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VIA U.S. MAIL & EMAIL (cdraecs@placer.ca.gov)

Shirlee Herrington
Environmental Coordination Services
Community Development Resource Agency
County of Placer
3091 County Center Drive, Suite 190
Auburn, CA 95603

Re: Sunset Area Plan/Placer Ranch Specific Plan Draft EIR
(State Clearinghouse No. 2016112012)

Dear Ms. Herrington:

Churchwell White LLP represents Western Placer Waste Management Authority (the "Authority") in connection with its review of the Sunset Area Plan/Placer Ranch Specific Plan (the "Project"). This letter provides the Authority's comments to the draft environmental impact report for the Project (the "Draft EIR"). In addition, attached to this letter is a technical report from environmental consultants who are deeply familiar with operations at the Western Regional Sanitary Landfill ("WRSL"), as their previous work is cited and referenced in Appendix J to the Draft EIR.

As you know, the WRSL is located in the center of the Sunset Area Plan ("SAP"), adjacent to the northern boundary of the Placer Ranch Specific Plan ("PRSP"). The Project, as currently proposed, would replace the existing landfill buffer, which currently prohibits any residential development within one mile of the WRSL site, with a new buffer that would allow residential development up to 1,000 feet from the perimeter of active landfill and recycling operations. The Project could also potentially allow commercial and recreational uses to encroach within the buffer zones of 1,000 feet and 500 feet, respectively.

In December 2016, the Authority submitted comments in response to the Notice of Preparation for the Draft EIR ("NOP"). The Authority's NOP comments detailed the critical importance of the WRSL site and the existing buffer zone, along with policies for adopting mitigation measures that Placer County (the "County") should consider as the lead agency for the Project. While the Authority appreciates its ongoing discussions with the County, the Authority has concerns that the Draft EIR does not adequately analyze the reduced buffer zone. In addition, the Draft EIR does not incorporate feasible

mitigation measures, as required under CEQA, to reduce the reasonably foreseeable air quality and other impacts related to the reduced buffer zone and the proposed encroachment of development in close proximity to the WRSL.

If the landfill buffer must be reduced, the attached technical report shows that mitigation measures are available that would likely reduce potential odor impacts at the PRSP to a less-than-significant level. CEQA therefore requires the County to incorporate odor-reducing mitigation measures into the Draft EIR, especially given that the reduced landfill buffer is the central feature of the Project that would directly cause a significant increase in odor impacts if additional measures are not implemented.

1. The proposed buffer zone policy is internally inconsistent with the General Plan.

The Placer County General Plan was last updated by the County Board of Supervisors on May 21, 2013 (the "General Plan"). Under State law, the General Plan must include an integrated, internally consistent, and compatible statement of policies.[1] When elements of a general plan are found to be internally inconsistent, on judicial review, "the appropriate remedy is to issue a writ of mandate requiring a county's board of supervisors to set aside the inconsistent elements so that they can be amended to achieve the statutorily required correlation and consistency."[2] In addition, under CEQA, the Draft EIR must disclose if the Project is inconsistent with any applicable land use plan, policy, or mandatory provision in the General Plan.[3]

The Project proposes to develop residential, commercial and recreational uses within the existing and proposed landfill buffer zones, along with General Plan amendments that, if adopted, would result in an internal, irreconcilable inconsistency with the following mandatory provision in the General Plan:

> BUFFER ZONE PRESERVATION
>
> Land use buffer zones shall be reserved and guaranteed in perpetuity through land acquisition, purchase of development rights, conservation easements, deed restrictions, or similar mechanisms, with adjacent proposed development projects providing the necessary funding.[4]

Both the PRSP and SAP would authorize commercial, recreational and residential development within the existing and proposed landfill buffer zones. The Draft EIR Project Description, however, makes no reference to this conservation requirement.

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[1] Cal. Gov. Code § 65300.5.

[2] *Murrieta Valley Unified School Dist. v. County of Riverside* (1991) 228 Cal.App.3d 1212, 1235.

[3] 14 Cal. Code Reg. § 15125; Placer County Environmental Checklist.

[4] Placer County General Plan, Part 1, Land Use/Circulation Diagrams and Standards p. 24.

Although the Draft EIR refers to agricultural and open space easements in Chapter 4.10 (Land Use) and public trail easements in Chapter 4.13 (Public Services), it makes no reference to the landfill buffer conservation easement requirement, or that adjacent development projects, such as PRSP, must bear the cost of acquiring such easements.

In addition, the Draft EIR does not discuss how the proposed General Plan amendments to further reduce the residential landfill buffer zone from 2,000 to 1,000, or to further reduce the commercial and recreational buffers to less than 1,000 and 500 feet, should be reconciled with the General Plan's mandatory provision to permanently conserve all land within the buffer zone.

The County's existing landfill buffer policy culminated after the result of a lengthy, multiyear General Plan update throughout the 1990's. The conservation easement requirement clearly represents a General Plan policy "adopted for the purpose of avoiding or mitigating an environmental effect."[5] If the County's intent now is to transition from a conservation policy to a development model within the landfill buffer, this change in policy must be thoroughly analyzed in the Draft EIR. The baseline condition requiring the acquisition of conservation easements must be disclosed and analyzed, impacts related to the removal of the conservation requirement must be identified, and additional or functionally equivalent mitigation measures necessary to reduce future land use conflicts with the WRSL must be implemented.

The Authority is willing to discuss functionally equivalent mitigation measures that could preclude the need for conservation easements, provided that such measures include an ongoing enforcement mechanism, similar to an easement in perpetuity. Examples of ongoing mitigation measures are provided in the technical report. In addition, durable finance mechanisms must be adopted to ensure that mitigation measures can be implemented in an incremental, ongoing basis throughout the 80-year buildout scenario contemplated in the Draft EIR. Further refinements to the mitigation measures in the Draft EIR are clearly needed, depending on the County's proposed resolution of the conservation requirement.

Lastly, to fully ensure General Plan consistency, the County should closely review the requirements set forth in Part III (General Standards for Consideration of Future Amendments to the General Plan). Part III includes other mandatory considerations related to the existing landfill buffer zone and other provisions that must be reconciled with the proposed General Plan amendments for the Project.

[5] Placer County Environmental Checklist.

2. Solid waste generated by the proposed Project may exceed operational capacities at the WRSL.

Chapter 4.15 of the Draft EIR (Utilities) examines waste management operations at the WRSL. The Environmental Setting in Section 4.15.2 briefly discusses the key components of the WRSL, such as the Materials Recovery Facility (MRF), which includes separate processing of construction and demolition waste, and green waste. The Environmental Setting also briefly describes composting and landfill operations at the WRSL, in addition to the Permanent Household Hazardous Waste Collection Facility.

In the analysis of Impacts and Mitigation Measures, however, Chapter 4.15 examines the capacity of the landfill area only, and does not analyze the individual components that comprise the WRSL site, which were clearly identified in the previous section. On closer review of the MRF, for example, the construction, demolition and green waste operations are currently near their maximum operating capacities. Implementation of the Project could therefore exceed the ability of the WRSL and MRF to adequately process construction, demolition and green waste. As a result, the Draft EIR incorrectly concludes that "[t]he MRF and the WRSL have adequate capacity for disposal of solid waste generated by construction and operation of the PRSP."[6] Implementation of the Project will in fact result in potentially significant impacts to the operational capacity of the MRF, and additional mitigation measures are necessary to address this impact.

Although the Draft EIR notes that the Authority is currently proceeding with a master planning process to improve and increase operations at the site, these expansion plans remain highly conceptual and are not yet complete. In addition, even if the master planning process had concluded, the Project must address actual capacity limitations and implement measures to address impacts related to the Project, such as the generation of construction and demolition waste, and green waste, that could potentially exceed the current operational limits at the WRSL.

3. The Draft EIR must include mitigation measures to finance the facilities, services and personnel that would be required to reduce odors at the WRSL

The Draft EIR finds that the "cumulative demand for solid waste services would be a potentially significant impact."[7] In addressing this potential impact, however, the Draft EIR states that the PRSP and SAP would be "required by Placer County General Plan Policies 4.B.1 and 4.B.2 to pay their fair share of the cost of all existing public facilities and the cost of upgrading existing [solid waste processing] facilities or constructing new facilities that would be needed to serve the new development," and that "[t]hese

[6] Draft EIR, p. 4.15-57.

[7] Draft EIR, p. 4.15-69.

policies would serve to avoid any project contribution to significant adverse effects related to solid waste disposal. The impact would be less than significant."[8]

The Draft EIR, however, does not specifically identify how the Project would contribute fair share fees to contribute towards the new facilities, operations and personnel that would be needed at the WRSL. In addition, additional contributions are needed so that the Authority can implement additional measures to reduce odors, especially where such measures would not otherwise be needed, but for the reduced landfill buffer. Moreover, tipping fees by themselves may be insufficient to generate sufficient revenue over the long term to address the level of odor reduction that may be needed to ensure that future land use conflicts are avoided if the existing landfill buffer is reduced.[9] In addition, where the need for additional odor reductions are needed directly as a result of development of the PRSP within the landfill buffer, the costs for addressing those impacts should not be spread to all WRSL customers through generally applicable tipping fees.

Throughout other sections of the Draft EIR, mitigation measures are proposed to require the payment of fair share fees, and the creation of special taxes and assessments to fund additional facilities, maintenance and personnel costs that will be required as a result of the buildout of the Project.[10] In addition, the Draft EIR includes mitigation measures regarding transportation improvements and the Pleasant Grove Retention Facility, both of which are offsite to the Project. Similar mitigation measures must be implemented to address the new facilities, operational adjustments, and new personnel that will be required at the WRSL to address potential odor impacts directly caused by the development and buildout of the Project within the existing landfill buffer.

4. The Draft EIR's analysis in Impact 4.3-6 is inconsistent with the odor analyses in Appendix J and must be revised.

The Draft EIR's analysis of odor impacts raises several concerns that must be corrected prior to the County taking any action to certify the EIR or approve the Project.

Under Impact 4.3-6, the Draft EIR asserts that "odor impacts are subjective and there are no quantifiable thresholds of significance…." Appendix J to the Draft EIR, however, clearly states an established threshold of significance using the dilutions to threshold ("DT") metric:

> Generally, odor is frequently considered likely to be offensive when it exceeds 10 DT, may be considered offensive when it exceeds 8 DT, and is

[8] *Id.*

[9] See, e.g., Landfill Tipping Fees in California, CalRecycle February 2015

[10] See, e.g., Mitigation Measures 4.13-1a, 4.13-2, 4.13-4, 4.13-8,

> sometimes considered offensive when it exceeds 5 DT. These thresholds are sometimes used as regulatory odor nuisance thresholds and are illustrative of the range of odor concentrations that are considered a nuisance.[11]

Appendix J therefore provides a quantifiable metric with regard to odor impacts that the Draft EIR should incorporate as its significance threshold for odors.

Moreover, the Draft EIR mistakenly relies on unrelated holdings by the First District Court of Appeal,[12] regarding Receptor Thresholds, to conclude that the Draft EIR is "not strictly required" to evaluate impacts of existing odor sources such as WRSL. The WRSL Incremental Odor Evaluation in Appendix J clearly demonstrates that the Project would exacerbate existing odors generated by the WRSL if additional mitigation measures are not implemented. In addition, odor impacts are directly relevant in this case because the General Plan amendment for the Project proposes to reduce the landfill buffer zone to allow residential, commercial and recreational uses to encroach closer to the WRSL. Reduction of the buffer zone therefore serves as the key Project feature that would potentially expose future residents to odors, and buildout of the Project would generally lead to the production of more waste that would also serve to exacerbate the potential for future odor impacts from the WRSL.

Appendix J analyzes existing, baseline odors, baseline odors plus the Project, and future odors plus the Project, to determine the incremental impact of Project-related odors. Appendix J then concludes that the odor intensity and footprint of the WRSL site will continue to increase, and that the solid waste generated by the Project will play a significant role in contributing to that increase. The Draft EIR, however, ignores the analysis in Appendix J and concludes that "neither Placer County nor PCAPCD has adopted nor subscribes to any specific scheme of odor standards or thresholds."[13]

Ultimately, Appendix J constitutes substantial evidence of a significant odor impact that would be caused directly by the Project's proposed removal of the landfill buffer zone, and the Project's incremental contribution of solid waste disposal at the WRSL.

Whether or not the County applies a quantitative or qualitative significance threshold with regard to odors, the Draft EIR concludes that odor impacts resulting from implementation of the Project would be significant. Despite this significance finding, however, the Draft EIR proposes no mitigation measures to reduce potential odor impacts. On the other hand, the Draft EIR explains that the County rejected a proposal

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[11] Draft EIR, Appendix J, WRSL Incremental Odor Evaluation, p. 6

[12] *California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2016) 2 Cal.App. 5th 1067

[13] Draft EIR, p. 4.3-50.

to adopt a regional mitigation fee to address improvements at the WRSL site that would reduce odor impacts.[14]

Again, the failure to implement feasible mitigation measures pursuant to Impact 4.3-6 is somewhat baffling, given that the proposed reduction of the landfill buffer zone is a key component for allowing the proposed buildout of the PRSP. Although the Authority is proactively evaluating site improvements at the WRSL to reduce odors, the reduced buffer zone will undoubtedly require the Authority to take additional measures, with additional costs, that would not need to be incurred except due to the development of PRSP and SAP within the existing buffer zones.

As noted above, the Draft EIR references the County's General Plan policy requiring new developments to pay their fair share for the cost of new facilities and services. Impact 4.3-6 therefore must include enforceable mitigation measures to ensure that fair share contributions are provided through the development of the PRSP and SAP, especially where the need for new services, facilities and personnel is directly caused by the reduced landfill buffer zone. Those costs should not be borne by the Authority, nor its Member Agencies or existing ratepayers.

5. **The Draft EIR's analysis in Impact 4.15-11 must be revised to include enforceable mitigation measures, to reduce potential odor impacts that will be directly caused by the reduced landfill buffer zone.**

Under CEQA, the County clearly has the authority to adopt measures requiring the developer and future properties within the SAP or PRSP to mitigate odors at the WRSL, provided that such measures are proportional to the impacts caused by the Project.[15]

Under Impact 4.15-11, the Draft EIR finds that the reduced landfill buffer zone will lead to increased complaints regarding the WRSL if additional measures are not taken to reduce odors. Rather than identify mitigation measures to address this impact, however, the Draft EIR states that the Authority is proactively engaged in community outreach, and taking measures to reduce odors from the WRSL. In reciting all of the current actions taken by the Authority to reduce potential odor impacts, the Draft EIR ignores the implementation of mitigation measures to address potential future land use conflicts due to the reduced landfill buffer zone.

The Authority will undoubtedly be required to greatly accelerate its current outreach and odor management operations in order to adjust to residential, commercial and recreational encroachment proposed by the PRSP and SAP. The Draft EIR concludes, however, without any substantial evidence, that the potential risks to expansion of the WRSL due to the reduced buffer zone are speculative. On the contrary, landfill

[14] Draft EIR, p. 4.3-51.

[15] 14 Cal. Code Reg. § 15126.4.

expansions have constantly been the target of litigation, regardless of the investments made by those agencies, or their importance as assets to the community. Bringing additional residents closer to the landfill buffer will significantly increase the risk of additional lawsuits, especially if the Project does not contribute to suitable measures to reduce odors at the WRSL.

Even with the execution of landowner notices, implementation of the Project will require the Authority to introduce additional odor control measures that would not otherwise be needed if the existing landfill buffer zone remained in place. Existing customers should not be required to incur costs related to new development that is encroaching onto the existing landfill buffer zone.

6. Numerous mitigation measures are available to reduce odor impacts and operational deficiencies at the WRSL caused by the Project.

Mitigation Measure 4.10-2 in the Draft EIR identifies some basic measures for mitigating odor impacts for the properties located within the PRSP and SAP. Building design, landscaping buffers and deed notifications are important elements that should remain as mitigation measures for the Project. Downstream measures to reduce potential odor impacts, however, are far less effective than source controls at the WRSL, which would achieve much greater odor reductions. Mitigation measures must be implemented to require the PRSP and SAP to contribute to operational and facility improvements at the WRSL, in order for the County to justify any reduction to the existing landfill buffer.

In Appendix J, SCS Engineers provides a Review of Odor Management at the WRSL, which expressly finds that additional mitigation measures should be implemented at the WRSL to reduce potential odor impacts, thereby reducing future land use conflicts. For example, the SCS report identifies gas flaring improvements, expanded use of misters, the use of additional covers and other improvements that would reduce odors at the WRSL. Appendix J is based in part on a literature review, including the 2015 EMC report prepared by the CE Schmidt and TR Card, who have prepared the attached technical report.

The attached technical report reviews potential mitigation measures proposed in Appendix J, and the report suggests a broader array of measures for reducing odors at the WRSL. Potential mitigation measures identified by SCS Engineers, and elaborated by the attached report, include the following:

- Improved use of gas flaring and engines;

- Development of an automated gas system to respond to changes in barometric pressure and optimized gas recovery;

- Improvements to landfill cover and use of temporary membrane landfill covers;
- Ongoing system-wide assessments;
- Greater use of odor reducing agents;
- Development of a biosolids and wood waste processing facility;
- Incorporation of odor masking agents during the use of misters;
- Improvements to, and scaling up of, aerated static pile composting;
- General odor controls, such as tree lines, meteorological monitoring, odor monitoring on the PRSP and SAP sites; and
- Dedicating Authority personnel to ongoing odor inspection, management and supervision.

The report concludes that effective odor reduction mitigation strategies can be implemented on the WRSL site to achieve an odor emission reduction of around 80%. If such reductions were achieved, the reduced landfill buffer would cause far less odor impacts. Odor episodes would be less frequent, with shorter duration, and with lower concentration or drift to offsite areas of the WRSL.

Based on the attached report, an 80% reduction of the existing odor profile at the WRSL is possible, using known techniques. Over time, additional measures will likely emerge to further control and reduce odors at the WRSL. Under either a qualitative or quantitative approach to analyzing odor impacts, measures to reduce odors must be implemented as enforceable mitigation measures for the Project, in-lieu of the existing requirement in the General Plan to permanently conserve all land within the landfill buffer zone.

Additional air dispersion modeling would help to refine the quantitative (or qualitative) reduction that additional mitigation measures could provide to reduce odors from the WRSL. Those additional mitigation measures must be implemented if the modeling shows that their implementation would significantly reduce the DT level or hedonic tone, especially in the areas proposed for development within the reduced landfill buffer zone. In addition, measures must be implemented to allocate the fair share of those costs to the Project. The Authority looks forward to working with the County in

this modeling, to identify the most cost-effective measures for the Draft EIR to implement.

7. The Draft EIR must examine alternatives to the proposed landfill buffer.

The reduced landfill buffer is a key component of the PRSP, as currently envisioned. Several commenters to the NOP raised concerns regarding the proposed reduction of the landfill buffer. The Draft EIR therefore should have analyzed a Project alternative in which the landfill buffer zone remained in place, with development intensities revised to account for the existing landfill buffer.

8. The Draft EIR should analyze alternative alignments for water and recycled water lines.

Figure 4.15-4 in the Draft EIR identifies a new 12-inch potable water pipeline extending through the center of the Authority's property located directly to the east of the WRSL. In addition, Figure 7 in Appendix B to the Draft EIR identifies an 8-inch recycled water pipeline extending along this same alignment. The Authority is currently developing a master plan that could entail the placement of a new landfill on the parcel to the east of the WRSL. The placement of pipelines through the Authority's property therefore may be infeasible. Alternative pipeline alignments that do not cut through the Authority's property should be considered in the Final EIR.

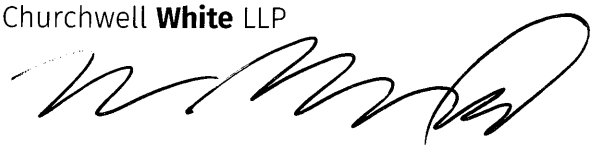
In conclusion, the purpose of this letter is to identify areas where the Draft EIR should be revised in accordance with CEQA and, more importantly, to address additional measures that the Draft EIR must implement, as required under CEQA, to mitigate the direct impacts that would result from the reduction of the existing landfill buffer.

Although the Authority has additional concerns regarding other aspects of the Project, this letter focuses on the proposed landfill buffer as the key issue that threatens the long-term viability of the WRSL. If warranted, the Authority may submit additional comments regarding other aspects of the Project at a later date.

Lastly, résumés for CE Schmidt and TR Card are provided for reference, to illustrate their extensive background in air quality impacts relative to landfills and project siting; the Authority does not intend for the County to provide any responses to those materials in the Final EIR.

Sincerely,

Churchwell **White** LLP



Robin R. Baral

CE Schmidt, PhD
Environmental Consultant

TECHNICAL REPORT

To: Robin Baral, Churchwell White LLP

From: CE Schmidt, PhD; TR Card, PE/MS

RE: WPWMA Odor Mitigation Measures as Related to the Site Buffer Zone

Scope

The purpose of this report is to:

> (1) review odor analyses included as technical appendices to the Environmental Impact Report for Sunset Area Plan and Placer Ranch Specific Plan (EIR); and
>
> (2) identify feasible mitigation measures that can be implemented at the WSRL site to address odor impacts identified in the EIR.

The estimated costs for the implementation of these alternatives is not included in the scope of this report.

(1) Background Reports

Reducing fugitive odor emissions from the site, in an attempt to reduce off site odor impacts with a limited border zone, includes both physical and operational changes in the current facilities on site including the MRF, the landfill (landfilling of solid waste, gas collection system, energy conversion operation), and greenwaste/foodwaste composting operation.

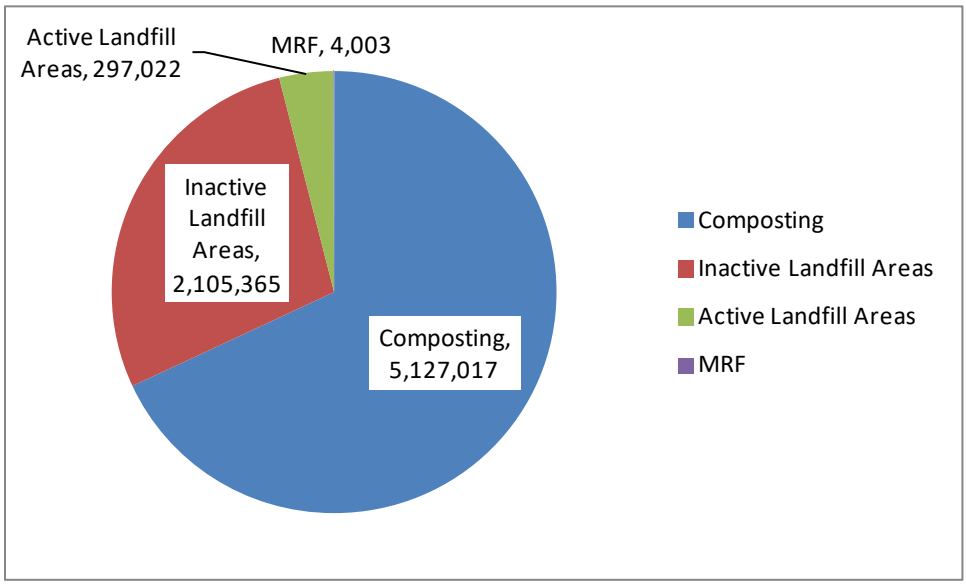
A robust odor emission source apportionment study was conducted at the site in August of 2015 and reported to WPWMA October 2015. The MFR, the active and inactive areas of the landfill, and the compost operations were studied, and in total, 97 measurements were performed. The results of the study are shown in Figure 1.

The units shown in the pie chart are 'odor emissions'. On a percentage basis, the odor emissions from the MRF represent 0.053% of site odor emissions, then active face of the landfill 3.9%, the inactive landfill 28%, and the compost operations 68%.

These data can be used to model emissions from the site but, more importantly for this study, they show where the odor from the site comes from and can also serve as the bases for estimating future emissions as remedial measures for odor control are applied to these site operations.

CE Schmidt, 19200 Live Oak Road, Red Bluff, CA 96080 (530) 529.4256 schmidtce.com

Figure 1. Relative Odor Emissions by Landfill Process



(2) Mitigation Measures

MRF Operations

Controlling odor emissions from the MRF is challenging given that the operation is a transfer and sorting operation. The considerations for reducing MRF odor emissions include: minimizing the daylight hour amount of waste processed, and eliminating the storage of unprocessed incoming waste overnight; controlling the surface area of sorted material waiting for landfilling using agents such as foam products, and collecting and treating fugitive air emissions in the MRF building using filtration.

The controlling of municipal waste incoming could be achieved by organizing collection and transfer activities, which may only be achieved by using an off-site parking area remote from the facility. Refuse transfer could be better managed operationally but not without developing an improved operational process. The goal would be to only receive refuse that can be processed within a working day, and have no unprocessed refuse for overnight storage. Housekeeping of transfer decks at the end of the day would also be necessary. The use of storage bins with covers or lids for segregated or processed refuse, and landfilling of stored materials by the end of the day would reduce odor emissions from the facility. The goal is limiting the surface area of odorous materials. Lastly, putting the MRF building under negative air and scrubbing the building air would be challenging and expensive, however collecting fugitive emissions from selected work stations with independent collection and treatment systems could be feasible. Another option is using odorant sprays on refuse as sorted or in storage waiting processing and landfilling. The use of masking agents typically has limited success, however this technology can be used when other approaches are not satisfactory.

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Given the challenge of controlling emissions from the MRF and cost, and given that the MRF accounts for less than 1% of the site odor emissions, extensive changes to the operation may not be warranted on a cost-benefit basis.

Landfill Operations

Reducing the fugitive emissions from the landfill would focus on three components of the operation: active landfill face, landfill gas collection system, and the waste gas-to-energy plant operations. The active face of the landfill operation has a high flux of odor but a limited surface area and as such, accounts for about 4% of the site odor emissions. This active dumping and filling area is difficult to control, and an Odor Control Handbook operating procedure has been prepared (September 2017). Controlling emissions from the active face of the landfill operations would require the limiting or elimination of very odorous materials such as biosolids from wastewater facilities, limiting the working face surface area, the use of interim cover materials or foam products during the day, and complete coverage of refuse overnight. Although this surface area is generally very small by comparison to the area of the landfill under interim can final cover, controlling fugitive emissions from the active face will limit the release of fugitive odor release from a significant odor source.

The greater concern is the landfill gas collection system on the inactive portions of the landfill which accounts for 28% of the site odor emissions. Landfill gas collection must operate within design specifications. This includes using the required landfill monitoring data to insure the proper operation and placement of landfill gas wells (adding wells where needed), and the collection of landfill gas from the wells. The landfill gas cannot be 'banked' or stored in the landfill, but rather used, flared, and/or stored in a leak free container so that the surface of the landfill has minimum fugitive emissions and maintained under design negative pressure. This requires operating the landfill gas collection system at maximum containment and not necessarily the most cost effective performance of the gas-to-energy operation. Landfill gas not used for energy production must be flared and/or stored in a proper container, rather than stored in the landfill, which may reduce the efficiency or operation of the gas-to-energy plant.

Compost Operations

The odor emissions from the current windrow composting operation is the largest odor source on site and accounts for about 68% of the site odor emissions. Odor emissions from the compost operations can be significantly reduced by as much as 90% according to a pilot-scale test conducted on site (December 2016) by installing an aerated static pile (ASP) technology that uses a covered, forced air composting technology. The compost blend is placed in a three-sided matrix of block wall structure where the process days for the life-cycle operation of the

composting process is contained. One day of process compost is places with consecutive days joining until the facility is full and operational. Compost and cover loading is accessed from the open side of the matrix. The piles are not moved until maturation thus the 'static' nomenclature. Similarly, process air or aeration is added to the bottom of the compost or 'zones' of compost in the matrix as the piles or zones are aerated and static until composting is complete. The final design component is a layer of finish compost or 'biolayer' on the composting material which is the air emission 'control device'. The cover layer is maintained by irrigation water and when the matrix is complete the ASP is one continuous pile with zones joined on the sides as the material is added and taken from the matrix. This positive aeration, ASP with biofilter layer can, if maintained and operated according to design specifications, can achieve 90% reduction in odor emissions or greater for the compost cycle, which is the greater source of odor emissions in the composting cycle. After the composting of waste is complete, the composted materials are taken to a curing stage either before or after screening which is the step where finish compost is recovered for use as biolayer or sold as product. Typically, no odor controls are needed for the curing piles and finish compost. Note that minimizing greenwaste/foodwaste coming into the site so that stockpiles are not left overnight minimizes odor emissions from the 'front end' of the process. If odor emissions are significant, there are technologies that can be employed to reduce emissions from these sources a well.

Sites that have either converted over to positive ASP with a biofilter layer have the option of installing permanent facilities (blowers with asphalt pads with in-ground aeration system and leachate system), or more temporary, above-ground facilities that employ skid mounted blowers and temporary perforated piping and leachate drainage.

Site-Wide Technologies

Site Odorant Use

Site odorant use can be applied to the site fenceline which does have some affect on offsite odor, so long as the odorant is not offensive. Typically odorant systems are installed and liquid odorant is applied directly on odor sources, but they can also be applied airborne on the fenceline as ambient air 'masking agents'. Other sites have used this technology with limited success and application of odor reducing agents can be applied to refuse at the MFR operation sorted and transported to the landfill active face, or at different stages of the sorting and storing process, and the landfill active face.

Visual and Wind Break Barrier

Site fenceline visual blocks and fenceline wind break tree-lines should be considered. These not only ad favorable odors (conifers in particular) from the site but also create surface roughness which aids in plume mixing and dispersion of plumes off site.

Site Odor Monitoring

An onsite monitoring effort could be established and used to inspect and remediate odors that may create off site odor impacts. Employee training programs and training in odor assessment could prove useful in minimizing site odors. Monitoring technology is available that can be used for this purpose.

Community Education, Odor Response Network, and Neighborhood Monitoring

Several outreach programs could be used to minimize the concerns of the community in respect to off-site odor. These types of programs have been instituted and used effectively, however they require consistent support by the facility. Often times these tasks can be more cost-effectively maintained by subcontract services.

Recommendations

Given the study data provided from the site source apportionment (October 2015) and subsequent odor mitigation studies (December 2016, August 2017) along with a projection of attainable odor control where test data are not available, the following prediction can be provided regarding reduction of site odor emissions (see below). An estimate regarding the potential impact from the site to the surrounding community can be realized by performing dispersion modeling using these proposed (post-mitigation) odor emission estimate (1,581,892 DT/min). Thus a potential impact to the community given the proposed reduced buffer zone can be estimated using the post-mitigation estimate of odor emissions.

Provided that effective odor reduction mitigation strategies are implemented and maintained on the site achieving an odor emission reduction of around 80%, it is possible that minimum impact of odor as defined by less frequent odor episodes of shorter duration and lower odor concentration can be achieved to the off site areas beyond the revised buffer zone.

Table 1. Future Projected Odor Reductions

Site Source	Current Odor Emissions (DT/min)	Percent Reduction (%)	Revised Odor Emissions (DT/min)	Reduction is Site Odor Emissions (%)
MRF	4,003	(50%)	2,002	
Active Landfill	297,002	50%	14,501	
Inactive Landfill	2,105,365	(50%)	1,052,683	
Composting	5,127,057	90%	51,271	
TOTAL ODOR	7,564,533		1,581,892	79%

Notes:

1. Percent reduction in parenthesis is estimated.
2. Estimated percent control for the MRF is based on best management practice and use of control agents and technology.
3. Estimated percent control for the inactive landfill is based on improved landfill gas collection and use or destruction.

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EDUCATION:
Ph.D., Analytical Chemistry, University of Michigan, Ann Arbor, MI, 1980.
B.A., Chemistry, Oberlin College, Oberlin, OH, 1975.

EXPERIENCE:
Independent Environmental Consultant, Red Bluff, CA, 1989 - Present.
Senior Staff Scientist, Radian Corporation, Sacramento, CA, 1980-1989.
Graduate Teaching Assistant, University of Michigan, Ann Arbor, MI, 1975-1980.
Chemical Consulting Service Coordinator, Ann Arbor, MI, 1976-1980.
Teaching Assistant, Oberlin College, Oberlin, OH, 1974-1975.

FIELDS OF EXPERIENCE:
Dr. Schmidt has served as Senior Staff Scientist/Project Director, Consultant, and/or major Task Leader on a number of projects associated with the management of hazardous waste and assessment of air emissions from area sources. Technical involvements have focused primarily on the assessment and evaluation of atmospheric contaminant emissions from hazardous waste facilities and area sources, including: the design, fabrication, and testing of direct emissions sampling devices; gaseous emission control technology design and testing; continuous real-time gas contaminant monitoring and integrated gas sampling; atmospheric emissions modeling; and data reduction, interpretation, and reporting. Responsibilities for these projects include: development of technical approach; test plan/quality assurance project plan design; project health and safety; schedule and budget management; field and laboratory supervision; and project reporting.

Significant and recent project experience includes:

- Developed technical approaches, wrote quality assurance project plans, and used direct emission measurement technologies to estimate air toxic emissions from a variety of area sources and facilities satisfying state and federal regulations.

- Performed a variety of projects assessing air emissions from subsurface area sources, mainly in industrial/residential settings, providing source-term data for health risk assessment studies.

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- Coordinating consulting organizations and developing project teams in response to client request for services for air toxics compliance testing.

- Expert witness providing testimony on the design and effectiveness of air monitoring and air emission (source) control associated with a Superfund hazardous waste site and permitted treatment facility.

- Development of a technical approach to assess potential health effects from the volatilization of organic compounds from contaminated ground water. The approach included survey work in subsurface utilities, soil gas testing, and indoor and outdoor air toxic measurement and monitoring.

- Development of the technical approach and implementation of the approach used to assess the air quality degradation of air emissions from a biomedical research facility (University of California, San Francisco). The approach included source testing for volatile organic compounds and radionuclides, ambient sampling and analysis, air quality modeling, and risk assessment.

- Design and implementation of a field testing program to evaluate the application of the isolation emission flux chamber for exposure assessment. The program included selecting a test site suitable for comparing the direct chamber technique to the best available indirect atmospheric measurement and modeling technique (transect sampling/dispersion modeling); and designing a technical approach for conducting the field test.

- Design and direction of a large west coast investigation to study off-site impacts to areas surrounding the refinery. Large area liquid hydrocarbon plumes on ground water were creating hydrocarbon vapor impacts in structures. The investigation included indoor air structure surveys, soil sampling and analysis, subsurface emission measurements using the downhole isolation emission flux chamber, contour plotting, and involvement in testing a vapor collection system for the mitigation of the impacts to the communities and environment.

- Technical involvement for developing field investigations to address state air quality regulations and compliance to the Toxics Pit Cleanup Act (surface impoundments) at a large west coast refinery.

- Development of test protocols and implementation of testing activities in compliance to the Calderon landfill testing requirements at private and government landfills.

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- Lead technical role in remedial investigations at three major hazardous waste sites involving significant potential for air emissions of potentially toxic gas and particulate matter species. Two sites included the design of air monitoring during remediation, and one site included air monitoring and the design and mitigation of air emissions during remediation.

- Development of testing protocols using the isolation emissions flux chamber to aid in the development and marketing of vapor suppression foam products for a private client. These foams are used for vapor emissions control at hazardous waste sites.

- Volatile emissions surveys at five sites for EPA-Environmental Monitoring Systems Laboratory, Las Vegas, Nevada, using direct and indirect source testing technologies. These data were used to assess the utility of various techniques as well as collect volatile emissions rate data on air emissions from various treatment, storage, and disposal facilities for hazardous waste.

- Production of air monitoring and air quality assessment manuals for hazardous site remediation for the Department of Environmental Quality, New Jersey.

- Lead role in the development of surface isolation emission flux chamber technology for EPA-EMSL Las Vegas and additional subsurface (downhole and ground probe) technologies.

- Technical involvement in remedial investigation/feasibility studies at a total of 19 hazardous waste sites, most involving the study of the air contaminant pathway.

HONORARY/PROFESSIONAL SOCIETIES:
Phi Lambda Upsilon, Delta Chapter, 1977
American Chemical Society, 1980
Air Pollution Control Association/Air and Waste Management, 1985-to-Present

SIGNIFICANT PUBLICATIONS/PRESENTATIONS

Kiefer, Ken, CE Schmidt, et. al. "Assessing Vapour Intrusion- How Do Assessment Technologies Compare?", *Remediation Australia*, Issue 12, pp. 16-19, 2014.

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Schmidt, CE, Steve Hoyt, "Validation of Volatile Fatty Acid Recovery from the USEPA Surface Emission Isolation Flux Chamber Technology and USEPA Method TO-17", AWMA Symposium on Air Quality Measurement Methods and Technology, San Francisco, California, May, 2007.

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THOMAS R. CARD

Education

M.S., Civil Engineering, California Institute of Technology
B.S., Civil Engineering, University of Washington

Experience

Mr. Card is internationally recognized for the assessment and control of odors, air toxics, and volatile organic compounds (VOCs) from waste treatment and industrial facilities. He has written nine books on air emissions and participated in over 150 air quality projects over the last 30 years. He has been the Chairman of the Air Quality Technical Committee of the American Society of Civil Engineers and he has been on the Program Committee for the Water Environment Federation for the Odor and Air Emissions Technical Sessions. He currently provides peer review for both organization's air emissions publications. He is expert in the design and operation of activated carbon systems, biofiltration systems, packed towers, atomized mist systems, and thermal incineration systems. Mr. Card assisted with the development of the BASTE Wastewater Air Emissions Model with Dr. Richard Corsi of the University of Texas. Mr. Card has taught extension classes on air emissions at the University of Texas, University of Wisconsin, and at the WEFTEC Conference.

Mr. Card has worked on air pollution control systems for industrial facilities for the wood products, food processing, chemical manufacturing, oil production, and automotive manufacturing industries. His clients have included Monsanto, Dupont, General Motors, Georgia-Pacific, DomTar, International Paper, Cargill, ConAgra, Pacific Pipeline, Imperial Oil, and Yakama Forest Products.

Mr. Card has recently completed two assessment programs for VOC and ammonia emissions from California Dairies for the California Air Resources Board. These assessments consisted of sampling at two daires over a two year period for ammonia, total hydrocarbons, and speciated VOCs. In addition to this project, he has completed VOC assessments for the Bay Area Air Qualtiy Management District (5 oil refineries), Alyeska Pipeline Services Company, Los Angeles County Sanitation Districts, NORCAL Waste Systems, and Agri-services.

Mr. Card has completed over 20 air emissions assessment projects for organic waste composting. These include aerated static pile, windrow, vessel technologies composting green waste, biosolids, food waste, and dead cows. He has evaluated the performance of five different compost cover systems. Along with Dr. Charles Schmidt, Mr. Card is the only person to complete a compost emissions compliance test using the SCAQMD Rule 1133 Test Protocol.

Mr. Card has supported the Association of Metropolitan Sewerage Agencies, Chemical Manufacturer's Association, American Petroleum Institute, and the Soap & Detergent Association in the development of national and state air emissions regulations. Mr. Card has worked on wastewater air quality compliance issues with the California Air Resources Board,

San Joaqin Valley Air Pollution Control District, South Coast Air Quality Management District, Bay Area Air Quality Management District, Puget Sound Clean Air Authority, the Illinois EPA, and several other jurisdictions.

Mr. Card has recently completed a research project with the Water Environment Federation Research Foundation to determine the effectiveness that odor control devices have on other air emissions. Mr. Card also participated in the preparation of the VOC Vapor Phase Control Assessment for the Water Pollution Control Federation Research Foundation. This document was the culmination of nine months of effort to review all available literature involving the characterization and control of wastewater air emissions.

Professional Registration

Professional Engineer, California and Washington

Membership in Professional Organizations

Air and Waste Management Association
American Society of Civil Engineers
American Society for Testing and Materials
American Water Works Association
Water Environment Federation
American Chemical Society

Books

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