact that carbon-14 testing is only a "marker" test that is helpful where the percentage of biodegradation is so minimal that one cannot discern where it came from. (Barlaz, Tr. 2244-46). Dr. Barlaz testified that the amount of biodegradation and methane recorded in the ECM tests conclusively shows that the plastic substrate has biodegraded anaerobically, far in excess of the ECM additive alone. (Barlaz, Tr. 2246-72). The very point of Dr. Barlaz's statistical calculations was to assess whether the methane produced from the test plastic was more than "just the additive." (Barlaz, Tr. 2246-72).

That is the very same concept that carbon-14 testing is predicated on, and Dr. Barlaz was able to show definitively through his analysis that carbon-14 is unnecessary. (Barlaz, Tr. 2244 (explaining the carbon-14 test is the "exact same premise or exact same conceptual experimental design as a reactor test where you're using regular carbon that's not radiolabeled"). He testified that, based on the data, the carbon-14 test is not only impractical, but that it does not "buy[] you anything" in these circumstances, even if it was feasible. (Barlaz, Tr. 2244). Dr. Barlaz demonstrated logically and conclusively that the amount of methane recorded in the ECM tests must have come from the test plastic and not the ECM additive. (RX 968; Barlaz, Tr. 2244-2272). That was true for many of the positive ECM tests in the record (almost every test that Dr. Barlaz reviewed based on data available). *See* RPFF ¶¶ 2217-2625.

Moreover, all the experts agree that carbon-14 testing is not the industry standard or reasonably required by any expert in the field. (Sahu, Tr. 112-347; Barlaz, Tr. 2244-2246). In fact, none of the experts in this case have ever conducted a carbon-14 radiolabeled test on

plastics, even though at least four of the six experts have tested for plastics biodegradation. (Michel, Tr. 2906; Tolaymat, Barlaz, Tr. 2246; Sahu, Tr. 1905; ECM's RPFF ¶¶ 1766-1809). None of Complaint Counsel's experts have shown that such testing is even possible, and ECM's experts how explained in detail why it is not possible or practical. (*See* ECM's RPFF ¶¶ 1790-1809, 1952-1963). Dr. McCarthy has never used radiolabeled testing to prove biodegradability despite all his purported experience. His position on carbon-14 testing is just a theory; given that no corporation or research group routinely performs carbon-14 testing of plastics, the test would be experimental and unorthodox.

456. ECM's consumer perception expert, Dr. David Stewart, was unaware of any reason why a manufacturer would purchase the additive other than to make its products biodegradable, and his own consumer survey found that 71% of respondents believe that whether a product is biodegradable is important. (Stewart, Tr. 2643); (RX-856 at 27).

Response to Finding No. 456:

Dr. Stewart actually testified that he doesn't "know all of the reasons they may purchase the product." (Stewart, Tr. 2643).

457. Yale Marketing Professor Shane Frederick concurred that biodegradable claims "affect consumer decisions." (CCX-865 at 15).

Response to Finding No. 457:

The cited document does not support the stated proposition. According to his own rebuttal report, Dr. Frederick did not "concur" with Dr. Stewart. (CCX 865 (Frederick, Rebuttal Rep. at 15)). Dr. Frederick actually stated the exact opposite of what Complaint Counsel claims, stating that "[c]ontrary to Dr. Stewart's suggestion … biodegradable claims would affect consumer decisions." (CCX 865 (Frederick, Rebuttal Rep. at 15)). In addition, page 15 of Dr.

Frederick's Rebuttal Report does not support the proposition that Dr. Frederick is a "Yale Marketing Professor." (CCX 865 (Frederick, Rebuttal Rep. at 15)).

458. Sinclair testified that ECM used the "nine months to five years" claim only to distinguish its product from faster-degrading compostable material. However, although Mr. Sinclair offered this dubious story when deposed. (CCX-818 at 77-79).

Response to Finding No. 458:

Finding 458 is incoherent and Respondent cannot properly respond.

459. Although there are a few instances in which a customer suggested that it did not consider biodegradation time, the overwhelming majority of the evidence supports the opposite. For example, in a candid moment, ECM CEO Robert Sinclair admitted to customer Westchem Group: "**Lots of people get hung up on how long**." (CCX-423 at 9; CCX-282 at 2 (asking various questions about "degradable timing," including whether "adding more [additive]" would accelerate the "degradable effect"); CCX-281 at 2 (requesting test results demonstrating the "progress of decomposition during a certain time span (a couple years)"); CCX-279 at 3 (expressing concern about "the ability to claim without exception the speeded up breakdown"); CCX-280 at 3 ("We do have some nagging concerns that we need to resolve. The first question is 'how long does it take to degrade.'"); CCX-300 at 1 ("Does ECM test, or recommend testing, the end-users' products to ensure that they biodegrade in less than 5 years?"); CCX-269 at 1 ("What determines 9 months vs 5 years as it is such a variance?"); CCX-400 at 4 (asking ECM precisely how much additive it needed to use in its products use "to meet your stated degradation timeframe of 9 months to 5 years")).

Response to Finding No. 459:

To the extent that ECM customers care about biodegradation rate, Complaint Counsel has failed to present any evidence in Finding No. 459 that explains **why** ECM customers care. There is significant evidence that most ECM customers did not care about biodegradation rate at all. (RPFF ¶¶ 508, 510-11, 613-16, 633-35, 642-46, 653-56, 673-76, 689-92, 700-03, 717, 720-23). In fact, the evidence suggests that ECM customers considered rate only to the extent that they needed to in order to comply with FTC regulations which by virtue of the "reasonably short

period of time" and "One Year Rule" have made rate of legal significance. (RX 347 at 3; RPFF ¶¶ 6-7, 689-92, 700-02, 707, 767-72; RX 36—RX 77). Furthermore, the evidence suggests that ECM customers did not want rapid biodegradation because they were concerned about the shelf life of their products. (RPFF ¶¶ 345, 705, 711).

460. Other ECM customers demonstrated the importance the timeframe had to them by reiterating it to **their** prospective customers. (CCX-811 at 22 (agreeing that "[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them"); CCX-33 (EarthAware Films; repeating "nine months to five years" in marketing literature); CCX-34 (EarthAware Films; repeating "nine months to five years" in memorandum to its distributors); CCX-37 (BioPVC, repeating "nine months to five years" on website); CCX-53 (Gilman Brothers; stating product would degrade in one to five years in marketing material); CCX-57 (Kappus Plastics; marketing materials stated in bold that its product "**will break down in approximately 9 months to 5 years**") (emphasis in original); CCX-102 (BioMugs; "This BioMug is made of a unique plastic that renders it biodegradable in 1-5 years."); CCX-105 (Plascon Films; repeating "nine months to five years" in advertisement)).

Response to Finding No. 460:

Contrary to Finding No. 460, ECM's customers do not think that any rate or timeframe for biodegradation is important. (RPFF ¶¶ 605–725). The vast majority of ECM's customers' advertisements of plastic containing the ECM additive do not contain any rate claim or timeframe for biodegradation. (RX 00; RX 02; RX 03; RX 14; RX 15; RX 16; RX 17; RX 22; RX 26; RX 28; RX 29; RX 30; RX 315; CCX-30 ; CCX-31; CCX 32; CCX 36; CCX 39; CCX 43; CCX 46; CCX 47; CCX 49; CCX 50; CCX 52; CCX 59; CCX 60; CCX 63' CCX 64; CCX 65; CCX 66; CCX 79; CCX 97; CCX 98; CCX 99; CCX 100; CCX 101; CCX 103;CCX 104; CCX 107; CCX 109–CCX 133; CCX 135; CCX 136; CCX 138; CCX 139; CCX 140; CCX 142–CCX 151). The few examples Complaint Counsel can cite to of ECM's customers passing on rate claims pale in comparison to the evidence showing that all ECM customers desired was the

ability to sell a biodegradable product, as Complaint Counsel proposes that "ECM sells the right to make a 'biodegradable' advertising claim" without reference to rate. *See* Finding No. 62.

461. After informing potential customers that its ECM Plastic allegedly would degrade in "9 months to 5 years," one customer's marketing materials exclaimed: "We think you'll agree that this is an environmental bargain. . . especially when compared to the unknown breakdown time of other modern plastic materials!" (CCX-38 at 1 (ellipses in original)).

Response to Finding No. 461:

The document cited is unreliable hearsay and irrelevant without foundation.

462. Down To Earth asked ECM about using language that included "nine months to five years" on its grocery bags. ECM responded with general approval – not befuddlement or confusion as to why anyone would want to put that claim on packaging for end-use consumers. (CCX-307; *see also* CCX-1095).

Response to Finding No. 462:

Finding No. 462 is an argument of counsel and contains Complaint Counsel's personal opinions characterizing Mr. Sinclair's responses. Finding No. 462 is inappropriate as a proposed finding of fact and must be discarded. Notwithstanding, the cited documents do not support the stated proposition. CCX 307 contains no statement of "general approval," instead ECM corrects a misstatement by Mr. Santana and offers to review a final press release when it is ready. (CCX 307). In CCX 1095, Mr. Sinclair did not give general approval to Ms. Hayden, instead Mr. Sinclair testified regarding CCX 1095 that "it doesn't appear that I took much time with this matter at all. Obviously, I mean, her statements are, you know, ungrammatical, and so forth. I mean, this is a customer of a customer, and apparently I kind of just sloughed it off." Thus, the cited evidence does not support the finding, and this finding should be struck.

463. Down To Earth's supplier, Island Plastic Bags ("IPB"), manufactured ECM Plastic bags reflecting the "nine months to five years" claim for "50 to 100" different customers. (CCX-811 (Hong, Tr. 57)).

Response to Finding No. 463:

ECM has no specific response.

464. In total, IPB alone manufactured "about **10 million**" such bags. (CCX-811 (Hong, Tr. 99)).

Response to Finding No. 464:

ECM has no specific response.

465. The claim "nine months to five years" helps ensure that consumers believe the "biodegradable" claim. Indeed, as IPB explained, its bags contain the "nine months to five years" language because "we want people [consumers] to know" how the product biodegrades, "so that they feel like this is an actual technology . . . **it's for real**." Put differently, IPB wanted consumers to have details regarding the biodegradation process, including the timeframe, "so that they would understand that the bags would . . . **work as advertised**[.] (CCX-811 (Hong, Tr. 54-55)).

Response to Finding No. 465:

Complaint Counsel has mischaracterized the cited testimony by removing key words and taking the testimony out of context. The preceding statements by Mr. Hong state that "there's a lot of people that say they're degradable or they say they're green, and really all they're using is recycled plastics, they aren't using anything that breaks down the plastics into, you know, water, carbon dioxide and stuff like that." (CCX 811 (Hong, Dep. at 55)). Complaint Counsel then removed the words "that is biodegrading" from the quoted statement in this finding. (CCX 811 (Hong, Dep. at 55)). When these words are added back in, the statement reads "so we want people to know how it does that so that they feel like this is an actual technology **that is biodegrading,** it's for real." (CCX 811 (Hong, Dep. at 55)). When taken **in context**, it is clear

that Mr. Hong believes that the claim differentiates Island Plastic Bags from other technologies that do not biodegrade, but are instead recyclable or oxo-degradable. Thus, the cited evidence does not support the finding, and Complaint Counsel's removal of key words to fundamentally change the meaning of a statement is wholly improper. Therefore, this entire finding should be struck.

466. Packaging manufacturer FP International testified that it conveyed to its potential customers that its "CELL-O air cushions will decompose completely within 9 to 60 months in the presence of microorganisms whether they are sent to a landfill or end up as litter in the soil" because "[i]t was important to convey a message of biodegradability." (CCX-810 (Blood, Tr. 24-25)).

Response to Finding No. 466:

ECM has no specific response.

467. The fact that ECM Plastic biodegrades quickly was so important that ECM required its customers to sign a so-called "Certificate of Minimum Loading" in which the customer acknowledges that "ECM's reputation can be materially and, perhaps, irreparably damaged when products claiming to use ECM MasterBatch Pellets fail to biodegrade **within a reasonable time**. (Sinclair, Tr. 765); (CCX-832).

Response to Finding No. 467:

This finding is improper argument of Complaint Counsel and should not be accepted as fact. Additionally, Respondent cannot properly respond to Finding No. 467 because the term "important" is ambiguous. Furthermore, Finding No. 467 improperly assumes that "within a reasonable time" means "quickly."

The evidence shows that proper loading of the additive was "important" to ECM because otherwise the product was not guaranteed to work. ECM required customers to sign the "Certificate of Minimum Loading" because ECM's proprietary technology had been determined to work only at load ratings of 1% or more. (RPFF ¶¶ 745, 747-48). ECM claimed and still

claims that proper infusion of its additive at a load rate of 1% or more will cause plastics to become "biodegradable," and it is therefore "important" for ECM's reputation that its product is properly infused into ECM amended plastics. (RPFF ¶¶ 319; 747, 764-65).

468. ECM further required that its customers certify: "we are fully aware [of] the risk that a [] plastic product will not fully biodegrade within a **reasonable period of time** if it contains less than one percent" of ECM's Additive. (CCX-832) (emphasis added).

Response to Finding No. 466:

ECM has no specific response.

469. Although ECM generally did not communicate with end-use consumers, one consumer who received a "biodegradable shopping bag" tracked down ECM and asked: "[I]n a landfill situation, would the bag be 100% broken down in XX years, or 50% within XX months." Mr. Sinclair responded: "The timeframe for biodegradation is generally-speaking 9 months to five years[.]" (CCX-326).

Response to Finding No. 469:

ECM's website has an inquiry form that sends an email directly to ECM staff, therefore, it is not difficult to "track down" ECM, and in the case of the specific email in CCX 326, a technical error resulted in the web form failing to send an email. (RPFF ¶ ; CCX 326). Furthermore, because Complaint Counsel failed to call a single fact witness, and the internet is an inherently ambiguous place, the Court cannot know whether "Adam Doll" actually exists. (CCX 326; Tr. 1-3005). Given the complete lack of foundation for CCX 326 and finding no. 469, this finding should be struck.

470. This anaerobic sludge from wastewater (sewage) treatment plants is what many of the labs used to conduct this test. (CCX-805 (Eden, Dep. at 69); *see also* CCX-669 at 1 (Northeast Labs report indicating test inoculum sourced from Mattabasset Waste Treatment Facility)).

Response to Finding No. 470:

The process of creating inoculum is a careful and precise process, and the labs generally followed the D5511 standard when preparing their inoculum. ECM again reiterates that ECM's experts testified that the tests were competent and reliable. (RPFF ¶¶ 1606–1628, 1899–1933). Dr. Barlaz actually visited Eden Labs and found that their procedures did not call into question the validity of their tests. *See supra*, Response to Finding No. 91.

471. Dr. Barlaz concedes that only about 10% of all landfills are bioreactors. (RX-853 at 5).

Response to Finding No. 471:

ECM hereby reiterates and renews its prior response to Proposed FOF Nos. 415, 423, 426, 427, 428, 430, 431 & 434.

472. Dr. Stewart admitted that "information conveyed to respondents earlier in a survey can affect their answers to later questions[.]" (Stewart, Tr. 2689).

Response to Finding No. 472:

Dr. Stewart testified that its "possible" that in "some surveys" that information conveyed to respondents earlier in a survey can affect their answers to later questions. (Stewart, Tr. 2689). "[A]s we all know, anything is possible." (Chappell, Tr. 2640).

473. Dr. Stewart also increased consumer confusion by asking end-use consumers to interpret "biodegradable" claims that included technical language such as "one percent load" and "plastic resins." (RX-602); (Stewart, Tr. 2775-76).

Response to Finding No. 473:

Dr. Stewart's survey merely asked respondents to explain in their own words what certain ECM statements meant to them; Dr. Stewart did nothing to intentionally "increase[] consumer

confusion," as Finding No. 473 implies, and Finding No. 473 supplies no evidence of such alleged confusion. (RX 602, at PP. 19–21; Stewart, Tr. 2775–76).

474. He agreed that most consumers would not know what these terms meant, and that such claims never reached end use consumers. (Stewart, Tr. 2775-76).

Response to Finding No. 474:

ECM has no specific response.

475. Mr. Sinclair maintains that the Green Guides were revised as a result of influence from the "corn lobby." (Sinclair, Tr. 1702).

Response to Finding No. 475:

ECM objects to Finding No. 475 as it is not relevant to any issue in this case as to why, according to Mr. Sinclair, the Green Guides were revised. Furthermore, Finding No. 475 mischaracterizes Mr. Sinclair's testimony; Mr. Sinclair testified that "the influence from the corn lobby … was part of the whole effort of lots of people to get the FTC to make changes in their favor and to make things – so, you know, again, yeah. They're a part of everything." (Sinclair, Tr. 1702).

476. None of the samples in Eden Lab's tests of plastics containing 1% ECM additives fully degraded. (Poth, Tr. 1490-1491 (stating that the witness had concerns about turning over Eden's ECM testing, and that the samples in the tests located had not totally degraded)).

Response to Finding No. 476:

The proffered finding No. 476 is misleading because it focuses on irrelevant information. The record reflects that the issue in controversy is whether the plastic has become "intrinsically biodegradable," such that the product will biodegrade whenever or wherever the environmental

conditions are suitable for biodegradation. (Sahu, Tr. 1924-27; Barlaz, Tr. 2217-19). Significantly, there is no evidence that any biodegradable technology or material has "fully degraded" during a short term gas evolution laboratory study, as Complaint Counsel uses that term "fully degraded." Not even Dr. McCarthy's own technologies surpassed 50% biodegradation during short term laboratory tests, yet he still claimed in sworn statements to the USPTO that those products were fully biodegradable. *See* McCarthy, Tr. 558-60; RX 928.

Complaint Counsel has never attempted to define the phrase "fully degraded" or "fully biodegraded," because such a definition is not possible. Complaint Counsel's rebuttal witness, Dr. Michel, testified that a biodegradable material like cellulose would be considered "fully biodegraded" if it biodegraded to 44 percent. (Michel, Tr. 2954 (identifying cellulose as "fully biodegradable"); Michel, Tr. 2960-61 (discussing "fully biodegraded"). Dr. Michel answered as follows:

> Q: So let's say that you have a D5511 test and 44 percent of the cellulose is converted. Would you consider that that cellulose fully biodegraded?
>
> A: Well, again, I – "fully biodegraded" is – that's the definition I'm asking you to define or me. What is your definition of "fully biodegraded"?
>
> Q: Fair enough. The definition I'm using for "biodegraded" is fully break down into elements found in nature.
>
> A: Yes, I would consider it to be fully biodegraded.
>
> Q: So then a material that only biodegrades 44 percent to elements found in nature is biodegradable; right?
>
> A: Yes.

(Michel, Tr. 2960-61; RX 385 (test report showing cellulose biodegradation plateau at 44%)).

Dr. Michel also explained that "fully biodegradable" materials like cellulose will not completely biodegrade, and then sometimes as much as 30% will remain in the environment either because it was converted to cell mass, humus, or remained recalcitrant. (Michel, Tr. 2844-

45). Dr. Michel's testimony thus establishes two points: (1) the definition or scientific understanding of "fully biodegradable" is uncertain and flexible because no product will ever be "fully" biodegraded, even cellulose (one of the most biodegradable substances); and (2) the scientific understanding of "fully biodegradable" refers to the intrinsic biodegradability of a material, or the ultimate *potential* of the material to biodegrade. Otherwise, Dr. Michel could not possibly refer to a cellulosic material that only biodegraded 44% as a "fully biodegraded," or call a cellulose positive control "fully biodegradable" when it stopped biodegrading at 72%.

Accordingly, ECM agrees that none of the Eden Laboratories tests (or any of the tests) demonstrated 100% biodegradation during the period of the test, but ECM disagrees that a product must show 100% biodegradation (an impossibility) before scientists can ascertain whether the material is anaerobically biodegradable. ECM's experts testified that, based on the test data in this case, the ECM plastics were anaerobically biodegradable. *See* ECM RPFF ¶¶ 1629-1670, 1964-2009.

477. Dr. Stewart also did not ask consumers any relevant variant, such as how much time would it take for plastic labeled "ECM biodegradable" to biodegrade? (*See* RX-847).

Response to Finding No. 477:

ECM cannot properly respond to Finding No. 477 because ECM cannot know what Complaint Counsel refers to by "any relevant variant"—any relevant variant of what? All of the questions Dr. Stewart asked in his survey are documented in RX 602. (RX 602).

Respectfully submitted,

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DATED: October 16, 2014

CERTIFICATE OF SERVICE

I hereby certify that on October 16, 2014, I caused a true and correct copy of the foregoing to be served as follows:

One electronic copy to the **Office of the Secretary** through the e-filing system:

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One electronic courtesy copy and three (3) hardcopies to the **Office of the Administrative Law Judge**:

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I certify that I retain a paper copy of the signed original of the foregoing document that is available for review by the parties and adjudicator consistent with the Commission's Rules.

Respectfully submitted,

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