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FROM: Claudio Sorrentino, Ph.D.   
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Human and Ecological Risk Office (HERO)

DATE: May 7, 2015

SUBJECT: Lilliard Trust Property (CASE # 14334)  
PCA: 36322 Site: 914334-48

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### DOCUMENTS REVIEWED

- "Ash Sampling Results Lillard Ranch, Davis, California" by Iris Environmental dated 10/28/2014;
- "Lillard Trust Property Sampling Report Case Number: 14334" by D. Clark dated 10/30/2013.
- Phase II Environmental Site Assessment; Lilliard Property Pipeline Easement, Davis, Yolo County, California" by Geocon Consultants, Inc. Rancho Cordova, CA dated October 15, 2014; and,
- Amended "Laboratory report" by BSK Associates dated 08/20/2013.

### SCOPE OF REVIEW

The Human and Ecological Risk Office (HERO) reviewed the above documents for scientific content relevant to human and environmental risk assessment. It is assumed that sampling of environmental media, analytical chemistry data, and quality assurance procedures have been examined by other Regional personnel. Inadequacies relevant to risk assessment are noted below. Any future changes or additions to the document should be clearly identified.

### Background

Fly ashes from Woodland Biomass Ltd has been applied to a field on the Lillard Trust Property north of Davis, CA. The site is located on approximately the western 70 acres of the Lilliard Ranch and is located on the East of County Rd. 102, north of the City of

Davis. Adjacent properties are used for agriculture, solar power generation, and as a go-kart track. On one of the adjacent properties immediately to the North there is a residential building. To the South there is a golf course and a residential area. According to the Phase II Environmental Site Assessment, the northern segment of the proposed easement is currently farmed and used for livestock grazing.

### General Comments

- 1) Human and Ecological Risk Office (HERO) noted that levels of dioxins in the incremental samples collected from two locations in site decision units where the ashes have been disposed are 26.3 and 36.9 ng/kg Toxic Equivalents (TEQs). In the Human Health Risk Assessment (HHRA) Note 2, the recommended maximum concentration remedial goal for a default agricultural scenario is <40 ng/kg dioxin TEQs. Furthermore, the HHRA Note 2 indicates that <40 ng/kg is a ceiling level that should result in 95% Upper Confidence Limit (95%UCL) concentrations close to 10 ng/kg dioxin TEQs ([http://www.dtsc.ca.gov/AssessingRisk/upload/HHRA\\_Note2\\_dioxin-2.pdf](http://www.dtsc.ca.gov/AssessingRisk/upload/HHRA_Note2_dioxin-2.pdf)). These results are consistent with and confirm those evaluated in the HERO memorandum issued on April 13, 2015 that concluded "the levels of dioxins/furans in the samples were high enough compared to the remedial goals for agricultural land use to provide the rationale for further action".
- 2) The HERO noted that while there is no information on site-specific background levels of metals, the concentrations measured in the samples collected from the easement area are consistently lower than those collected in areas where the ashes were applied. For example, the highest concentration of lead in the proposed easement area was 17 mg/kg whereas it was 98 and 110 mg/kg in the incremental samples, and ranged from 120 to 310 mg/kg in the samples presented in the amended analytical report from BSK Associates. Similarly, the concentration of arsenic in the samples from proposed easement ranged from 4.2 to 8.9 mg/kg whereas the levels in the incremental samples were 28 and 33 mg/kg and ranged from 32 to 110 mg/kg in the samples presented in the amended analytical report from BSK Associates.
- 3) The HERO notes that if the levels of metals such as arsenic and lead were to be found above naturally occurring background, they would be considered in excess of the acceptable levels for unrestricted land use.

### Conclusions

HERO noted that the levels of dioxins in the incremental samples were above the target 95% UCL that would be acceptable for a generic agricultural scenario. In addition, there is an apparent difference between the concentrations of metals in soils collected from where the ashes were applied compared to the area of the proposed easement that is suggestive of a potential impact from the application of fly ashes. Finally, the levels of metals such as lead and arsenic measured at the site are above those considered acceptable for unrestricted land use, if they are confirmed to be above natural background.

Dylan Clark  
May 7, 2015

Case 14334  
Lilliard Trust Dioxin/Furan Report

**Peer Reviewer**  
J. Polisini, Ph.D.  
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A handwritten signature in green ink, appearing to read "J. Polisini", is written over the text of the peer reviewer's name and title.