



# **Comments**

## ***DRAFT ENVIRONMENTAL IMPACT STATEMENT***

***Cedar Hills Regional Landfill 2020 Site Development  
Plan And Facility Relocation***

**October 30, 2020**

***Submitted to***

***King County DNRP—Solid Waste Division***

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

October 30, 2020

**To:** Kinyan Lui, King County (KC) Department of Natural Resources (DNRP) / Solid Waste Division (SWD)  
Project Manager, [klui@kingcounty.gov](mailto:klui@kingcounty.gov)

**cc:** Project, [CedarHillsPlanEIS@kingcounty.gov](mailto:CedarHillsPlanEIS@kingcounty.gov)  
Dow Constantine, KC Executive, [dow.constantine@kingcounty.gov](mailto:dow.constantine@kingcounty.gov)  
KC Council, [council@kingcounty.gov](mailto:council@kingcounty.gov)  
Pat McLaughlin, KC SWD Director & SEPA Responsible Official, [pat.mclaughlin@kingcounty.gov](mailto:pat.mclaughlin@kingcounty.gov)  
John Taylor, KC DLS Director, [John-Dir.Taylor@kingcounty.gov](mailto:John-Dir.Taylor@kingcounty.gov)  
David Daw, KC DLS External Communications Manager, [ddaw@kingcounty.gov](mailto:ddaw@kingcounty.gov)  
Ivan Miller, KC Comprehensive Plan (KCCP) Manager, [ivan.miller@kingcounty.gov](mailto:ivan.miller@kingcounty.gov)  
District #5 State Legislators (three)  
KC Rural Area Unincorporated Area Council (UACs) / Unincorporated Area Associations (UAAs) /  
Organizations (seven)  
ILA Member Cities—Mayors and Councilmembers (thirty-seven bcc'ed on submittal e-mail)  
Tahoma School Board and Issaquah School Board Members (eleven bcc'ed on submittal e-mail)

The Greater Maple Valley Unincorporated Area Council (GMVUAC) provides herein a set of detailed Comments on the *Draft Environmental Impact Statement (EIS) for the Cedar Hills Regional Landfill (CHRLF) Site Development Plan and Facilities Relocation*.

Founded in 1977 the GMVUAC is a community council of volunteer citizens who reside in the unincorporated portion of the greater Maple Valley area. We represent and advocate with King County and State officials for the interests of the citizens of our unincorporated area. Our website, [www.gmvuac.org](http://www.gmvuac.org), details our past and ongoing work in a vast variety of areas of interest to the many people of our area.

Our *Vision Statement* is:

*“Our community’s Rural Character will be supported by facilitating strong local ties and communication between the public, organizations, and government; promoting locally owned businesses and supporting quality education; protecting the environment and maintaining landowners’ rights and responsibilities; promoting controlled and well-planned growth with appropriate infrastructure; ensuring proper representation for rural interests and needs; and supporting the health and safety and the privacy of our vibrant community.”*

Due to the breadth and depth of the *environmental elements* identified, we assigned our three major subject-matter committees—Environment, Growth Management, and Transportation—to review the *Draft EIS* and its many *Appendices A through J*. After a thorough review, we prepared the Comments herein on the *No Action Alternative* and three *Action Alternatives* for most of the *environmental elements* identified. To aid in the preparation of the *Final EIS*, throughout our Comments we provide specific technical recommendations—all shown in **bold**—with supporting rationale.

We called a “*Special Meeting*,” outside of our normal monthly cycle, to discuss and vote on the Comments prepared by our three major subject-matter committees. The GMVUAC member vote was unanimous in support of the Comments and authorized full submittal prior to the October 30, 2020, due date.

We appreciate your deliberate attention to our Comments. You will find they expose the *Draft EIS* to be significantly deficient containing misstatements, misrepresentations and pertinent oversights. In order to build an authentic foundation upon which such enormous decisions regarding the future of the CHRLF is to be made, herculean steps need to be taken to move this *EIS* from “*Draft*” to “*Final*.”

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

We invite, and strongly encourage, the opportunity for continued broad and active involvement from interested and impacted parties, such as GMVUAC and area residents, in the coming months to fully vet all Public comments for accuracy, completeness, and quality, as you begin to plan and prepare the *Final EIS* for release for Public comment sometime in the near future.

Thank you.

### Prepared by:

LarKen Buchanan  
[imbuch@outlook.com](mailto:imbuch@outlook.com)  
Chair, Environment Committee  
GMVUAC

Peter Rimbos  
[primbos@comcast.net](mailto:primbos@comcast.net)  
Chair, Growth Management Committee  
GMVUAC

Susan Harvey  
[susandharvey@hotmail.com](mailto:susandharvey@hotmail.com)  
Chair, Transportation Committee  
GMVUAC

### Approved by:

Steve Hiester  
[steve.Hiester@oldcastle.com](mailto:steve.Hiester@oldcastle.com)  
Chair  
GMVUAC

**GMVUAC Comments—Draft EIS:  
CHRLF Site Development Plan**

***Table of Contents***

<u>Section</u>	<u>Page</u>
<b>I. EXECUTIVE SUMMARY</b>	<b>5</b>
<b>II. INTRODUCTION</b>	<b>12</b>
<b>III. MITIGATION AND ADVERSE IMPACTS</b>	<b>16</b>
<b>IV. ENVIRONMENTAL ELEMENTS</b>	<b>17</b>
Air and Odor	18
Surface Water	35
Groundwater	37
Plants and Animals	38
Greenhouse Gas Emissions	45
Human Health	64
Noise And Vibration	72
Land and Shoreline Use	76
Transportation	83
<b>V. OPTIONS</b>	<b>88</b>
<b>REFERENCES</b>	<b>92</b>

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **I. EXECUTIVE SUMMARY**

**...Credibility of Assumptions...Critical Foundational and Projected Risks...Essential Perspectives for the Future...Compendium of Specific Concerns...Final EIS**

### **Credibility of Assumptions**

The *Draft Environmental Impact Statement (EIS) for the Cedar Hills Regional Landfill (CHRLF) Site Development Plan and Facilities Relocation* prepared by Herrera Environmental Consultants, Inc. for the King County (KC) Department of Natural Resources & Parks (DNRP) Solid Waste Division (SWD) dated September 16, 2020, presents a series of assumptions that serve as the bases to evaluate environmental impacts related to future plans for the CHRLF.

In our review of the Draft EIS we asked ourselves three questions in order to develop the set of Comments herein to help SWD develop its Final EIS in the coming year:

1. Does KC SWD, in its operation and maintenance of the CHRLF's environmental control systems (e.g., disease vector control, landfill gas, leachate, stormwater, and surface water), do an adequate job now? **We ask because if it does not, then some of the Draft EIS's assumptions are flawed—meaning that the impacts identified for the three Action Alternatives could be understated—necessitating the need to re-evaluate same as the Final EIS is prepared.**
2. Since the Draft EIS states all health standards (e.g., laws, regulatory limits, protocols, etc.) currently are being met, are the methods used to monitor impacts of CHRLF's environmental control systems, and the execution thereof, adequate? **We ask because, once again, the impacts identified for the three Action Alternatives could be understated—necessitating the need to re-evaluate same as the Final EIS is prepared.**
3. For the three Action Alternatives, does the Draft EIS adequately account for up to 18 years (beyond 2028) more landfilling operations given the assumptions used in the underlying *CHRLF Site Development Plan* regarding population growth, waste stream volumes, economic swings, etc.? **We ask because such variables will have a direct influence on predicted health impacts due to continuing operations.**

**We believe, at a minimum, these questions must be addressed and, where deficiencies are found, they need to be properly identified and addressed in the Final EIS.**

### **Critical Foundational and Projected Risks**

There are many, many things that can (and will) happen over 26 years (i.e., 2020 to 2046) and, as such, many assumptions and plans could (and will) get derailed.

Consequently, as KC looks at alternatives out to 2046, environmental impact *risks* continue to increase and, thus, all the Action Alternatives should be viewed with less and less confidence they will be fulfilled and meet expectations.

For example, below is a brief summary of some incidents over the last 24 years at the CHRLF:

1996 – Citizen lawsuit initiated.

2000 – Class-Action Lawsuit settlement against CHRLF (and Cedar Grove Compost).

- o Issues: Odors, Birds, Vibrations, Noise identified.
- o Buffer: Reiterated the 1000-ft buffer was not to receive waste or dirt stockpiles and agreed to have a landscaper, within 2 years, evaluate replacing deciduous trees with evergreens. *[That did not happen and now it is too late, as the County said it would have to clearcut it for any evergreens to survive.]*

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

- o Alternatives: KC stated it did not intend at that time to pursue Alternative 3 (Areas 8 and 9) [*Not too different from what currently is being studied.*]
- o Heights: Good faith effort to keep heights of Areas 5, 6, & 7 at or below 788 ft. [*Selection of any of the three Action Alternatives would negate that “good faith effort.”*]
- o Monetary: \$16.5 million for all issues paid by King County.

2006 – Leachate pipe breakage, spilling 200,000 gallons of leachate.

2008 – Started using tarps for daily cover, rather than 6 ft of compacted dirt.

2009 – Bio-Energy Washington (BEW) came on-line. Largest ever of its kind and having never been tested. Many problems occurred.

2011 – Explosive level methane migration to western border and possibly beyond. Gas wells 31 & 33 showed high levels. It took almost a year to determine how to mitigate, resulting in installing a line of capture wells near the western border of the refuse areas.

2012 – Change in the Permit to *relocate* Leachate lagoons into the buffer zone to build Area 8.

2013 – Major Gas pipeline breakage which forced 2 families out of their homes. Families sold their homes to KC following a lawsuit. Caused long-lasting health issues.

2017 – Lawsuit settled for gas pipeline breakage.

2019 – Exceedance of chemicals in leachate.

2019 – Fire in Area 8.

2020 – Final Cover was to be placed on Area 7, but has not been installed as of October 2020 due to problems with contractors/bids, and then change in the seasonal weather to Fall rains. Final cover expected in 2021. Pipeline blockage, causing ~200-250 gallons of Leachate to spill, which closed Cedar Grove Rd to through traffic for several days to effect repairs.

### **Essential Perspectives for the Future**

In evaluating all aspects of future management of solid waste in King County we see the following as *overarching issues* that serve as a foundation for any and all decisions. We listed them alphabetically, so as not to imply any presumed priorities:

1. Climate Change: The short-term *difficult* impacts and the long-term *grave* effects of human-accelerated climate change will become a dominant factor in all decisions going forward. Planning must account for the risks associated with an ever-changing climate, especially severe swings in temperature, unusual rain events, strong winds, etc. All planning related to the CHRLF *pre-closure*, *closure*, and *post-closure* scenarios must account for such effects and the potentially large risks involved.
2. Economic Prosperity: The ability and freedom to meet one's family's needs today and into the future are, at a minimum, to cover essential needs sustainably and with dignity. Without sound stewardship, this definition can be disrupted by competing definitions of economic prosperity for businesses and government operations. Although economics do not, and should not, factor into a pure EIS process, the reality is that it has and will factor into all future planning for the CHRLF and the shared management of solid waste by King County and its cities. Such planning must take into account the competing economic effects of the many stakeholders without unfairly burdening the few.
3. Environmental Legacy: The environmental impacts we will leave our children and their children are far from clear. Climate change, already listed above, clearly is the most pronounced and all-consuming threat

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

we impose on all future generations. However, it is not the only environmental predicament that is caused by our conduct, as our natural resources such as air, water, ecosystems, and wildlife are in peril and will continue to be for some time to come. It is this legacy, with which we must cope, that we leave to future generations and must be thoughtfully considered as CHRLF planning moves forward.

4. Equity and Social Justice: There have been many historical wrongs imposed on minorities of all ilks, people with less voice in decision-making processes, and the downtrodden. The *King County Equity and Social Justice Strategic Plan* seeks to right some of these wrongs through a set of well-thought-out goals and policies. All planning for the future of CHRLF must cause all associated KC departments, such as SWD, etc., to follow-through and conduct themselves accordingly. The *Facility & Systems Improvements Goal Area* has three Goals, one of which is *Goal 3: Activities and responsibilities for pro-equity progress are clear and defined at the Dept., Division, and Section levels*, whose objective calls for: “...*project design program...includes project goals for equity and social justice....*” Such an objective must be met during all CHRLF planning.
5. Quality of Life: This is what all human beings strive for at various times of their lives. It is difficult to define, but essentially is achieving a level of good health, secure comfort, and a modicum of happiness. As a famous philosopher once said, “*You’ll know it, when you see it.*” It entails a whole gamut of needs to be met. Ensuring County citizens can trust in their leadership to make decisions that preserve or improve quality of life is an important consideration throughout all planning for the future of the CHRLF.

### **Compendium of Specific Concerns**

Below we provide a *summary* of specific concerns for each of the following that we address in detail herein in section **IV. Environmental Elements**:

#### **AIR AND ODOR**

Odor is an elusive part of nature. The impact of odor on communities and their standard of living is not quantifiable by models or measurement. Odors from the landfill have been an ongoing issue in surrounding communities. The CHRLF has been trying to mitigate these odors for years, yet has failed to keep them under control.

The Draft EIS attempts to determine the impact of toxic air pollutants (TAP) and odors on surrounding communities by modeling the amount of fugitive gas emissions and dispersal of only those emissions. However, all three cases where modeling is used, it is not readily apparent the assumptions used are accurate.

1. The modeling used for gas production, *LandGEM*, has been proven to underestimate the gas. Models need to be validated for there to be confidence in their results. The amount of gas collected is one measurement to determine the validity of the model, which was not done.
2. Collection efficiency accuracy, used to calculate fugitive gas, is another area we question due to the assumptions used in the model. In addition, the results are well above industry averages, which cast doubt on validity.
3. In the dispersion model, variables and locations used for meteorological assessment do not accurately represent the meteorological conditions at and near CHRLF.

Consequently, the results *understate* the amount of TAPs, fugitive gas, and odor generation. Subsequently, this leads to the resulting impacts being *unidentified* and/or *underestimated*.

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

Analyses do not take into account the combined effect of all the gases taken as a whole. Nearly all the TAPs have an odor. No analysis is done to determine, if combined, if they would have greater odor intensity than just the Hydrogen sulfide (H<sub>2</sub>S) used in the model. Experience has shown there definitely is more to the odors from CHRLF than H<sub>2</sub>S.

**The Final EIS should address such underestimation and seek to re-evaluate impacts using assumptions with which there is more confidence based on experience and data, as well as more accurate models.**

### **SURFACE WATER**

Once the CHRLF is closed, post-closure activities will include: compressing each area, installing permanent caps, hydroseeding, etc. These post-closure steps will affect surface water runoff volumes and locations, such that each of the alternatives (with differing closure years) will behave differently over varying periods of time. Impacts should be identified and assessed related to closure and post-closure vs. continuing to expand and operate.

**The Final EIS must recognize that Action Alternative 3, because it enlarges the actual landfill footprint, and any Action Alternative that involves relocating the support area on site, will certainly increase the stormwater handling needs and, consequently, discuss necessary mitigation measures, including the form these additional stormwater facilities may take.**

The CHRLF has long relied on the downstream Queen City Farms (QCF) to accommodate excess stormwater runoff, so much so that QCF has had to build/maintain some infrastructure for that purpose. As part of the gravel pit reclamation process, QCF currently is planning to *re-engineer* its facilities to handle the stormwater from the northernmost part of the site and the south half of CHRLF. Its new infiltration pond to replace the in-filled Main Gravel Pit Lake will be designed to handle the *current* situation. However, until it's built and functioning, it's unclear whether the replacement pond will succeed in handling the *current* stormwater from CHRLF, let alone any *additional* stormwaters, causing the County to have to design to an unknown target.

**The Final EIS must recognize such uncertainties when assessing any option involving relocating the support area in the southern part of the CHRLF property.**

### **GROUNDWATER**

We anticipate that KC Water District #90 will submit its own Comments related to groundwater. So, our only comment is that any of the Alternatives involving new or expanded waste areas may lead to decommissioning *existing* monitoring wells.

**The Final EIS should explain how any resulting monitoring gaps would be identified and addressed.**

### **PLANTS AND ANIMALS**

The Draft EIS does not account for the abundance of specific plants and wildlife present at the CHRLF site. Unfortunately, continuing to do what, over the years, clearly has not worked, in terms of plants and animals, does not make a successful plan. Amazingly, the Draft EIS states that, indeed, is what is planned with a few "*additional measures*," which sound like more "*best management practices*," which are referred to *ad infinitum* as a *panacea* throughout the Draft EIS.

**The Final EIS must take the presence of plants and animals at the CHRLF site seriously and identify and evaluate mitigation measures that are needed and will work.**



# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **GREENHOUSE GAS EMISSIONS**

Fugitive emissions from landfills contain methane. According to the U.S. Environmental Protection Agency (EPA), “Overview of GHG Emissions,” <https://www.epa.gov/ghgemissions/overview-greenhouse-gases> methane is a far more damaging Greenhouse Gas (GHG) to the atmosphere and climate change than CO<sub>2</sub>:

*“Methane's lifetime in the atmosphere is much shorter than carbon dioxide (CO<sub>2</sub>), but CH<sub>4</sub> is more efficient at trapping radiation than CO<sub>2</sub>. Pound for pound, the comparative impact of CH<sub>4</sub> is 25 times greater than CO<sub>2</sub> over a 100-year period. Globally, 50-65 percent of total CH<sub>4</sub> emissions come from human activities.”*

Yet, the Draft EIS has determined methane emissions are negligible, based on information from CHRLF, in comparison to the total emissions of the U.S. and World, and therefore has not included the fugitive methane in any of the GHG totals. If every individual project did similar comparisons, none would show major contributions of GHGs to the World's totals, even though the project *does* contribute. However, each project's contribution of GHGs *collectively* adds up and must be addressed.

The assumption of *non-significance* is based on models used by CHRLF to estimate the amount of landfill gas produced and their collection efficiency based on the cover system they use. The models CHRLF uses understate the levels of gas production and, therefore, the levels of fugitive methane. King County cannot validate the modeled emissions claims, because it has not done any facility-wide measurements. Research exists, such as that using aerial monitoring, showing actual fugitive emissions from California landfills exceed those modeled by the EPA.

**The Final EIS must *include* fugitive methane emissions and take into account that the models used so far for the CHRLF *understate* GHG emissions.**

The Draft EIS makes several assumptions regarding the alternatives or activities as being “*similar*” in GHG emissions, but provides no data or supporting rationale. The data tables provided do not contain all the components necessary to evaluate the GHG impact. Data for the Waste-to-Energy (WTE) and Waste Export are misleading, as they do not include the potential credits reducing the GHG emissions. One final summary, that details all components of each alternative—such as post-closure options, transportation, construction, landfilling activities, and relocations—is needed to show comparisons.

It is not clear how Action Alternative 3 would have the same impacts as any of the other alternatives. It has the most waste, largest footprint/surface area, and longest operational time without final sealed covers. Once again, using the misleading premise that GHG emission from all alternatives is *insignificant* compared to total U.S. and World output is unsupportable and certainly not a reason to ignore differences in the alternatives.

**The Final EIS must fully populate the tables, include more realistic fugitive GHG emissions, and stop comparing estimates to *total* U.S. and World GHG output, as *all* inputs matter collectively.**

## **HUMAN HEALTH**

The Draft EIS assumes there are no adverse impacts to human health from landfill activities at the present time, or even in the past. No data is shown to support such an assumption. No comprehensive studies are cited to assess the frequency of health issues—cancer, asthma, chronic disease, respiratory diseases, etc.—in the communities around the landfill as compared to other rural communities. It cannot be claimed there are little adverse impacts to human health.

The landfill literally is a cesspool of toxic air and water pollutants that have, at any time, the possibility of causing adverse symptoms in humans, as well as animals. Complaints have been submitted to PSCAA over the years document some of the symptoms that have arisen from the odors – burning nose and throats, asthma attacks, respiratory distress. The toxins will continue to be present for *all* alternatives. Unless the

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

pathways are *eliminated*, there always will be the possibility, and even continuation, of adverse impacts to human health. The impacts from the operation of the CHRLF over the years have not been fully mitigated.

The Draft EIS does not address each of the health issues, rather it simply refers readers to the respective *environmental elements* elsewhere in the document. Just to be clear, in those respective *environmental elements* there is mention of potential health issues, but not consistent levels of detail provided. Further, as with *environmental elements* elsewhere in the Draft EIS, the underlying assumption is that the CHRLF performs *all* functions and controls with no accidents or incidents, which is clearly not true based on historical data and experience.

**The Final EIS cannot simply assume, falsely, that current CHRLF operations produce little health impacts and then project the alternatives will do so as well. Further, the *HUMAN HEALTH* section in the Final EIS must discuss *all* sources and the deleterious health impacts therefrom.**

### **NOISE AND VIBRATION**

Noise and vibration from the CHRLF have been a past and current issue in surrounding communities. Noise studies need to include measuring decibel levels for moving vehicle alarms or changes in engine loading or hydraulics loading. The equipment used to manage the landfill operations do not idle 100% of the time, when the machine is put into reverse, it engages the “*backup beeper*” which has been known to emit 120 dBA. When the machine is required to perform an action, it takes more power to complete the action, when the power level is increased, so does the noise that is emitted – that increased level of noise needs to be measured and, if necessary, mitigated. **The Final EIS should address such increased levels of noise.**

Unfortunately, the Draft EIS presents a simplistic table of vibration source levels for construction equipment without providing any discussion. **The Final EIS must assess all known and expected vibration sources and how they reach and affect the Public and wildlife.**

Due to the unique location of CHRLF within the Cedar River Canyon, much of the noise created can be compounded by the sound waves reflecting back from the canyon wall itself. Echoes bounce around in a canyon. Further, for the Action Alternatives, there is no way that an accurate noise study can be performed for any that involve rebuilding the site facilities and/or harvesting the trees from the property, since sound waves bounce off of physical items removal of items that absorb the sound waves is only going to increase the nuisance complaints about noise. **The Final EIS should account for these phenomena and the resulting environmental impacts.**

**The Final EIS *also* should evaluate and discuss: (1) The Bio-Energy Washington (BEW) facility, which has demonstrated exceedances and the HVAC (the cell tower that has fans that cause vibrations) in its noise studies, not just use studies from nearly a decade ago in 2012; (2) Harmonic vibrations as the cause from flare-stack rumbles, as identified in the 1999 lawsuit, as well as gas exceedances at the property line; and (3) New harmonic studies including, but not limited to, general operations and existing or potential equipment used at the landfill considering the various heights at which works is performed.**

### **LAND AND SHORELINE USE**

Section 11.0 *Land and Shoreline Use* discusses various *King County Comprehensive Plan (KCCP)* policies. Unfortunately, nearly all the policies cited are not met even for the *original* siting of the CHRLF. Further, the continuous operation of the CHRLF violates multiple KCCP policies and, thus, is not “*consistent*” with those policies.

KCCP Policies **R-101** and **R-201**, referred to in **Chapter 3 RURAL AREAS AND NATURAL RESOURCE LANDS, Section III — Rural Densities and Development**, under Policy **R-324**, do not support “*extending the useful life of the CHRLF,*” nor does Policy **R-324** itself.

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

KCCP Policies **R-401**, **R-402**, and **R-403**, in **Chapter 3 RURAL AREAS AND NATURAL RESOURCE LANDS, Section IV — Rural Public Facilities and Services**, have nothing to do with “*extending the useful life of the CHRLF*.”

KCCP **Chapter 9 — SERVICES, FACILITIES AND UTILITIES, Section II. Facilities and Services** in subsection **G. Essential Public Facilities** policies **F-228 through F-230** and in subsection **J. Solid Waste** policies **F-265 through F-271b** do not support “*extending the useful life of the CHRLF*.”

Finally, there is nothing that supports or applies to “*extending the useful life of the CHRLF*” in the text itself of any of the KCCP chapters cited above.

**The Final EIS needs to address such incorrect assumptions, inconsistencies with existing policies, and specific land-use incompatibilities.**

### **TRANSPORTATION**

Section **13.0 Transportation** is highly deficient, because it omits any discussion of impacts on several roads that are affected directly and indirectly by the traffic generated by all alternatives for the CHRLF site, in three principal ways:

1. Trucks and other site traffic heavily use the entire seven mile corridor along SR-169 from SE Cedar Grove Rd to I-405, but only the intersections at those ends are evaluated, with no consideration of the seven miles in between which receive exactly the same amount of traffic impacts. This highway corridor must be systematically re-evaluated in its entirety.
2. There is silence about future expansion of a known existing phenomenon whereby congestion along SR-169 induces some traffic to find alternative routes to avoid that congestion. As the region around SR-169 grows this phenomenon will only increase, and any expansion of the CHRLF site will further exacerbate that impact.
3. The mitigation plan given for construction traffic impacts directly corroborates the first two issues by stating that consideration would be given to “*not routing all [construction truck traffic] via SR 169 to reduce impacts at the intersection of SR 169/SE Cedar Grove Road.*” The alternate routes should be explicitly identified and those impacts also mitigated.

**The Final EIS must address all these issues.**

### **Final EIS**

**Our detailed Comments herein expose the Draft EIS to be significantly deficient; containing misstatements, misrepresentations and pertinent oversights. In order to build an authentic foundation upon which such enormous decisions regarding the future of the CHRLF are to be made, *herculean* steps need to be taken to move this EIS from “Draft” to “Final.”**

**We invite, and strongly encourage, the opportunity for continued broad and active involvement from interested and impacted parties, such as GMVUAC and area residents, in the coming months to fully vet all Public comments for accuracy, completeness, and quality as you begin to plan and prepare the Final EIS for release sometime in the near future.**

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **II. INTRODUCTION**

***...CHRLF Planning History...Comprehensive Solid Waste Management Plan...Draft EIS Review...King County Equity and Social Justice Strategic Plan...Long-Term Concerns... Public Engagement and Process***

### **CHRLF Planning History**

Below we cite the prior planning efforts, of which we are aware, that have led KC SWD to the *2020 Draft Environmental Impact Statement (EIS) for the Cedar Hills Regional Landfill, 2020 Site Development Plan and Facilities Relocation* for which the Comments herein are presented:

*2001 Comprehensive Solid Waste Management Plan*

*2006 Solid Waste Transfer and Waste Management Plan*

*2010 Cedar Hills Regional Landfill Site Development Plan – Project Program Plan*

*2017 Site Development Alternatives for Cedar Hills Regional Landfill*

*2019 Final EIS, Comprehensive Solid Waste Management Plan  
2019 Comprehensive Solid Waste Management Plan*

*2020 Cedar Hills Regional Landfill Site Development Plan*

In a November 2, 2001, letter from King County attorney, Norm Maleng, to the citizen class-action lawsuit attorney, Brad Jones, it was stated:

*“Consistent with the comprehensive planning process, the County expects that the Cedar Hills Regional Landfill will reach its capacity and be closed some time in 2012.”*

*“The Cedar Hills Regional Landfill will continue to generate landfill gas for approximately thirty years after its closure. Options in addressing gas generation include either flaring the gas as the county does currently or putting the gas to beneficial use through a Landfill Gas-to-Energy Facility. The County strongly believes that a Landfill Gas-to-Energy project at the Landfill would be beneficial to your clients and the community at large by significantly reducing the flaring of landfill gas over the long term while generating energy for the County. The County has expressed a willingness to address your clients’ concerns in connection with their cooperation with a Landfill Gas-to-Energy project - even though such a project would already benefit your clients.”*

Clearly, actual closure of the CHRLF has been, and continues to be a perpetual moving target.

### **Comprehensive Solid Waste Management Plan**

As listed above, in 2019 the KC SWD finalized its *Comprehensive Solid Waste Management Plan*. It relied on models to estimate how much garbage and other materials will come through the regional system in the future. It was based on a steady tonnage growth, which meant facilities would have to be large enough to accommodate the tonnage. It estimated available capacity at CHRLF until 2028. To ensure disposal services could continue to be provided to meet Interlocal Agreements (ILAs) with member cities, three alternatives were identified: build more capacity at CHRLF; export waste via rail to out-of-county landfills; or construct a waste-to-energy (WTE) facility somewhere in King County.

The plan recommended further development of CHRLF, because it was considered to be the lowest cost option evaluated, as well as having the least environmental impacts as measured by Greenhouse Gas (GHG) emissions. There are higher GHG emissions associated with *export* due to transportation emissions, and when you burn garbage in a Waste-to-Energy (WTE) facility you *also* create emissions. With the onsite Bio-Energy Washington

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

(BEW) facility, the landfill is able to offset some fossil fuel consumption with the renewable natural gas created from purifying landfill gas.

The intent of the *Draft EIS of the CHRLF Site Development Plan* is to evaluate the environmental impacts of the alternatives under consideration. Once the Final EIS is complete, decisions will have to be made between the No-Action Alternative (CHRLF closure in 2028) and three Action Alternatives with CHRLF closure out to 2046. The Final EIS will enumerate the environmental impacts and potential mitigation measures needed of each. However, it is not clear what the County's decision matrix looks like. The County believes it *already* has determined the most economical alternative per the *2019 Comprehensive Solid Waste Management Plan*. Since the *Final EIS of the CHRLF Site Development Plan* will not look at economics, it is not clear how downstream decisions will be made.

**The Final EIS most likely will indicate a series of mitigation measures that need to be taken, which would then have to be costed out and combined with the previous cost estimates of alternatives to determine the most economical pathway to the future.**

### **Draft EIS Review**

We have thoroughly reviewed the Draft EIS. It looks at four end dates for closing the CHRLF: No Action Alternative (i.e., do nothing and run out of room by ~2028) and three Action Alternatives that extend life to 2037, 2038, or 2046 (our emphases):

*“King County has not yet selected the long-term disposal option that will be used once the CHRLF reaches its capacity under the alternative selected as the result of this EIS process, although the 2019 Comprehensive Solid Waste Management Plan indicates it could be either waste export by rail to a regional landfill or a waste-to-energy (mass burn) facility located somewhere in King County.” (p. 1-22)*

The Draft EIS assesses, as stated in **Section 1.7**:

*“This Draft EIS discusses direct, indirect, and cumulative impacts associated with the three action alternatives compared to the No Action Alternative.” (p. 1-21)*

So, the Draft EIS identifies and assesses these three levels of impacts for each of the three Alternatives compared to keeping things as they are. In doing such an assessment it looks at 12 environmental elements (**Chapters 3.0 to 14.0**) in terms of impacts (our emphases):

*“...to the point at which each alternative reaches capacity. However, in order to compare equally the potential impacts from the action alternatives and the No Action Alternative over the same period into the future, this EIS considers potential impacts in the intervening years between the estimated year of capacity for the No Action Alternative and Action Alternatives 1 and 2, and 2046, which is the estimated capacity year for Action Alternative 3. This necessarily involves documenting potential indirect impacts associated with the alternative long-term disposal options under policy consideration.” (p. 1-22)*

The Draft EIS is looking at *post-closure* alternatives and associated impacts therefrom for the 18 years between 2028 and 2046 for the *No Action Alternative* and lesser intervals for the three *Action Alternatives*. So, although KC must determine and implement long-term solutions for all alternatives, the *No Action Alternative* forces KC to do that sooner and, thus, has more near-term impacts. That said, the Draft EIS also looks at the impacts associated with the three *Action Alternatives* that extend the life of the landfill up to 18 years beyond 2028.

**Our review of the Draft EIS focussed on identifying and quantifying those key issues that will need to be addressed in the Final EIS. We reviewed past CHRLF plans, experience with the operation and expansion of the CHRLF, Public health and quality of life concerns expressed by citizens throughout the years, scientific studies, and technical papers. Our objective was to ensure KC SWD can develop a robust Final EIS that identifies and addresses *all* environmental impacts and associated mitigation measures.**



# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **King County Equity and Social Justice Strategic Plan**

The recently released six-year *King County Equity and Social Justice Strategic Plan, 2016-2022*, <https://aqua.kingcounty.gov/dnrp/library/dnrp-directors-office/equity-social-justice/201609-ESJ-SP-FULL.pdf> sets to shift the County away from “*policies and practices that react to problems and crises toward investments that address the root causes of inequities, ultimately leading to better quality of life and greater prosperity in all of our communities.*” We expect the County to apply the basic tenets of the *Equity and Social Justice Strategic Plan* to how it looks at the CHRLF today and into the future and ensure all the associated departments, such as SWD, etc., follow-through.

The CHRLF and any possible expansions and extension of operational life are undue burdens on just one part of the King County population. In fact, that burden is further compounded by the adjacent Queen City Farms Superfund Site, Cedar Grove Compost, Stoneway, Pacific Topsoils, and at least two gravel operations: Quality Aggregate and Elk Heights—all in the same vicinity in an Unincorporated Rural Area, not an industrial Urban Area of King County.

The *Equity and Social Justice Strategic Plan* identifies six Goal Areas, one of which is: Facility & Systems Improvements with three Goals, one of which is Goal 3: Activities and responsibilities for pro-equity progress are clear and defined at the Dept., Division, and Section levels, has an objective of:

*“By 2018, the project charter and/or project design program conveys a project scope, schedule and budget that includes project goals for equity and social justice, addressing governance, contracting, siting, development, design characteristics, construction practices, operations, and maintenance.”*

It contains four “*minimum standards*” (our emphases):

- *All infrastructure and facility master plans describe the intended equity and social justice outcomes for the system (a.k.a. the pro-equity version of the system).*
- *All CIP program and portfolio budgets have evaluated and include a description of how equity and social justice considerations are advanced through project decisions—and provide guidance and/or direction on equity considerations and objectives on a project-by-project basis.*
- *Communication and engagement efforts of all capital development programs and projects are culturally appropriate.*
- *Funding sources (levies, bonds, etc.), siting, design, and construction of capital projects are responsive to the equity interests and priorities of historically disadvantaged communities.*

Please note the community within many miles of the CHRLF, because of the “*sacrifice zone*” that has been created by the siting of all the industries mentioned earlier, is a “*historically disadvantaged communit(y).*” and, as such, each of the “*minimum standards*” listed above need to be applied to any decisions regarding the expansion and/or extending the life of the CHRLF.

## **Long-Term Concerns**

The Draft EIS does not address the impacts associated with the fact that the areas to be top lifted will stay “*open*” (i.e., no final covers put in place) until the end. This means areas 5, 6, 7, 8, and 9, potentially, could remain “*open*” until 2046, to allow settling and to maximize air space. This will have direct impacts in terms of emissions and leachate, as well associated indirect impacts.

**The Final EIS must recognize the past, current, and future concerns the Public has documented regarding the operation of the CHRLF, as such concerns will have long-term environmental/societal impacts.**

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

### **Public Engagement and Process**

There have been extensive past and ongoing communications between members of the Public and KC departments, agencies, and personnel including, but not limited to: monitoring, odors, health impacts, noise, safety, right to enjoy life and property, mitigation measures, etc. We cite e-mails in our Comments herein as evidence from authoritative leadership in KC departments and agencies that give us pause as the Public seeks accountability and appropriate mitigation of ongoing impacts. In light of these communications, we again call on the County to apply the basic principles of the *Equity and Social Justice Strategic Plan* discussed earlier.

The GMVUAC has fielded many questions from members of the Public regarding past public comment and public meeting opportunities on the CHRLF. It appears people in affected zip codes (such as 98038) were not notified and, thus, made aware, of the opportunity for public comment via mail. In looking at the mail distribution map, which was last updated in 2011, it is clear it includes some very arbitrary straight lines and, thus, ignores a great many people who are directly or indirectly impacted by the CHRLF operations and expansions. We call on KC SWD to establish a process for determining proper distribution due to growth in the greater Maple Valley area.

Taking a *regional* look, the EIS process is relevant to the residents of all 37 *Interlocal Agreement (ILA)* cities served by the CHRLF, extending far beyond the greater Maple Valley area, as they comprise the entire regional population being served. This is why we have included those cities in distribution of our Comments herein

We look forward to improvements in KC SWD's public process so that it truly vets *all* the issues for *all* the people being served.

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **III. MITIGATION AND ADVERSE IMPACTS**

### ***...Mitigation...Adverse Impacts***

#### **Mitigation**

The Draft EIS in many of the *Environmental Element* Chapters 3.0 to 14.0 states the following:

*“To avoid potential health impacts from landfill operations, KCSWD has been implementing best management and engineering practices in designing, operating, and maintaining environmental control systems, including disease vector control and the landfill gas, leachate, stormwater, and surface water systems. This EIS discusses these and other potential mitigation measures to limit impacts and avoid potential health impacts.”*

While the Draft EIS does discuss some mitigation measures, it falls far short of what constitutes meaningful mitigation to impacts cited. In addition, there are impacts the Draft EIS does not identify, for which mitigation measures need to be enumerated. We detail these in section **IV. ENVIRONMENTAL ELEMENTS** herein for each element. **The Final EIS needs to rectify these omissions.**

#### **Adverse Impacts**

The Draft EIS provides no real discussion of *significant unavoidable adverse impacts* and, thus, provides no potential needed mitigation. Each of the *Environmental Element* Chapters 3.0 to 14.0 contains under its concluding subsection, **Significant Unavoidable Adverse Impacts**, either of the following simple statements:

*“None of the alternatives would result in significant unavoidable adverse impacts to human health.”*

OR

*“With implementation of mitigation measures described above, xxxxxxxx. However, no significant unavoidable adverse yyyyyy impacts should occur.”*

Unfortunately, the Draft EIS assesses *past and current* conditions at and operation of the CHRLF as meeting *all* requirements and, thus, by extension, *all* alternatives would present little impacts. As we have detailed herein in section **IV. ENVIRONMENTAL ELEMENTS**, there are many concerns with *past and current* operations at the CHRLF that have not been properly recognized, nor adequately addressed, which will remain, to varying degrees, for each alternative.

**The Final EIS should recognize such *past and current* concerns and address each in terms of impacts they will impose on the Public and the environment. We expect the Final EIS to identify and discuss each concern, provide supporting rationale, list and describe potential impacts, associated potential mitigation measures, significant unavoidable adverse impacts, and provide detailed contrasts among the No-Action Alternative and the three Action Alternatives.**



# ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

## **IV. ENVIRONMENTAL ELEMENTS**

***...Air and Odor...Surface Water...Ground Water...Plants and Animals...Greenhouse Gas Emissions...  
Human Health...Noise and Vibration...Land and Shoreline Use...Transportation***

Although we reviewed the entire Draft EIS, we provide herein Comments only on the following 9 of 12 *Environmental Element* sections:

4. Air and Odor
5. Surface Water
6. Ground Water
7. Plants and Animals
8. Greenhouse Gas Emissions
9. Human Health
10. Noise and Vibration
11. Land and Shoreline Use
13. Transportation

**In all subsections herein we emphasize concerns with assumptions used, depth/breadth of subjects assessed, and/or technical omissions with the objective to aid KC in its preparation of a strong Final EIS.**

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **Air and Odor**

### **4.0 AIR AND ODOR (pp. 4-1 through 4-13)**

The Draft EIS states that:

*“This environmental review determined that no significant unavoidable adverse impacts to air quality, including odor, would be anticipated at CHRLF or the Renton site during construction or operation of any of the alternatives, including the facility relocation options.” (p. 4-1)*

Unfortunately, such a statement is completely predicated upon the assumption that everything being done today at the CHRLF has worked to keep the air clean and odors under control, but that simply is not the case. **We call on the Final EIS to look at all past incidents of releases of air pollutants and odor emissions that have adversely impacted residents, and mechanisms and pathways that caused these pollutants to be both generally and locally transmitted. This should include: (1) How substances may be locally accumulated to disturbing and/or health-impacting levels; (2) Meteorological effects and the flowing and trapping of air currents into sinks and vortices; and (3) Transmission of gasses and fluids, which can be noxious and/or odorous, through the ground’s fractured and permeable layers into surrounding homes, neighborhoods, and the environment, as each Action Alternative entails increased elevation gain and, thus, increased pressure.**

### **4.1 AFFECTED ENVIRONMENT (pp. 4-1 through 4-6)**

#### **4.1.1 Cedar Hills**

The Draft EIS states that:

*“The landfill flares ... are an insignificant source of air emissions as the combustion of landfill gas in stack-tested flares destroys more than 99 percent of NMOC, including TAP).” [Note: There is an incorrect addition of end parens in this Draft EIS statement] (p. 4-1)*

This statement that landfill flares are stack-tested is misleading. It is not possible to verify air quality on flares that are unable to be stack tested. One example is the NW candlestick migration flare that operates 24/7 and does not destroy by combustion. There is no quality control for public and environmental health on this flare. Per Public Records Request: *Landfill Neighbor Follow Up e-mail, 2/21/20 Scott Barden to Laura Belt, Engineer, Glynda Steiner, etc., KC SWD:*

*“We also discussed the NFS candlestick flare (migration flare). I told Mrs. Brighton that I was incorrect in my information to her. I told her that the migration flare was stack tested each year. I was wrong. Due to how the candlestick flares flame is at the top, it cannot be tested like the NFS’s ground flares.”*

Compliance testing for combustion, per the PSCAA Permit #10138, is to be done annually on Flares 1, 2, 3 & 4. *The First Quarter 2013 Flare Source Testing at Cedar Hills Regional Landfill* report, submitted by AMEC Environmental & Infrastructure, Inc. (AMEC): *“provides the results of the first quarter 2013 source testing of the four operational landfill gas flares at the North Flare Station of Cedar Hills Regional landfill.”* The tests were performed on Flares 1, 2, 4, and 5. Flare 3 was apparently not operational at the time. It is unclear if or when Flare 3 was tested for this compliance test.

Results of destruction efficiencies for each flare, listed in *Tables 4-5, 4-10, 4-15, and 4-20* for Flares 1, 2, 4, and 5, respectively, show there were two chemicals that had a destruction rate of between 80 & 90%. These chemicals – 1,1-Dichloroethane and 4-Methyl-2-pentanone are considered “irritants” according to the National Institute of Health PubChem website, <https://pubchem.ncbi.nlm.nih.gov/>:

## GMVUAC Comments—Draft EIS: CHRLF Site Development Plan

1,1-Dichloroethane: “ether-like odor,” “Causes serious eye irritation,” “May cause respiratory irritation,” “EPA – Human carcinogenicity Data: None. Animal Carcinogenicity Data: Limited;” Health effects: OSHA: “HE3 - Chronic (Cumulative) Toxicity---Long-term organ toxicity other than nervous, respiratory, hematologic or reproductive; HE16 - Irritation-Eyes, Nose, Throat, Skin---Mild; HE8 - Nervous System Disturbances---Narcosis”

4-Methyl-2-pentanone (Methyl isobutyl ketone): “pleasant odor,” EPA Air Toxics: “Acute (short-term) exposure to methyl isobutyl ketone may irritate the eyes and mucous membranes, and cause weakness, headache, nausea, lightheadedness, vomiting, dizziness, incoordination, narcosis in humans.” Hazardous Substances Data Bank (HSDB): “Confirmed animal carcinogen with unknown relevance to humans.” GHS Hazard Statements: “H319: Causes serious eye irritation; H335: May cause respiratory irritation;” Health effects: OSHA: “HE7 - Nervous System Disturbances---Nervous system effects other than narcosis; HE8 - Nervous System Disturbances---Narcosis; HE16 - Irritation-Eyes, Nose, Throat, Skin---Mild”

Looking at these two chemicals highlights that not all compounds are destroyed, they do have an odor, and there are health hazards associated with them. The statement that “*stack-test flares destroys more than 99 percent of NMOC, including TAP*” is not accurate. In fact, as the 2013 first quarter report made clear, not all the flares were compliance tested at that time.

*“periodic monitoring of the surface of the landfill to determine if the requirement is being met that methane concentrations at the landfill surface not equal or exceed 500 parts per million (ppm).” (p. 4-2)*

Not all surface areas are monitored for methane concentrations. On p. 206 of the 40 CFR 60 Federal Regulation regarding quarterly methane **Surface Emission Monitoring** for landfills, it says: “*Areas with steep slopes or other dangerous areas may be excluded from the surface testing.*” The active area and areas they may be working on with machinery are areas that may be considered dangerous and therefore not monitored.

*“Odor at solid waste facilities is regulated by PSCAA Regulation I and the Code of the King County Board of Health Title 10. These regulations prohibit odor that interferes with health and enjoyment of life or property beyond the facility boundary. The regulation of odor by these agencies is a qualitative evaluation and involves investigation of odor complaints.” (p. 4-2, our emphases)*

Qualitative evaluation and investigation are loosely undefined terms. It is assumed PSCAA and the King County Board of Health do the evaluation and investigation of odor complaints at CHRLF. This is inaccurate. PSCAA contacts KC SWD to verify complaints it receives instead of actually doing their own evaluations and investigations. PSCAA does not validate odor, safety, or regulations on the complaints. KC SWD does this for PSCAA using its own self-governed monitoring program. Unfortunately, the self monitoring of odor and air checks are inaccurate, untested, and results in KC SWD providing input to PSCAA and the Public Health—Seattle-King County on complaints, instead of on-site follow-up inspections from the regulatory agencies. Such self-produced assessments are used in KC SWD studies and reports to governing departments. As one example, an Odor Boss machine (<https://bosstek.com/products/odorboss-odor-control-solutions/>) is used with masking agents to cover up leachate odor effluents, combining additional unknown toxins to the mix which is illegal. PSCAA doesn't investigate its use during an onsite permit inspection.

Per an e-mail on Tuesday, Jan 7, 2020 at 7:07 AM Dhillon Darshan wrote in response to a resident:

*“Odor Boss is an industry standard is used to mitigate odors at a variety of facilities nationwide. Since CHRLF is RCRA Subtitle D landfill, It has to go through a rigorous internal approval process by KCSWD Health and Safety Office and the Industrial Waste inspectors before using or storing any chemicals at CHRLF. The Odor Boss-5000 (OB-5000) is a plant derived oils as well as plant extracted surfactants and contains no ingredients designated as hazardous or toxic (please see the attached MSDS as well as the supplier information). The OB-5000 natural oil particles latch onto the dust or any malodorous compound in the ambient air and land them to the ground through gravity where the ubiquitous microbes in the soil would then consume the chemical compounds as food or substrate.” “Yes, KCSWD has to report landfill gas concentrations above certain concentration to Public Health. You can find the specific requirements in WAC 173-351-200(4) Explosive gases control.”*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

PSCAA inspectors do not respond to submitted air and odor complaints, which, thus, are left unanswered to the Public. WA Department of Ecology (DOE) and Public Health are tagged on toxic pollutant complaints. Public Health contacts KC SWD regarding the complaint to refresh memory and provide operation status. There are no evaluations or inspections from these departments without guidance from the KC SWD. In fact, no governing department or agency in WA State appears to be in charge and, thus, enforce public health and safety regulations regarding the King County owned and self-operated CHRLF.

### **4.1.1.1 Criteria Pollutants**

*“Criteria pollutants that are relevant to the CHRLF include the following:...” (p. 4-2)*

The Draft EIS lists six criteria pollutants that are regulated by PSCAA. Yet, the document only mentions 5 that are *“relevant to the CHRLF,”* omitting ground-level ozone. According to the EPA in a report *Frequently Asked Questions About Landfill Gas and How it Affects Public Health, Safety and the Environment*, June 2008, *“Nonmethane organic compounds consist of certain HAP and VOC, which can react with sunlight to form ground-level ozone (smog) if uncontrolled.”* It goes on to state: *“Ozone is capable of reducing or damaging vegetation growth as well as causing respiratory problems in humans.”* Given the uncertainty in the accuracy of the models for landfill gas generation, the presence of ozone may be higher than believed.

The Draft EIS discusses fugitive emissions and ozone formation (our **emphases**):

*“Hydrocarbons in fugitive emissions of landfill gas could contribute to ozone formation, but ground-level ozone is a **regional** issue and hydrocarbon emission at the landfill would contribute minimally to **regional** ozone levels.” (p. 4-3)*

Since ground-level ozone can cause respiratory problems in humans, it should be considered at the local level as to how it might affect the health and air of residents *locally*, not regionally.

*“The CHRLF is located within an area designated by the EPA and PSCAA as an attainment zone for all criteria pollutants. This designation is given to areas within which the ambient standards for criteria pollutants have been met, using a continuous ambient air monitoring program year-round, operated independently by the state or by local agencies.” (p.4-3)*

The Final EIS must define what the *“attainment zone”* encompasses, exactly where the *“continuous”* monitoring is being done, if CHRLF, itself, is included in the monitoring, and exactly what agency is doing the monitoring.

The U.S. EPA provides its definition of Ambient Air in: *“New Source Review (NSR) Permitting, “Ambient Air” Guidance”* <https://www.epa.gov/nsr/ambient-air-guidance>:

*“The regulatory definition of ambient air, in 40 CFR §50.1(e), remains unchanged as “that portion of the atmosphere, external to buildings, to which the general public has access.”*

One would assume the ambient air *around* the landfill would be tested. However, according to a CDC document *“Landfill Gas Primer - An Overview for Environmental Health Professionals: Chapter 4 Continued: Ambient Air Monitoring Agency for Toxic Substances & Disease Registry”* <https://www.atsdr.cdc.gov/HAC/landfill/html/ch4a.html>:

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*“Why is ambient air monitored at or near landfills? The main reason ambient air monitoring is performed at or near landfills is to evaluate worker and community exposure concerns regarding releases of toxic chemicals to the air. However, because federal regulations currently do not require ambient air monitoring to be performed in the vicinity of municipal solid waste landfills, no ambient air monitoring data are available for many landfills. This is especially true for smaller landfills and those that have not generated extensive community health concerns.”*

When there have been no studies concerning any health impacts of communities surrounding CHRLF, it is not clear how it can be known if there are *“extensive community health concerns.”* People generally do not advertise their health issues – cancer, allergies, asthma, respiratory issues, thyroid dysfunction, and chronic illness. So, it is not clear how the community would know if there were an unusually high rate of these symptoms as compared to other rural areas, as no research has been done. KC SWD should install monitors *outside* its borders to test the *“ambient”* air to secure the health and welfare of the Public.

### **Particulate Matter (PM2.5 and PM10)**

*“A study has been conducted of the expected maximum emissions of particulates as a result of landfill construction and operation under the various alternatives, and it includes the results of dispersion modeling used to estimate future concentrations of particulates at off-site locations (see Appendix D, Air Quality and Odor Technical Memos).” (p. 4-3)*

The modeling described in *Appendix D*, used elevation to address dispersion, but it does not appear vegetation was included. Raising the landfill height to 830 ft will put the landfill *above* the treeline in the buffer zone. The north buffer zone is on the hillside and is lower than the rest of the landfill. The landfill will loom over the May Valley area and dust and emissions will have a clear path to the communities in the area. The communities to the west also will be impacted because the buffer zone will be rendered useless when the landfill exceeds the tree height.

### **Other Criteria Pollutants**

*“Carbon monoxide from CHRLF-related traffic and equipment contributes minimally to regional CO levels.” (p. 4-3)*

Local levels also should be considered.

*“...with recommended mitigation at the SR 169/SE Renton Maple Valley Highway/Cedar Grove Road SE intersection, CHRLF traffic under any of the alternatives would cause no significant traffic impact, and CO is therefore not considered further in this section.” (p. 4-3)*

**The Final EIS should consider the impacts if the mitigation doesn’t occur or takes longer than expected.**

*“Similarly, the emissions of sulfur dioxide and nitrogen oxides would minimally contribute to regional levels of these compounds.” (p. 4-3)*

**The Final EIS should include impacts for *local* areas and its residents.**

Gas odor, combined with leachate and landfill odors, produce significantly high levels of toxins, emissions, and effluents (known and unknown) that are not monitored and tested for public health and safety. The regulations are violated and bypassed by KC SWD self-monitoring practices. Such lax regulatory enforcement provides no accountability and direct on site follow up by PSCAA, Public Health, DNR/SWD/FESS - Environmental/Permit Compliance, and Solid Waste Program Supervisor Health & Environmental Investigator at Public Health.

#### **4.1.1.2 Toxic Air Pollutants**

The Draft EIS states the following regarding Toxic Air Pollutant chemicals:

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*“Through WAC 173-460 (Controls for New Sources of Toxic Air Pollutants), the State of Washington regulates sources of 389 chemicals that are identified as TAP. PSCAA enforces WAC 173-460 through Regulation III.” (p. 4-4)*

Appendix D of the Draft EIS only reports on 58 chemicals from leachate and landfill gas and stack emissions tests by CHRLF only show results for 41 chemicals. One questions whether all 389 chemicals are tested for or only ones that are historically found in landfills? **The Final EIS should explain this discrepancy.**

*“A study of the expected emissions of TAP from the landfill under the various alternatives has been conducted, and it includes the results of dispersion modeling used to estimate future concentrations of TAP at off-site locations (see Appendix D, Air Quality and Odor Technical Memos).” (p. 4-4)*

Appendix D, states:

*“...there are two potential sources of toxic air pollutants:(TAP): landfill gas and leachate.”...In the “Emissions Estimation Methodology” , , the “analysis focused on the fugitive landfill gas and leachate compounds that are classified as TAP by Ecology in the Washington Administrative Code (WAC) 173-460-150”..The quantity and components of landfill gas are a function of the quantity, type and age of the waste disposed in the landfill, and the moisture and temperature of the waste in the landfill at a given time.” (Appendix D, p. 2 of 18)*

The Landfill Gas Emissions Model (LandGEM) method of estimating gas production uses models very similar to those used for the Mandatory Reporting Rule (MRR) report, as shown in comments in the **Greenhouse Gas Emissions** section of this document. The MRR modeling uses the HH1 formula and has been shown to be inaccurate for THIS landfill, calculating less gas is produced than is collected. CHRLF receives more rainfall than the model accounts. Because of this discrepancy and knowing the LandGEM model uses similar formulas and variables, Toraj Ghofrani, PE, CHRLF Engineer was asked to run a comparison of the gas generation models for both programs. In the email, dated 10/26/20, Toraj wrote:

*“Both LandGEM and eGGRT HH1 model use exponential decay of organic content of refuse as an indirect measurement to estimate how much methane is expected to be generated based on refuse tonnage conservatively. LandGEM model is the earlier version of predictive models designed for estimating how much and how long will take for methane to be generated and depleted each year over time”*

*“LandGEM and HH1 can be run with similar parameters and inputs to note the difference between the methane generation results. I have done this exercise for you, using 1965 to 2019 refuse throughput and similar parameters (such as k), the LandGEM model resulted in 51,648 metric tons (MT) of methane generation while HH1 resulted in 50,489 (2% less than LandGEM model), please see throughputs below or attached for LandGEM and HH1.”*

Of note, the *k* variable used was 0.057 and the methane generation capacity used was 100 – same as the model used in Appendix D modeling. The amount of methane collected in 2019, per the summary MRR report referenced in the GHG chapter, was 51,084 Metric tons. With the LandGEM predicting 51,648 Metric tons, that would imply only 564 Metric tons was fugitive gas. This would result in a 99% capture efficiency rate. In reality, the LandGEM gas generation model understates the amount of gas generated, because a 99% capture rate is technologically impossible.

Given that the formula used in the LandGEM emissions estimates are substantially understated, this would also render estimates of the NMOC and Toxic Air Pollutant compounds understated, since they are directly related to landfill gas production, and, thereby, render the results inaccurate.

*“Landfill Gas Collection Efficiency – 92.4 percent (average of the five most recent (2014-2018) available facility annual GHG reports).” (Appendix D, p. 3 of 18)*

In addition to the understatement of the landfill gas produced, there is valid concern about the validity of the modeling done to calculate the level of capture efficiency, using the HH6 formula estimates [note: Further discussion on the potential flaws in this capture efficiency can be found in comments herein in the **Greenhouse**



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

**Gas Emissions** section]. Data presented in the *California Methane Survey* [again, see the **Greenhouse Gas Emissions** section] suggests the measured fugitive gas is greater than that modeled by the EPA, in the majority of cases. The use of the “92.4 percent” recovery rate in *Appendix D* may further underestimate the amount of fugitive gas emitted, if indeed the modeling is understating the collection efficiency, and, therefore, the amount of Toxic Air Pollutants emitted.

**The Final EIS must consider this understatement of emissions throughout its analysis.**

*“TAP Evaluation against De Minimis, SQER, and ASIL Thresholds” (Appendix D, pp. 4 thru 8 of 18)*

*“As discussed above, the increase in the TAP emissions associated with the implementation of Action Alternative 3 consists of the sum of the uncollected fugitive landfill gas emissions, the collected landfill gas that is not destroyed in a flare or engine, and the leachate emissions.” (p. 5 of 18)*

As discussed earlier, the value for fugitive landfill gas emissions are understated. **The Final EIS must re-evaluate, the levels of Toxic Air Pollutants against the De Minimis, SQER and ASIL thresholds.**

Table 3, *Appendix D, page 8 of 18*, shows several Toxic Air Pollutants that exceed the *De Minimis* and the *Small Quantity Emissions Rate (SQER)*. Subsequently, in *Table 5, p 13 of 18*, which compares those emissions that exceeded the thresholds to the ASIL, only three were found to exceed the ASIL. The model was further refined in *“Round 2 ASIL modeling Analysis Results”*:

*“The average TAP concentration (or detection limit, as applicable) from these analytical results was used in conjunction with the LandGEM calculated maximum annual landfill gas flow rate to recalculate the landfill gas emissions for each of these three TAP. These emission values were added to the leachate emissions for comparison to the TAP evaluation criteria of WAC 173-460-150. The results of the supplemental evaluation indicate that none of the three constituents will exceed their respective ASIL at any receptor at or beyond the property boundary, as shown in the Table 6.” (Appendix D, p 14 of 18)*

Here again, the use of the LandGEM *“calculated maximum annual landfill gas flow rate to recalculate the landfill emissions for each of these three TAP,”* could provide results that understate emissions, since the flow rate is directly related to the modeled annual production rate. The analysis may understate the levels of Toxic Air Pollutants and resulting impacts of those compounds. **The Final EIS should re-evaluate this.**

On *“ASIL Dispersion Modeling”*:

*“The meteorological data stations were chosen because they were the closest to the project location and best represented site characteristics.” (Appendix D, pp. 9 thru 11 of 18)*

Based on the list of locations chosen, it is questionable if those are the *“best represented site characteristics.”* The meteorological modeling for ground values uses areas that are not similar to conditions at and near CHRLF. Wind patterns may be drastically different at the Renton Airport than around the CHRLF, which is located north of the narrow Maple Valley and May Valley, with Squak and Tiger Mountains nearby. These major land features can and so create wind patterns that are nothing close to those present at the Renton Airport.

*“Moisture was determined separately for each year based on Seattle area 30 year climate data.” (Appendix D, pp. 9 thru 11 of 18) and “The climatological precipitation data set was from the Western Regional Climate Center for the Seattle Tacoma International Airport.” (Appendix D, p. 10 of 18)*

Neither of these locations – Seattle or Seattle-Tacoma International Airport – represents the moisture and rainfall patterns at and near the CHRLF, which is located in an area considered the *“foothills”* and can be raining in this area and sunny at Sea-Tac and in Seattle.

So, several questions need to be resolved:

1. Can the model take into account the temperature inversions that trap the emissions close to the ground?

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

2. Can the model take into account the atmospheric conditions in the fall that creates morning and evening “fog” or “heavy air” that traps the emissions?
3. Can the model take into account the low spots in neighborhoods where odors will collect?
4. Does the model consider barometric pressure?
5. Does the model take into account the screening effect of the buffer zone and the effect that will occur when the landfill is above the tree line?

**The Final EIS must factor in the understatement of these emissions or totally re-evaluate the emissions of Toxic Air Pollutants.**

Regarding Landfill gas the NW candlestick flare off-gasses “poor quality” unregulated gas 24/7 into communities and cannot be stack-tested. Health impacts and odors were identified on-site by the members of the Public during April 5, 2019, and June 28, 2019, landfill tours with CHRLF Assistant Operations Manager, Scott Barden, and CHRLF Engineer, Laura Belt (and Glynda Steiner on the June 28, 2019, tour). Candlestick flare off-gassing, leachate odors, and other health complaints exist in community and have been submitted to PSCAA. Such issues were encountered by the CHRLF employees and members of the Public during the two tours. KC SWD was aware of the identified problem during these two tours. No response formal response was ever provide, except that Mr. Barden and Ms. Belt investigated and tightened a leaky joint that was causing a problem, but that did not fix the problems, identified, which still remain to be addressed.

Toxic leachate effluent travels in the wind into homes and properties. Resident, Kim Brighton, verified timed aerators worsened health and safety impacts in and on her property. She made an impromptu visit to CHRLF leachate ponds with Mr. Barden on 2/2/20. Mr. Barden verified leachate odors on Kim Brighton’s property were just as strong and impactful as at the CHRLF leachate ponds themselves. Kim Brighton had requested KC SWD to cover the ponds years ago., yet related health impacts remain to be addressed. Further, KC SWD admitted (*Scott Barden, 2/21/20 e-mail to Laura Belt, Glynda Steiner, etc.*) there were an insufficient number of aerators in each leachate pond and that more were need.

**The Final EIS must recognize that Leachate pond effluent has a direct impact to health, air, odor. Significant adverse impacts include: Asthma, difficulty breathing, burning eyes, sinuses, throat, headache, weak/sick, difficulty to function. Much of this is the result of minimal toxic effluent monitoring and testing for public health and safety, as well as near non-existent protection to prevent toxic air contamination.**

### **4.1.1.3 Odor**

The Draft EIS states:

*“children have a more acute sense of smell than adults” (p. 4-4)*

**The Final EIS must include the adverse impacts on the children at nearby elementary schools.** Maple Hills Elementary school directly west of the landfill in the Issaquah School District is located less than ½ mile from the western border. Children cannot go out to recess on bad odor days, asthma and other breathing issues occur, and general learning atmosphere is diminished. Parents and teachers at Ridgewood Elementary school to the southwest have also mentioned issues with odors. As the Draft EIS has stated, *“children have a more acute sense of smell”* and, as such, are impacted to a greater extent.

*“In addition to this variability in the human olfactory system, the number of chemical compounds present and the complexity of chemical processes in the atmosphere can make it difficult to identify and quantify the compounds causing the odor. Due to this variability, defining a specific concentration at which any odorant is detectable or causes an adverse impact is extremely difficult. Therefore, unlike criteria pollutants, there are no ambient air quality standards for odorous compounds,” (p. 4-4)*

The Draft EIS admits it is difficult to define a concentration at which any odorant is detectable or causes an adverse impact, so it is not clear how any conclusions can be drawn regarding adverse impacts for the CHRLF, itself, as well as any of its expansion Action Alternatives. It also is not clear how and



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

conclusions can be drawn, as there are no ambient air quality standards for odorous compounds. We would expect that the complaint history, experience, and comments from those members of the Public who are impacted would carry more consideration as to whether there are adverse impacts to their lives.

*“Although not incorporated into regulatory standards, odor thresholds have been defined, with a level of distinct odor awareness (LOA) taken as the concentration at which it is predicted that half of the exposed population will experience a distinct odor intensity, and about 10 percent of the population will experience a strong odor intensity.” (p. 4-4)*

It is not clear if these percentages are determined through surveys or by researchers who will use their judgement as to the intensity. There needs to be consensus within the communities surrounding CHRLF, as well as studies conducted, to assess the odor intensity levels.

*“Three sources at the CHRLF have the potential to generate odors: 1) fugitive landfill gas emissions; 2) leachate lagoons; and 3) fresh garbage in the active face area.” (p. 4-4)*

CHRLF sources *do* generate odors, they are not just *“potential.”*

The flares are another source of odors. The large flares burn about 15% of the landfill gas captured during the year when BEW is offline for maintenance or other incident, as reflected in the MRR summary report submitted by Toraj Ghofrani. The candlestick flare operates 24/7 burning landfill gas that does not meet the quality standard set by BEW of 50% methane. On landfill tours, when passing the flare stations, there is a distinct odor from the flare, different than the other sources of odor.

**The Final EIS must include odors from the flares in their analysis.**

*“Washington state through WAC 173-400-040(5) regulates odor.”*

*“Any person who shall cause or allow the generation of any odor from any source or activity which may unreasonably interfere with any other property owner's use and enjoyment of his property must use recognized good practice and procedures to reduce these odors to a reasonable minimum.”*

*“PSCAA regulates odorous emissions through section 9.11 (Emission of Air Contaminant: Detriment to Person or Property) of Regulation I, which states in part:”*

*“(a) It shall be unlawful for any person to cause or allow the emission of any air contaminant in sufficient quantities and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property.*

*(b) With respect to odor, the Agency may take enforcement action under this section if the Control Officer or a duly authorized representative has documented all of the following:” (pp 4-4 thru 4-5)*

CHRLF continues to violate the regulations as odors continually interfere with the surrounding *“property owner's use and enjoyment”* and residents *“enjoyment of life and property.”* The definition of *“unreasonably”* may be open to interpretation by the regulators, but it is the property owners whose lives are being affected *not* the regulators. CHRLF has made advances in their odor containment, but in no way have they reduced *“these odors to a reasonable minimum.”*

*“After receiving complaints of odor, a PSCAA inspector may visit the area when the odor is present. At the inspector's discretion, a notice of violation can be issued to the owner or operator of the odor source.” (p.4-5)*

PSCAA has not been effective in enforcement of the odor regulations, due primarily to being underfunded and understaffed. Currently there is but one inspector for South King County, and it is a rare occurrence to have the inspector come out at all, let alone *during* an event to document the violation, obtain an affidavit, and confirm the source. In all practical respects, the regulations have little value in protecting the Public. Relying on the facility that is being regulated to respond to complaints is unacceptable. It does not validate the claim. Without an inspector's

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

validation, the PSCAA cannot take *“enforcement action.”* Without the validation from the PSCAA inspector, residents have no recourse against CHRLF. Since there is another source of odor, Cedar Grove Compost, an inspector’s validation is necessary, otherwise, CHRLF can just claim, and often has, *“it’s the Compost company.”*

### **Odor History in the Site Vicinity**

The Draft EIS states:

*“All the gas wells are monitored daily for any gas leakage.”* (p. 4-5)

This statement needs clarification. In an email exchange 10/20/2020 with Toraj Ghofrani, PE, CHRLF employee and Janet Dobrowolski, resident:

Janet Dobrowolski: *“In the Draft EIS, page 4-5, it states that “All the gas wells are monitored daily for any gas leakage.” Is that true? What wells and how many are they talking about?”*

Toraj: *“Please ask for clarification. We have 729 wells, with 10 landfill gas operator working on 2 shifts we read each well twice a month. We do read landfill gas composition in 4 main headers at North Flare Station each day, the readings will clue us if there is a leak in a main header and then start investigating the wells that are connected to that header. Maybe that is what they mean by checking wells each day. We also do odor check at the landfill each day, maybe that is what they mean. Also please note that since our landfill gas system is under vacuum, when there is a leak, it will be leaking air into our system which is a fire hazard for us. Landfill gas leaks does not mean landfill gas emitting from wells into the atmosphere. Please ask for clarification.”*

**Clearly, the Final EIS must clarify this claim of daily monitoring for gas leaks.**

*“Odor intensity is measured five times a day using the landfill industry-standards Nasal Ranger®. Odor measurements are made in the landfill buffer zone, around the active face, and around the leachate lagoons.”* (p. 4-5)

Employees at PSCAA have criticized the use of the Nasal Ranger, stating that an operator who works at the facility where they are testing for odors, can become *“nose blind”* resulting in the intensity of the odors to be understated. Consequently, PSCAA investigators do not use the Nasal Ranger.

*“KCSWD investigates any complaints to determine if there was noncompliance with an applicable requirement of the landfill’s Air Operating Permit and to correct any identified compliance problems as soon as possible.”* (pp 4-5 thru 4-6)

Unfortunately, records are not transparent to the citizen who has complained. CHRLF does not give them a written statement as to the findings of their investigation at the time of complaint, nor after it is filed. A Public Records Request must be filed to determine if the complaint has been properly logged.

*“PSCAA maintains records of odor complaints from across its jurisdiction but does not generally provide field investigations for complaints received. In 2019, PSCAA received 1,357 odor complaints for the Maple Valley area of which 881 (65 percent) cited Cedar Grove, 193 (14 percent) specified the landfill, and 283 were uncertain as to whether the source was the landfill or Cedar Grove (KCSWD 2020c).”* (p. 4-6)

The number of calls is not necessarily indicative of actual occurrences, nor is the number of calls for each facility necessarily accurate. Since PSCAA *“does not generally provide field investigations for complaints received,” the source cannot be confirmed.* Over the many, many years of being assaulted with odors from *both* CHRLF and Cedar Grove Compost, calls have been made with no response from PSCAA, no action by either of the facilities in question, and no end in sight for the cessation of the odors. Residents have developed *“complaint fatigue,”* in that, they become tired of it all and don’t bother to call in. While it continues to impact their lives year round, they no longer know who to deal with it when there is no one on their side fighting for social justice. People become weary and apathetic. That does *not* mean there are *no* odors. That does *not* mean there are *no* health impacts.

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

Times of day and year are more impactful than others. Further study on the complaints file to both PSCAA and to CHRLF may reveal a pattern. An analysis of the time of year and time of day of existing complaints should be done. Unfortunately, many odor events occur during the night in the summer and fall, and many don't bother to make the call on file a complaint on line. They just get up and close the windows to reduce the intrusion of the odors at night so they can sleep. These complaints should be incorporated into the dispersion models used to test the validity of the results generated by the model.

**The Final EIS should address complaints filed during the second half of 2019, as the odors, especially from the leachate ponds, were more common and more intense. In addition, the Final EIS should include an analysis of the time of day and year.**

The Draft EIS describes the *"Complaint Response Plan"*:

*"...KCSWD investigates any complaints to determine if there was noncompliance with an applicable requirement of the landfill's Air Operating Permit and to correct any identified compliance problems as soon as possible....A Complaint Response Plan (Odor, Fugitive Dust, and Nuisance) for the CHRLF is in effect and commits KCSWD to the following specific actions:..." (pp. 4-5 through 4-6)*

Unfortunately, over the years, this *"Complaint Response Plan"* has proven to be inadequate in instituting effective on-the-ground solutions to a continuous long line of odor events. Below we provide but one communications trail for an odor event to illustrate that current *"normal"* operations at the CHRLF create odor and air impacts that continue to not be resolved:

*November 2019*

- 11/8: **Cedar Hills Landfill Odor Masking Violation** e-mail, author: Kim Brighton. Questioning 2 PSCAA inspectors that performed 8-29-19 permit inspection at CHRLF without validating a violation for the use of odor masking agent spraying from Odor Boss at leachate pond.
- 11/13: **Cedar Hills Landfill Odor Masking Violation** e-mail, author: Rick Hess. Response to reference #2. You are correct the product cannot be a masking agent. We have no information at this time a masking agent is being used. This will continue to a point of inquiry during inspections and/or complaint response.

*April 2020*

- 4-4: **PRR-Brighton-Leachate-Odors-01-CRM-Data-04-04-2020.pdf.** Author SWD. Actual SWD CRM data customer call in complaint log from Kim Brighton asking nasal ranger inspector to drive back and meet her at the fence to confirm strong leachate odor. (The inspector drove by when Kim Brighton was filing the air/odor complaint.) Neighbor Leslie Morgan was on speaker phone with Kim as a witness and also to communicate leachate impacts to her and her daughter's health and properties. The inspector documented the odor as compost 1 (minimal) with the nasal ranger on his lap in truck. Kim and Leslie state that is incorrect. There were no compost odors as he wrote driving by our arena the first time and, in fact, strong leachate. He then confirmed he smelled strong leachate the first time when Kim pointed to the front of the horse arena. This proved inaccurate inspection being level 1 compost instead of strong leachate. **No response from SWD.**
- 4-4: **Follow-up on candlestick flare leachate odor 4420.mthl** e-mail. Author Kim Brighton. Documented summary of leachate odor activity and what happened speaking with SWD and Riley Sexton nasal ranger gas technician inspector confirming it was not compost as written and was strong leachate. **No further follow up from SWD.**
- 4-8: **King Co Solid Waste Op Sec Cedar Hills Reg #10138 - Complaint - Strong off-gassing.** Author Scott Barden (KC SWD Operations Supervisor & Interim Assistant Operations Manager). Scott

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

forwarding very detailed 4-4-20 complaint investigation request from PSCAA to their next in charge of operations.

- 4-20: **Kim Brighton Impromptu Visit Today** e-mail. Author Scott Barden. Scott's e-mail to management describing Kim Brighton visit to the landfill and request to confirm leachate pond wind odor immediately as it smelled the same in her home and inside her horse arena.

*May 2020*

- 5-8: **Leachate Pond Covers** e-mail. Author Scott Barden. Kim Brighton called Scott and requested status of covering the leachate ponds again. Went to Glynda Steiner, Laura Belt, and operation managers. Are we considering covering them? **No response from SWD.**
- 5-12: **Odor Complaints - King Co Solid Waste Op Sec Cedar Hills Reg # 10138** e-mail. Author Scott Barden. From PSCAA regarding refuse odors for Scott to investigate and get back on. Correspondence including strong westerly winds, refuse positioning at road height of area 8 has made it challenging. I will speak to our operations staff and ensure our daily cover is accurate and make sure we are doing everything possible to decrease odors if they should happen to come along.

*June 2020*

- 6-23: **Cedar Hills Landfill (Maple Valley) Reg #10138 - Leachate Odor Complaints**; author: Scott Barden. Scott's response to PSCAA e-mail sent the same day to confirm the leachate odor experienced on 6-20-20. Scott attached their odor logs and operation log with no leachate odor. Odor Boss is used.
- 6-26: **Action Needed for Chemical Trespass: What Happened at Cedar Hills Regional Landfill** e-mail. Author Yolanda Pon Department of Health. To DNRP/SWD/FESS - Environmental/Permit Compliance employees, cc Darshan Dhillon SWD Program Supervisor Health & Environmental Investigator at King County Public Health responding to Kim Brighton's statewide e-mail—including complaint, testimony, photos, and e-mails—asking for them to tell her about any operating issues with leachate ponds the past week, aerators, odor boss, etc.
- 6-26: **What Happened 6-20-20 at Cedar Hills Regional Landfill – URGENT** e-mail. Author Scott Barden. To Glynda Steiner Deputy Director, Operation Managers and DNRP/SWD/FESS - Environmental/Permit Compliance manager/employees. Correspondence included from Yolanda Pon of Department of Health, and Neil Fujii NDRP/SWD/FESS Environmental/Permit Compliance Manager asking for coordination and keeping them posted on the response. Includes SWD logs. Reply immediately. Status included intermittent leachate/gas odor on west haul road, A7 west slope. Engineering is working on a plan to address leachate weeps; CSW (contaminated storm water) pond level mitigating odor. SWD response: *"We did not receive a call on this odor complaint, so we did not have an opportunity to go investigate this complaint at the time it was noted as is our process."* Although the status included intermittent leachate/gas odor on west haul road and working on a plan to address leachate weeps, this odor was not included in the logs and, therefore, did not occur, according to all departments, agencies, authorities. **SWD's inaccurate inspections, lack of follow-up, and inability to address impacts provided no resolution.**
- 6-30: **Sodium Permanganate for Treating Leachate for Odors** e-mail. Author Mark Monteiro, King County SWD Operations Supervisor. Forwarding fyi e-mail to Scott Barden from Darshan Dhillon, Solid Waste Program Supervisor Health & Environmental Investigator at King County Public Health, to see below an article with regards to treating leachate link below for effectively managing landfill leachate odor control. Link contains information stating leachate is acutely toxic when inhaled. Leachate production is a significant concern for municipal solid waste (MSW) landfills and causes substantial odor emissions that have negative health and environmental effects.

*August 2020*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

- 8-12: **What Happened 6-20-20 at Cedar Hills Regional Landfill** e-mail. Author Glynda Steiner, SWD Deputy Director. Contains two of Glynda's follow-up correspondences with Kim Brighton, including first one on 6-26-20 cc includes King County Executive, Christie True, Pat McLaughlin, SWD position no leachate identified in their odor.

Clearly, this shows a pattern of how complaints are routed, excuses are given, and nothing changes as business as usual goes on. Further, members of the Public have attended numerous meetings with KC SWD, as well as the King County Council. Incredibly, at the latter, on 3-11-19, KC SWD provided false statements regarding PSCAA odor complaints, inaccuracy of nasal ranger inspections, landfill gas, etc. The Public is not being served.

**The Final EIS must not only recognize the myriad pertinent and real complaints filed by members of the Public which indicate there continues to be toxic air pollutants and odors released into the general region where the CHRLF resides that directly affect residents, but also assess the impacts therefrom, as well as provide potential mitigation measures.**

### **4.2 ENVIRONMENTAL IMPACTS** (pp. 4-6 through 4-11)

#### **4.2.1 Direct and Indirect Impacts**

##### **4.2.1.1 Landfill Development**

*"The various modeling efforts described below used the following assumptions/inputs:"* (p. 4-6)

*"Landfill gas collection efficiency of 90 percent"* (p. 4-7)

The *"90 percent"* conflicts with the *Appendix D* LandGEM assumption of 92.4%. The difference should be reconciled as to which one was really in use. In addition, the validity of this value is in question.

*"Flare or engine TAP destruction efficiency of 97.2 percent (the lowest typical efficiency for flares or engines from EPA's AP-42: Compilation of Air Emissions Factors), except as noted below:  
Toxic Air Pollutants:"* (p. 4-7)

Use of overall *"destruction efficiency"* is misleading. Examination of the 2013 stack-test compliance testing showed some compounds with less than an 90% destruction rate. In addition, according to the NIH PubChem site, Vinyl Chloride, states that when heated to decomposition, it may emit toxic fumes of carbon dioxide, carbon monoxide, hydrogen chloride and phosgene—classified as *"acute toxic."* Other compounds also could be created when heated to decomposition.

#### **Toxic Air Pollutants**

*"The evaluation of potential impacts due to the emission of TAP from the landfill involved a multi-step process, the details and results of which are described in Appendix D, Air Quality and Odor Technical Memos."* (p.4-8)

As commented on previously, such model results are inaccurate (p.4-8):

*"Step 1—The first step involved using historical compositional analyses of landfill gas and leachate to determine which TAP are contained in landfill gas and/or in leachate at CHRLF, and then calculating the amounts of each TAP emitted as fugitive gas and/or as emissions from leachate lagoons."*

*"Step 2—The second step in the evaluation involved comparing the amounts calculated in the first step against two thresholds contained in WAC 173-460-150. The first threshold is a de minimis value defined as a "trivial" level of emission that does "not pose a threat to human health or the environment". Those TAP that were calculated to exceed the de minimis value were then compared to a greater "small quantity emission rate" (SQER) defined as a level of emission "below which dispersion modeling is not required to*



## GMVUAC Comments—Draft EIS: CHRLF Site Development Plan

*demonstrate compliance with acceptable source impact levels.” ”*

*“Step 3—In the third step, dispersion modeling was conducted for those TAP whose calculated emission amounts exceeded their respective SQER, to calculate expected concentrations at 122 residential locations adjacent to the west, north, and east sides of the landfill.”*

Step 1: Modeled landfill gas production is understated due to the LandGEM underestimating landfill gas production. Emissions from TAPs also are understated, since they directly are related to the estimated landfill gas produced.

Step 2: Since Step 1 results in understated amounts of TAPs, the comparisons to thresholds are invalid.

Step 3. Dispersion models don't fully incorporate the “micro climate” of the CHRLF located in the Cedar River canyon, as the recording stations do not fully reflect the meteorological conditions at and near the landfill.

*“The results of the air toxics evaluation shows that the increase in TAP emissions associated with Alternative 3 are either below the Ecology evaluation thresholds or have modeled impacts less than Ecology ASIL.” (p. 4-8)*

**The Final EIS must look at such conclusions based on faulty data and re-evaluate same.**

Regarding odor:

*“To assess the potential for odor generation under the various alternatives, modeling was performed to estimate expected concentrations of hydrogen sulfide (H<sub>2</sub>S), the most potent odoriferous constituent associated with landfilling operations.” (p. 4-9)*

In analyzing the *all* chemicals listed in *Tables 2 and 3 in Appendix D (pp. 6 and 7 of 18)*, using the National Institute of Health Public Chemistry site <https://pubchem.ncbi.nlm.nih.gov/>, all but a few had an odor associated with it. To only consider “hydrogen sulfide (H<sub>2</sub>S), the most potent odoriferous constituent associated with landfilling operations” is negligent and a disservice to those living in areas surrounding the CHRLF. One cannot consider each TAP individually, one must take them as a whole and evaluate the impact of *all* their odors. There are two compounds — 1,4-Dichlorobenzene (*p*-Dichlorobenzene) and Carbon Tetrachloride – whose odors can be detected at very low levels.

Putting these chemicals together is like a chemical cocktail that is being served up to citizens who are impacted by the odors. The odors coming from the leachate, fugitive landfill gas and flares is *not* just hydrogen sulfide. As with prescription drugs, a pharmacist will let you know if drugs interact and cause an adverse reaction if mixed. Studies on the mixing of these chemicals and resulting impacts need to be explored, as it smells nothing like the rotten egg smell of hydrogen sulfide. Interpretation of results of the models conclude there are no impacts based on acceptable source impact levels (ASILs). According to WAC 173-460-020 (2) “Acceptable source impact level (ASIL) means screening concentration of a toxic pollutant in the ambient air.” Since the ambient air in the communities in the vicinity of CHRLF has not been established by testing, it is not clear how an ASIL can be established. Further, since some of the chemicals have not been evaluated as to their long-term impacts on humans, it is not clear how they can be “acceptable.”

*“This includes odors associated with fresh garbage delivery and placement and diesel fumes, as well as the perception of other odorous compounds contained in the landfill gas and leachate.” (p. 4-9)*

The implication that it is only a “perception of other odorous compounds contained in the landfill gas and leachate” is insulting. It is a *fact* there are odorous TAPs in fugitive landfill gas and leachate, as an analysis of each chemical is done. As stated above, the combination of *all* chemicals can produce an odor that is *not* hydrogen sulfide. The leachate odor alone has been described as “disgusting” and *does* contain odors other than hydrogen sulfide. Residents’ “perception” of the characteristics of the odor is not misguided.

## GMVUAC Comments—Draft EIS: CHRLF Site Development Plan

*“H<sub>2</sub>S was chosen as the odor marker for evaluation because it is one of the most potent of the odorous compounds that also has a very low detection threshold.” (p. 4-9)*

As stated earlier, all but a few TAPs have characteristic odors. Taken as a whole, not individually, and not just H<sub>2</sub>S should be evaluated as to the potency of the odor.

*“Based on the analysis described in this memo, implementation of Action Alternative 3 is not expected to cause a significant increase in odor impacts at or beyond the CHRLF property line. Further, as Action Alternative 3 was selected for this evaluation as being the most conservative, none of the other action alternatives are expected to cause a significant increase in odor impacts at or beyond the property line.” (Appendix D, HDR Technical Memorandum, p. 8)*

It appears the Draft EIS admits the current CHRLF operations are causing odor impacts, since *“Action Alternative 3 is not expected to cause a significant increase in odor impacts.”*

*“This environmental review determined that no significant unavoidable adverse impacts to air quality, including odor, would be anticipated at CHRLF or the Renton site during construction or operation of any of the alternatives, including the facility relocation options.” (p.4-1)*

The Draft EIS has not proven that there have *not* been *“adverse impacts to air quality, including odor”* over the years of this landfill operation. Multiple lawsuits provide evidence of the impacts. Since the Draft EIS earlier indicated that *“unlike criteria pollutants, there are no ambient air quality standards for odorous compounds,”* it is *not clear* how a determination can be made concerning adverse impacts. The models do not necessarily reflect reality. **The Final EIS must reconcile the differences, when results from a model are interpreted as the TAP compounds being within ASIL, while residents continue to report odors other than “rotten egg” smell.**

*“Modeling results indicate that, under normal operating conditions, none of the alternatives would result in significant odor impacts or any increase in odor compared to existing conditions.” (p. 4-10)*

Again, the Draft EIS admits there is an odor problem when its conclusion is *“compared to existing conditions.”* In the models meteorological conditions for the location of the CHRLF were not used, which are not similar to the meteorological conditions for the locations used. Added waste, leaving more areas *“open”* without final cover, digging up old areas (e.g., Action Alternative 3), and going higher *will* increase odors and the models should show same, otherwise they are not adequately validated.

The Draft EIS describes modeling techniques used to estimate levels of Particulate Matter, Toxic Air Pollutants, and Odor. We have no problem with modeling these phenomena, it is both necessary, and can be informative. However, all models depend on the accuracy of the inputs, the usefulness of underpinning theories and equations, and how results are validated to determine the accuracy and reproducibility of results, as well as the sensitivity of the variables investigated to changes in inputs. **The Final EIS must assess the validity of the inputs used for each “criteria pollutant” model and present results that are reproducible, as well as investigate the many pollutant-release events over the years to determine how well the models predict such behaviors.**

### 4.2.1.3 Indirect Impacts

*“Waste export may require development of an intermodal facility that could have odor impacts, although waste handled at such a facility would be enclosed within shipping containers and the facility is likely to be located in an industrial area where odor-sensitive receptors, such as residences, schools, etc., are unlikely.” (p. 4-11)*

The logic in this statement does not make sense, as the CHRLF is *not* located in an *“industrial area,”* yet is located in an area where *“odor-sensitive receptors, such as residences, schools, etc.”* do exist. Then, to compound the illogical nature of the above statement with possible expansion of the CHRLF adds in salt to injury.

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*“The County’s siting process to determine a location for a major facility such as an intermodal facility or a WTE would favor sites where sensitive receptors are unlikely to be adversely affected.” (p. 4-11)*

Given the County’s history in siting large adverse health-impacting facilities, one cannot put much credence in the above statement.

*“For Alternatives 1 and 2, potential air and odor impacts that could occur after closure in 2038 and 2039, respectively, would be similar to those that could occur under the No Action Alternative. A more detailed description of potential impacts associated with the long-term disposal options can be found in the Final EIS for the Solid Waste Comp Plan” (p. 4-11)*

Unfortunately, the Draft EIS does not discuss this, but simply provides the link to the March 2019 *Comprehensive Solid Waste Management Plan Final EIS*, which looked at 16 alternatives, so it is not clear to which of these alternatives the Draft EIS refers. Consequently, the reader of the Draft EIS cannot review *“a more detailed description of potential impacts associated with the long-term disposal options.”* Further, if the assumption is that putting final covers on either Alternative 1 and 2 creates similar impacts as closing under the No Action, then why wouldn’t putting final covers on Alternative 3 areas do the same? What is the justification for this conclusion?

Odor from landfill gas and leachate is directly related to how much waste is decaying. Gas will continue to be produced long after areas are closed, and leachate will continue to be pumped from those areas. Impacts from odors from these sources will increase with more waste, even after they close.

**The Final EIS needs to address all of these concerns and questions.**

### **4.2.2 Cumulative Impacts**

*“Historically, adjacent industrial-zoned properties have been the major source of odors in the community surrounding CHRLF, and less frequent odor events from the CHRLF have added to the cumulative odor impacts.” (p. 4-11)*

What this statement fails to point out is that odor from the adjacent properties, namely Cedar Grove Compost, does not contain the kinds of TAPs associated with landfilling. As is scientifically well known, composting odors result from aerobic decomposition of biomass, while landfill and leachate emissions contain TAPs.

**Such distinctions need to be made clear in the Final EIS.**

*“Over the past several years, odor complaints related to the CHRLF have declined substantially in frequency.” (p. 4-11)*

As discussed earlier, a lack of complaints is not necessarily indicative of a decrease in odors.

The Draft EIS does not cover the following:

- The cumulative effects of odors on school children that have a diminished learning experience because of odors.
- The cumulative effects of stress for people who are concerned about health impacts from the unknown content of the odors – which do contain TAPs – And CHRLF refuses to do any testing of the air outside its boundaries.
- The cumulative effects for those with asthma, respiratory illness, who suffer with headaches, etc. from the odors.

In fact, the Draft EIS does not discuss Air and Odor “cumulative impacts.” Again, it simply states that *“...less frequent odor events from the CHRLF have added to the cumulative odor impacts.”* (p. 4-11) Then, it states: *“activities associated with landfill development and facilities relocation, including those at the CHRLF and the*



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*Renton site, would contribute incrementally to the cumulative overall past, present, and likely future impacts on air quality....” (p. 4-11).*

**Such issues must be rectified in the Final EIS, which must include cumulative impacts related to known and expected air and odor issues.**

### **4.3 MITIGATION MEASURES (p. 4-12)**

The Draft EIS simply states:

*“...KCSWD has been implementing best management and engineering practices in designing, operating, and maintaining environmental control systems, including the landfill gas and leachate systems.” and “With these controls in place, no additional mitigation measures are necessary.” and “Although modeling indicates that under all alternatives, odor should not be significant, odor history at the landfill indicates that occasional odor events could occur. As discussed earlier in this chapter, the County implements an odor monitoring program and an odor complaint response program that provides rapid identification and resolution of odor issues at the landfill using good landfill industry-standard practices, so that persistent odors should be minimal.” (p. 4-12)*

These statements clearly attempt to paint a picture of everything is working perfectly at the CHRLF in terms of limiting air and odor events and, therefore, nothing needs to change as landfill life is extended for the three Action Alternatives out to 2046. Based on such false assumptions, the conclusions are flawed. **At a minimum, the Final EIS must address further mitigation measures—beyond simply extending best management and engineering practices—related to releases of fugitive dusts, toxic air pollutants, and odors.**

*“Although modeling indicates that under all alternatives, odor should not be significant, odor history at the landfill indicates that occasional odor events could occur.” (p. 4-12)*

The idea that the odor should not be significant is based on faulty modeling, as outlined previously. Actually, to effect reality and experience, the statement should be changed to *“odor events will occur.”* It is not clear how odors would not increase with Alternative 3, when previously closed areas will be opened, there will be more waste to generate landfill gas, and a larger percentage of the landfill will be increased to 830 feet – above the treeline, decreasing the partial mitigation of the buffer zone.

*“As discussed earlier in this chapter, the County implements an odor monitoring program and an odor complaint response program that provides rapid identification and resolution of odor issues at the landfill.” (p. 4-12)*

The County monitoring program needs substantial improvement. The process is not transparent and difficult to validate complaints. The County needs to implement an online complaint system to allow an independent paper trail and tracking system that can be easily accessed by the public. Making calls in the evening to the Roads Department is not sufficient. Complaints can be lost, mis-communicated, and simply not passed on to the responsible party.

There is non-existent protection to prevent air contamination. Although a scientifically proven air-monitoring system will not stop it, it would alert the Public to silent air contamination as it occurs. Permanent installation of air-monitoring equipment along the fence line—the full length of the CHRLF property—should be part of mitigation measures. Air-sampling equipment must collect a broad spectrum of airborne Toxic Volatile Organic Compounds, plus what may be carried in dust or in aerosols, not to be restricted to any minimum list or contractors and independent of KC SWD and accountable to the Public 24/7.

**At a minimum, the Final EIS must address Mitigation Measures related to: (1) Capping, covering, and sealing the various areas and (2) Requiring all gasses, aerosols, and volatiles be captured, processed, and precluded from local release.**

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

### **4.4 (misabeled as “4.1”) SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS (p. 4-13)**

The statement, which comprises this entire subsection of the Draft EIS, provides no discussion whatsoever and is completely unacceptable:

*“With implementation of ongoing and future mitigation as described above, no significant unavoidable adverse air quality or odor impacts would occur under any of the alternatives.” (p. 4-13)*

**The Final EIS must discuss significant unavoidable impacts and their ramifications on air and odor.**

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **Surface Water**

### **5.0 SURFACE WATER** (pp. 5-1 through 5-20)

#### **5.1 AFFECTED ENVIRONMENT** (pp. 5-1 through 5-14)

No comment.

#### **5.2 ENVIRONMENTAL IMPACTS** (pp. 5-14 through 5-20)

##### **5.2.1.1 No-Action Alternative**

The Draft EIS states:

*“...the landfill would continue to operate as currently permitted, support facilities would remain in their current locations as-is or would be refurbished or re-built in place and could be temporarily located at interim facilities. No impacts to the stormwater system, leachate system, or CSW system would be anticipated and impacts on surface water quality would likely remain low.”* (p. 5-14)

This does not address closing the CHRLF in 2028—the definition of the No-Action Alternative. Once the CHRLF is closed, post-closure activities will include: compressing each area, installing permanent caps, hydroseeding, etc. These post-closure steps will affect surface water runoff volumes and locations, such that each of the alternatives (with differing closure years) will behave differently over varying periods of time. **The Final EIS should identify and assess the impacts related closure and post-closure vs. continuing to expand and operate.**

##### **5.2.2 Cumulative Impacts**

The CHRLF has long relied on the downstream property (e.g., Queen City Farms) to accommodate its excess stormwater runoff from the southern half and, over the years, Queen City Farms has had to build and maintain a certain amount of infrastructure for that purpose. The County recognizes it may need to construct additional facilities to avoid any increase in flow rates and volumes to Queen City Farms.

As part of the gravel pit reclamation process, Queen City Farms currently is planning to *re-engineer* its facilities to handle the stormwater from the northernmost part of the site and the south half of CHRLF. Its new infiltration pond to replace the in-filled Main Gravel Pit Lake will be designed to handle the current situation. However, until it's built and functioning, it's unclear whether the replacement pond will succeed in handling the *current* stormwater from CHRLF, let alone any *additional* stormwaters (either peak or total volume). As such, the County may have to design to an unknown target.

**The Final EIS must recognize these uncertainties when assessing any option involving relocating the support area in the southern part of the CHRLF property or address how the County and Queen City Farms would work together to ensure the design of these facilities is treated as one system.**

Moreover, the higher the landfilled elevation, the more rainfall the landfill will “catch” that otherwise would have continued east to the foothills. **The Final EIS must take this into account when evaluating stormwater volumes and handling needs, as well as anticipate a need to add additional stormwater detention capacity over time and assess the associated impacts.**

**The Final EIS should include a discussion of how precipitation changes will be monitored and evaluated in regard to stormwater capacity.**

### **5.3 MITIGATION MEASURES** (p. 5-20)

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

The Draft EIS again simply mentions “*best management and engineering practices*” and states that “*no additional mitigation measures are necessary.*” Unfortunately, this completely ignores climate change, which very likely will cause progressively larger and more frequent “*atmospheric river*” rainfall events in the future. Consequently, systems designed for *current* meteorological conditions may require expansion over time. **The Final EIS should assess such situations, their impacts, and needed mitigation measures.**

**The Final EIS must recognize that Action Alternative 3, because it enlarges the actual landfill footprint, and any Action Alternative that involves relocating the support area on site, will certainly increase the stormwater handling needs and, consequently, discuss necessary mitigation measures, including the form these additional stormwater facilities may take.**

### **5.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS (p. 5-20)**

The Draft EIS again simply mentions: “*There would be no significant unavoidable adverse impacts to surface water or surface water quality as a result of implementing any of the alternatives.*” **Based on the concerns we detail above, the Final EIS will have to identify any significant unavoidable adverse impacts.**

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

### **Groundwater**

#### **6.0 GROUNDWATER** (*pp. 6-1 through 6-13*)

We anticipate the KC Water District #90 will submit its own Comments related to groundwater.

Our only comment here is that any of the *Alternatives* involving new or expanded waste areas may lead to decommissioning existing monitoring wells. **The Final EIS should explain how any resulting monitoring gaps would be identified and addressed.**

# GMVUAC Comments—Draft EIS: CHRLF Site Development Plan

## Plants and Animals

### 7.0 PLANTS AND ANIMALS (pp. 7-1 through 7-15)

#### 7.1 AFFECTED ENVIRONMENT (pp. 7-1 through 7-9)

Does the “*within one half mile of the property line*” statement include property not owned by King County? If so, what is the significance of only looking out one half mile?

##### 7.1.1 Vegetation

###### 7.1.1.1 Cedar Hills

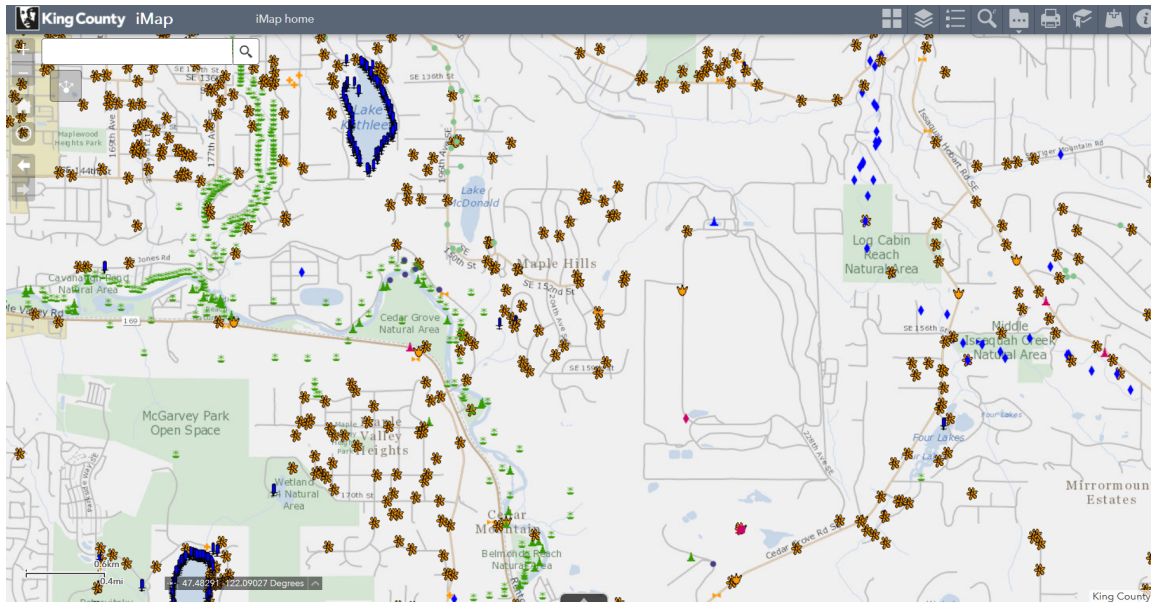
It is not clear that vegetation at CHRLF has been identified. Both the County and the Public have concerns about potential noxious plants such as [knotweed](#), or [Scotch broom](#) (<https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/laws/list.aspx>)—some poisonous to wildlife and domestic animals such as horses.

##### 7.1.2 Noxious Weeds

###### 7.1.2.1 Cedar Hills

Tansy Ragwort is not typically known to limit its population to one area as indicated in Fig. 7.2. We refer to: <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/maps.aspx>.

This map has the *noxious weed layer* added to indicate the abundance of Tansy Ragwort all around the CHRLF.



Tansy Ragwort seeds can remain “active” for up to 10 years and it propagates easily. <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/tansy-ragwort.aspx>

To limit the location to a small area in the northwest corner of the CHRLF in the Draft EIS leaves doubt of the accuracy of the map in Fig. 2.

Should there be Yellow Starthistle at the CHRLF, there is 75% chance [purple starthistle](#) (*Centaurea calcitrapa*) also is present, which opens up doubt around accuracy some of the data contained in the Draft EIS.

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

It is not clear why is [butterfly bush](#) (*Buddleia davidii*) is not included in the list of noxious weeds. It is well prevalent in the surrounding areas. That also is true for [buttercup](#) (*Ranunculus repens*), which is not included in the list of noxious weeds, as it too is prevalent in the surround areas.

**These omissions must be included in the Final EIS and their presence fully evaluated.**

### **7.1.3 Wetlands and Waters of the U.S.**

#### **7.1.3.1 Cedar Hills**

*“Naturally occurring and human-caused wetlands and streams are present in and around CHRLF (see Figure 7-3). Wetlands and streams mapped by King County (King County 2009; King County 2012) include:*

- Excavated leachate lagoons in the south buffer. These lagoons were classified as palustrine unconsolidated bottom, artificially flooded excavated wetlands (sewage treatment ponds) during color infrared photo interpretation from 1981. They are not naturally occurring wetlands and have minimal habitat value.*
- Forested, shrub and herbaceous wetlands south and east of the landfill property.*
- Streams in the east and northwest buffers.*

*The streams in the east buffer drain to Issaquah Creek and the streams in the northwest buffer drain to McDonald Creek, both of which are perennial fish-bearing streams (WDNR 2020b).” (p. 7-5)*

There is significant concern about the Volatile Organic Compounds (VOCs) that are released into Issaquah Creek, McDonald Creek, and the Cedar River (through run-off) on the south side of the landfill. There literally are *hundreds* of VOC's the county does not test for above their normal *nine* that are considered. Of these *hundreds*, many are just as, or more, hazardous than the *nine* that are monitored. **Many of these omitted VOCs should be identified and their impacts assessed in the Final EIS.**

A crucial part of the salmon's life cycle occurs at the fry stage — imprinting. Salmon fry memorize their home stream or lake through factors such as the type of rock and soil in the bed, plant life and other aquatic organisms, all of which contribute to the quality and the unique scent of the water. Salmon learn to recognize this scent as very young fry and can identify it in the water when they return from the ocean. Changes in the stream's environment that occur after the fry leave can confuse the returning salmon, preventing them from finding their home stream and spawning. Imprinting continues as the fry grow and become smolts, so fry raised in an aquarium use these memories, rather than memories of tap water used in aquariums <similar to Issaquah Fish Hatchery>, to find their way home. Almost 90 per cent of all fry die from predators, disease or lack of food. People can help increase fry survival by protecting their environment from pollution, flooding or blockages (see: Seymour Salmonid Society, PO Box 52221, N. Vancouver, BC V7J 3V5; (604) 288-0511).

*“A wetland delineation conducted by biologists in the Ecological Services Unit of the King County Department of Natural Resources and Parks, Water and Land Resources Division in 2001 found additional wetlands within the northwest landfill buffers (KCSWD 2005 as cited in King County 2010), however no wetlands are currently mapped within the northwest landfill buffers and no recent wetland mapping has been conducted at the landfill. The County intends to avoid or minimize impacts to wetlands and streams and their buffers. Prior to final design and depending on the alternative selected, a wetland delineation could be conducted in the northwest buffer zone if needed, and project limits would be refined based on the new delineations.” (p. 7-5)*

Using data that is 19 years old raises doubt to the county's intent to research any and all current or future potential hazards to the environment around any alternative that is ultimately decided upon. **The Final EIS should be based on more recent data and observations.**

### **7.1.4 Wildlife**

#### **7.1.4.1 Cedar Hills**



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

While no salmonoid actually reside or spawn on the site, their safety is of concern with potential contaminants from ground or surface water and airborne pollutants from the leachate processing pools settling on nearby foliage, soil, or standing water. There is much known about how aquatic life responds to chemicals: “*Chemicals In Our Waters Are Affecting Humans And Aquatic Life In Unanticipated Ways*” at <https://www.sciencedaily.com/releases/2008/02/080216095740.htm>. Such effects must be identified and addressed in the Final EIS.

### **Bird Management**

It should be noted in the Final EIS that during operation of the CHRLF soil is not always used to cover daily intakes. When CHRLF only used soil to cover the day’s activity there were not as many Bald Eagles using the landfill as a food source.

#### *“Harassment Techniques and Wildlife Management*

- Pyrotechnics to harass birds. Pyrotechnics are noise-making devices that are shot out of a pistol launcher or 12-gauge shotgun. This must be done in compliance with all federal, state and local laws regarding the possession and use of a firearm, and outside of the nesting season. (p. 7-9)*

What sort of studies have been performed on the effects of the air/earth vibrations of repeated use of loud noises? This is of particular concern to nearly homeowners due to the vibroacoustic effects on structures (see: [Advanced Sensing and Structural Health Monitoring](https://www.hindawi.com/journals/js/2017/7214975/) at <https://www.hindawi.com/journals/js/2017/7214975/>).

There is failure to mention that the American Bald Eagle has special protection in the United States under the [Bald and Golden Eagle Protection Act](http://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter5A/subchapter2&edition=prelim) (<http://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter5A/subchapter2&edition=prelim>). The U.S. Fish and Wildlife Service provides eagle management guidelines: ([https://www.fws.gov/pacific/eagle/all\\_about\\_eagles/Bald\\_Eagle\\_Management\\_Guidelines.html](https://www.fws.gov/pacific/eagle/all_about_eagles/Bald_Eagle_Management_Guidelines.html)), which recommend:

*“Monitor and minimize dispersal contaminants associated with hazardous waste sites (legal or illegal), permitted releases, and runoff from agricultural areas, especially within watersheds where eagles have shown poor reproduction or where bioaccumulating contaminants have been documented. These factors present a risk of contamination to eagles and their food sources.”*

### **7.2 ENVIRONMENTAL IMPACTS (pp. 7-10 through 7-14)**

#### **7.2.1 Direct and Indirect Impacts**

##### **7.2.1.1 No Action Alternative**

*“Areas 5 and 6 currently have interim cover in place, while a temporary soil cover has been placed on the top of Area 7. Under the No Action Alternative, the interim covers on Areas 5 and 6 would be removed, waste placed to final grade, and final covers placed at an elevation not to exceed 788 feet (Area 7 has previously reached 788 feet). Resuming active landfilling in areas with interim or temporary covers would impact the wildlife that currently use these areas and would attract scavengers.” (p. 7-10)*

It would seem this is the same with all the Action Alternatives.

There is no clear plan shown in the Draft EIS for managing wildlife after the CHRLF closes. Nor is there any discussion of how well the liners will hold up as wildlife forages for food, such as eagle food sources. **These questions must be addressed in the Final EIS.**

##### **7.2.1.2 Impacts Common to All Action Alternatives**

*“Under all action alternatives, proposed Area 9 would be developed for landfill expansion. The existing buildings and parking areas would be removed and the area would be prepared for landfilling. Before any*



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*landfilling, the area would be prepared with a liner system and other environmental controls as described in Section 2.3.1.1. During construction, birds and small mammals may disperse to and use adjacent habitats in or near the landfill. This area currently contains minimal wildlife habitat value, therefore no impacts to upland vegetation or wildlife would be anticipated from operation of proposed Area 9.” (p. 7-11)*

**The Final EIS should address the wildlife habitat value of lands in or near the CHRLF and assess the impacts to wildlife in perpetuity.**

*“Under all action alternatives leachate and stormwater will be managed to protect salmonid habitat downstream of CHRLF. Leachate and CSW are never discharged to local receiving waters. As described in Section 5.1.4, additional leachate and CSW created by the expansion would flow by gravity or be pumped from the collection system through subsurface piping to the existing leachate aeration lagoons in the southwest corner of the landfill, or the CSW Lagoon, respectively. Following pre-treatment in the leachate lagoons by aeration, the leachate would be discharged to the King County KCWTD sanitary sewer system and POTW. CSW is detained and settled in the CSW Lagoon and then discharged to the leachate lagoons.” (p. 7-11)*

As this pipe recently (mid October 2020) sprung another leak causing closure of Cedar Grove Rd. planning for additional leachate needs to be addressed in regard to the aging piping to the Waste Water Treatment plant. **This should be addressed in the Final EIS, especially ensuring any new piping to replace portions of the old is properly evaluated in the Final EIS.**

*“Runoff from areas of the landfill with interim or final cover is considered clean stormwater that has not come into contact with waste. This stormwater would be collected in ditches or subsurface piping in and around the landfill cells and transported to storage/treatment facilities, such as the Southwest Siltation Pond or the South Stormwater Lagoon, as described in Section 5.1.3....Stormwater that comes into contact with solid waste is considered CSW and is separated from the clean stormwater via a series of berms and ditches. Under all action alternatives, contaminated stormwater would be collected and conveyed to the existing CSW lagoon as described in Section 5.1.5....These controls would ensure that no untreated stormwater runoff would enter fish-bearing streams. As a result, no impacts to fish are expected.” (p. 7-11)*

**How the standing water (stormwater) that is open, not covered, is protected from the aeration from the leachate pumps in which the water is dispersed into the air as part of the cleaning process should be evaluated in the Final EIS.**

**Further, in the Draft EIS there is no discussion on impacts to fish; this must be rectified in the Final EIS.**

### **7.2.1.3 Action Alternative 1**

#### **Support Facility Options**

*“Under Option 1 (facilities relocated primarily to the south), a Special Use Permit would be pursued to place the main landfill support facilities in the south buffer. Approximately 10 to 15 acres of vegetation, primarily deciduous forest, would be cleared. Wildlife would be affected during construction temporarily due to noise and dust from equipment operation.” (pp. 7-11 through 7-12)*

There is concern with disturbing the soil in the vegetation on the site due to previous management of neighboring Queen City Farms Federal Superfund site. In the past 50 years Queen City Farms has been known to incinerate the flammable material that floated on top of the water ponds on their site, hence releasing polycarbons into the air that likely landed on surrounding surfaces, and later dropped to the soil. **The Final EIS should account for this history and evaluate impacts accordingly.**

*“Operation of the facilities would cause permanent wildlife impacts with the loss of these habitats.” (p. 7-12)*

The Draft EIS provides no examples of such *“permanent wildlife impacts.”* **The Final EIS should enumerate these and discuss potential mitigation.**

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*“Any wildlife using this area currently coexist with noise and human activity and would likely relocate to other habitats in or near the landfill during construction and return to the remaining buffer areas once construction activity is complete. The overall percentage of vegetation removed would be minor compared to the areas of existing vegetation in the buffers surrounding the landfill.” (p. 7-12)*

For Options 1 and 2:

*“Forest canopy loss is a common result of urbanization. While many cities and counties have ordinances to reduce tree removal due to development, canopy assessments comparing satellite data between 2001 and 2011 show loss in the Puget Sound Metropolitan Area. Areas of high vegetation and tree canopy declined by 37 percent over that time period. One result of that canopy loss was a 35 percent increase in stormwater runoff. The cost of replacing the equivalent lost tree canopy with pipes and ponds and other engineered systems to manage stormwater (between 1974 and 1996) would be more than \$2.4 billion. It is further estimated that the lost tree canopy would have removed about 35 million pounds of pollutants from the air (American Forests 1998).” (see: 2017 Washington State Forest Action Plan (<https://www.stateforesters.org/wp-content/uploads/2018/07/FINAL-Washington-State-Forest-Action-Plan-2017.pdf>))*

### **7.2.1.4 Alternative 2**

#### **Landfill Development**

*“These areas are currently closed, with final grass cover in place, providing relatively low value for wildlife habitat.” (p. 7-12)*

**The Final EIS should acknowledge that deer and other herbivore wildlife depend on grasses as a primary source of nutrition/food and, thus, depend on such habitats.**

**The Final EIS should discuss wildlife scavenging in these re-opened areas**, as it has been noted in the past that bald eagle population at the site was greatly reduced when the open/in-use areas when they were covered with dirt each day.

Further, concerns exist around health impacts on landfill scavengers like bald eagles, crows, gulls, etc. by opening previously closed areas. How will the “fermenting” debris affect their digestive tracts and overall being? **The Final EIS should evaluate such impacts.**

### **7.2.1.5 Alternative 3**

*“A soil berm would be constructed along the northeast corner of the proposed refuse area. A stream (Figure 7-3) is mapped near the proposed footprint of the Alternative 3 landfill area (King County 2012). Depending on the alternative selected, if necessary during final design, streams, wetlands and waters of the US could be delineated and the design would be modified to avoid impacts to the extent possible. If impacts are unavoidable mitigation may be required to comply with critical areas code (King County Code 21A.24).” (p. 7-13)*

How the aerial dispersing of leachate will be prevented from entering the “stream” and other clean water in the area is not discussed the section quoted above. **This should be addressed in the Final EIS.**

### **7.2.1.6 Indirect Impacts**

*“As discussed in Section 1.7, in order to compare the potential impacts from the action alternatives and the No Action Alternative over the same period into the future, this EIS must consider potential impacts in the intervening years between the estimated year of capacity for the No Action Alternative and Action Alternatives 1 and 2, and 2046—the estimated year of capacity for Action Alternative 3. The impacts that would occur during these intervening years would not occur but for the proposed action selected and are therefore indirect effects.” (p. 7-13)*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

However, the longer that leachate is carried through pipes to wastewater treatment plants, the greater the risk of those pipes breaking and leaking the toxic water into the surrounding area. The most recent break/leak in those pipes occurred in the week of October 12, 2020 and Cedar Grove Rd had to be completely shut down to make the emergency repairs. **Such longer term concerns must be addressed for all the Action Alternatives in the Final EIS.**

*“For the No Action Alternative between 2028 and 2046, waste disposal could involve either waste export to a regional landfill or disposal at a WTE facility, which could be at the CHRLF site or another site.” (p. 7-14)*

Waste to Energy (WTE) facilities need intense investigation due to the potential deleterious impacts to the County Rural Area where CHRLF is located and the unique aspects present, such as sensitive salmon areas, thermal inversion, and reduced air flow due to a hill and valley terrain. **The Final EIS would recognize this and suitably identify such unique impacts and potential mitigations.**

*“For Alternatives 1 and 2, potential impacts to plants and animals that could occur after closure in 2037 and 2038, respectively, would be similar to those that could occur under the No Action Alternative.” (p. 7-14)*

**Those extra 9 or 10 years must be accounted for in the Final EIS.**

### **7.2.2 Cumulative Impacts**

*“The loss of vegetation and wildlife habitat from landfill support facilities development at the CHRLF or the Renton site under any of the action alternatives would be limited and relatively minor, but would incrementally add to the cumulative overall past, present, and likely future loss of vegetation and habitat in the region.” (p. 7-14)*

The above is all the Draft EIS says about “cumulative impacts.” **The Final EIS must properly identify, discuss, and evaluate “cumulative impacts,” as required by WAC 197-11-060 Content of environmental review.(4) Impacts.:**

*“(e) The range of impacts to be analyzed in an EIS (direct, indirect, and cumulative impacts, WAC 197-11-792) may be wider than the impacts for which mitigation measures are required of applicants (WAC 197-11-660). This will depend upon the specific impacts, the extent to which the adverse impacts are attributable to the applicant's proposal, and the capability of applicants or agencies to control the impacts in each situation.”*

Further, the County policy is “Reduce, Reuse and Recycle.” Yet, by committing to build additional CHRLF facilities, the County is throwing out perfectly good existing buildings and opting to use more materials and resources to run the existing site for a relatively short amount of time.

### **7.3 MITIGATION MEASURES (p. 7-14)**

Continuing to do what over the years clearly has not worked in terms of plants and animals does not make a successful plan. Unfortunately, the Draft EIS states that indeed is what is planned with a few “additional measures,” which sound like more “best management practices.” **This must be taken seriously in the Final EIS with real mitigation measures identified and assessed.**

In fact, the Draft EIS does not account for the abundance of wildlife present. The following is taken from University of Maryland’s “The Woods in Your Backyard section 2.6 Wildlife Ecology”  
<https://umd.instructure.com/courses/1214816/pages/2-dot-6-wildlife-ecology>

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

<b>Typical Abundance and Home Range for Common Eastern (Maryland) Wildlife</b>		
<b>Animal</b>	<b>Abundance</b>	<b>Home Range</b>
American robin	1 to 4 nesting pairs per acre	1,320 feet around nest
Black bear	~70 per 100 square miles	Female with cubs: 6–19 square miles Male: 60–100 square miles
Chipmunk	2–4 per acre	0.5 acre
Deer	Up to 100 per square mile	300–400 acres
Downy woodpecker	4 per acre	5–30 acres
Groundhog	Up to 10 per acre	160–320 acres
Rabbit	Varies from 1 per 4 acres to several per acre	10–25 acres
Raccoon	~1 per 10 acres	380–1,150 acres
Red fox	~1 per 100 acres	640–1,280 acres
Ruffed grouse	1 per 25 acres or 2–8 per 100 acres	~10 acres
Skunk	Up to 31 per square mile	160–320 acres
Squirrel	1–5 per acre	Up to 10 acres
Sources: C. Gilleland. Food, Water, Cover, & Space. Essentials In Wildlife Habitat, Part 2. Windstar Wildlife Institute; <i>Peterson Field Guides: A Field Guide To The Mammals</i> . 1980. Houghton Mifflin Co.; Ruffed Grouse Facts. Ruffed Grouse Society. <a href="http://www.ruffedgrousesociety.org/Your-Woodlot#_UQfpt4NEGJc">www.ruffedgrousesociety.org/Your-Woodlot#_UQfpt4NEGJc</a> ; Maryland Department of Natural Resources Wildlife And Heritage Service, Personal Communication; Davidson College Herpetology Lab. <i>Picoides Pubescens</i> . <a href="http://animaldiversity.org/accounts/Picoides_pubescens/">http://animaldiversity.org/accounts/Picoides_pubescens/</a> ; Animal Diversity Web; American Robin. Cornell Lab of Ornithology. <a href="http://www.allaboutbirds.org/guide/American_Robin/id">www.allaboutbirds.org/guide/American_Robin/id</a>		

**The Final EIS must account for the abundance of wildlife present.**

### **7.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS (p. 7-15)**

As is the case throughout the Draft EIS, this subsection simply states:

*“No significant unavoidable adverse impacts to upland vegetation, wetlands, and wildlife would be anticipated during construction or operation of any of the alternatives” (p. 7-15)*

**The Final EIS must take this seriously and offer a full description of such impacts and their ramifications for plants and animals.**

# GMVUAC Comments—Draft EIS: CHRLF Site Development Plan

## Greenhouse Gas Emissions

### 8.0 GREENHOUSE GAS EMISSIONS (pp. 8-1 through 8-11)

*“This environmental review determined that given the **relatively small contribution of GHG emissions** from the action alternatives compared to total US output from landfills and construction activities and total global output of GHG, no significant unavoidable adverse GHG-related impacts would be expected to result from these emissions at CHRLF or the Renton site during construction or operation of any of the alternatives, including the facility relocation options.” (p. 8-1, our **emphasis**)*

To discount the fugitive emissions from this landfill is negligent. KCSWD believes CHRLF only emits 5%, while 95% is recovered and sent to BEW or flared, even though industry norms and other research say that is not possible. The basis of KCSWD's belief is from the U.S. Environmental Protection Agency's (EPA's) e-GGRT (*EPA Greenhouse Gas Reporting Tool*) report that is submitted by CHRLF to the EPA and WA Department of Ecology on a yearly basis. The conclusion that fugitive emissions are not enough to even be considered is incorrect, because the comparison of the emissions of this landfill to *“total US output from landfills and construction activities and total global output of GHG”* is irrelevant and, as such, is an egregious assumption and renders the comparison of the alternatives in this section suspect. All Greenhouse Gas (GHG) emissions, especially from methane do have an impact on the environment and climate crisis. To discount it is irresponsible. According to the EPA's, *“Overview of GHG Emissions,”* <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>, methane is a far more damaging GHG to the atmosphere and climate change than CO<sub>2</sub>:

*“Methane's lifetime in the atmosphere is much shorter than carbon dioxide (CO<sub>2</sub>), but CH<sub>4</sub> is more efficient at trapping radiation than CO<sub>2</sub>. Pound for pound, the comparative impact of CH<sub>4</sub> is 25 times greater than CO<sub>2</sub> over a 100-year period. Globally, 50-65 percent of total CH<sub>4</sub> emissions come from human activities.”*

The EPA's GHG reporting program for 2018 lists 1,133 landfills across the US reporting their annual GHG EMITTED (not collected) into the atmosphere. Landfills are considered “direct emitters” of GHG. Cedar Hills ranks 446, with 68,087.5 MtCO<sub>2</sub>e (Metric tons CO<sub>2</sub> equivalent). While they may account for less than 1% of the overall landfill emissions, 68,000 metric tons is still significant.

We take issue with the statement that: *“no significant unavoidable adverse GHG-related impacts would be expected”*: The GHG emissions are significant, are to some extent avoidable, and are adverse. To believe one's emissions aren't significant is what will keep progress being made in tackling climate change. That attitude is like thinking your 1 vote won't count.

### 8.1 AFFECTED ENVIRONMENT (pp 8-2 thru 8-3)

#### 8.1.1 Sources of GHG (pp. 8-2 thru 8-3)

##### 8.1.1.1 Cedar Hills

##### Waste Disposal and Decomposition

*“Some landfill gas is not collected during active waste placement and prior to placement of daily, interim, or final cover systems, and this gas, **called fugitive emissions**, is emitted to the atmosphere. Of the landfill gas that is collected at CHRLF annually, **approximately 5 percent is flared and 95 percent is directed to BEW.**” (p. 8-2, our **emphasis**)*

This statement points to a lack of knowledge either of the reports they are attempting to use or of landfill gas production and capture in general. The statement referencing 95% and 5% is incorrect. By stating it as such, and without careful reading, one might get the impression that virtually no fugitive gas is released. In fact, what should be noted is that according to the *Federal Mandatory Reporting Rule (MRR) under 40 Code of the Federal Regulations, Part 98, Subpart HH*, using e-GGRT **of the landfill gas captured** approximately 80% is sent to the

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

BEW plant and ~15% is flared at CHRLF. Using the amount of landfill captured, the HH-6 formula of the e-GGRT, is used to “back into” how much gas they think is produced, using *estimated* cover efficiencies. By doing this, they’ve determined they capture 95% of the gas produced and 5% is fugitive. However, this reported efficiency rate is above industry averages. **All models (and assumptions) must be validated and incrementally improved to ensure they repeatedly produce results that are consistent and agree with against published data. Values that are outside of published ranges, with regard to landfill gas collection efficiency, methane generation potential, etc. should be carefully vetted. The Final EIS should discuss such model validation.**

Validating either the EPA’s e-GGRT or the EPA’s Waste Reduction Model (WARM) for GHG generation presents difficulties, since it is nearly impossible to measure *all* fugitive gas emissions. However, attempts are being made through aerial methane surveys to quantify actual emissions. The County should conduct more thorough assessments on all the GHG emissions from the CHRLF using tools such as surface emission monitoring (SEM), above ground drone emission monitoring (DEM), and downwind plume emission monitoring (DWPEM), or aerial methane surveys. **Below we provide comments on these models, some mentioned in the Draft EIS and some not, as well as monitoring techniques, in order to ensure the Final EIS addresses each.**

### **EPA’s Greenhouse Gas Reporting Tool — e-GGRT**

Models and tools used by CHRLF to calculate GHG fugitive emissions and comparisons to WTE and export both imply various assumptions and variables. They are complex and produce results that are sensitive to those assumptions and variables. Its is good that the Draft EIS recognizes the importance of the assumptions:

*“As described above with the No Action Alternative, these estimates for GHG emissions are highly dependent on the assumptions behind the analysis, and on whether the utility and other credits are applied.” (p. 8-9)*

Both e-GGRT and WARM (as reported in the MRR table below) use the formula *HH1*. In discussing the deficiency in the HH1 formula between Toraj Ghofrani, PE, CHRLF Engineer and supplier of the MRR report below, and Janet Dobrowolski, resident, in e-mails dated 9/30/20, it was stated:

Toraj Ghofrani:

*“The HH-1 model is used by more than 2,600 landfills across the USA so as long as the model accounts for dry, moderate, and wet climates that seems to be good enough for USEPA. What is important is that every municipal landfills uses the same consistent choices for the same parameters.”*

Janet:

*“I will say that just because everyone uses it, doesn’t make it accurate. Consistency is irrelevant if it’s ‘consistently wrong.’ ”*

Toraj:

*“I understand your sentiments, **accurately!** One day when I have more time in hand I will share the flaws of the MRR in an article for a broader audience so that change can get a tangible momentum. For now, not very many seem to know about the MRR flaws and not very many seem to care, nevertheless it is the law.”*



# GMVUAC Comments—Draft EIS: CHRLF Site Development Plan

**Table 1 – Summary MRR (Methane Required Reporting) submitted to the US EPA and Department of Ecology, created by CHRLF Engineer Toraj Ghofrani:**

ANNUAL GHG EMISSION TREND AT CHRLF (As reported by eGGRT)										Last Updated: 04-Feb-20
	Unit	Using HH6 2012	Using HH6 2013	Using HH6 2014	Using HH6 2015	Using HH8 2016	Using HH8 2017	Using HH8 2018	Using HH8 2019	Baseline 2012 thru 2016
KC Inventory Annual LFG Recovered	SCF	5,349,058,841	5,190,213,737	5,300,694,821	5,375,189,675	5,430,495,178	5,122,224,006	5,278,505,912	5,164,367,054	5,329,130,450
Annual LFG Delivered to BEW	SCF	1,924,408,678	4,368,759,791	4,440,749,409	4,645,143,681	4,707,263,880	4,246,403,840	4,449,293,328	4,479,258,964	4,017,265,048
Annual LFG Delivered to Flares	SCF	3,424,650,163	821,453,946	859,945,412	730,045,994	723,231,496	875,820,166	829,212,584	685,108,091	1,311,865,402
Annual Weighted Average CH4 Concentration	%	49	50.76	51.29	50.87	51.59	51.25	51.45	51.65	50.74
Daily Cover	M <sup>2</sup>	4,047	4,047	4,047	4,047	4,047	4,047	4,047	4,047	4,047
Intermediate Cover	M <sup>2</sup>	137,593	141,640	149,734	169,968	182,109	178,061	137,593	166,155	158,209
Final Cover	M <sup>2</sup>	1,266,866	1,262,619	1,254,525	1,129,073	1,116,932	1,120,980	1,161,448	1,161,448	1,205,993
Total Covered Areas	M <sup>2</sup>	1,408,306	1,408,306	1,408,306	1,303,088	1,303,088	1,303,088	1,303,088	1,351,650	1,366,219
CH4 Generation HH1	MT	49,340	49,931	49,333	49,428	49,604	49,945	50,298	50,489	49,527
CH4 Recovered using SCADA	MT	50,594	50,596	52,217	52,502	53,788	50,395	52,132	51,084	51,939
CH4 Recovery HH4	MT	50,594	50,596	52,218	52,501	53,788	50,395	52,132	51,083	51,939
CH4 Emission for Fuel using USEPA C1/C8	MT CO2e	206	220	145	176	229	335	335	321	195
CH4 Emission using USEPA MRR HH6	MT	506	100	96	77	74	85	74	61	170
Total GHG Emission HH6	MT CO2e	10,831	2,718	2,536	2,103	2,071	2,456	2,181	1,846	4,052
CH4 Emission using USEPA MRR HH6 (except post 2015)	MT	506	100	96	77	3,096	2,901	2,723	2,887	775
Total GHG Emission HH6 (except post 2015)	MT CO2e	10,831	2,718	2,536	2,103	77,623	72,848	68,422	72,738	19,162

**Row: CH4 Generation HH1:** The e-GGRT using the HH1 formula consistently calculates there is less gas produced than collected. This formula also is used in the WARM. It is theorized the formula does not sufficiently account for the amount of rain (~54 in/yr) the landfill gets and doesn't work for THIS landfill (i.e., CHRLF). Water is a major factor in methane production. The more water the more and faster methane is produced. In addition:

*“In some cases, the measured CH4 recovery will not agree well with the modeled CH4 generation. The ratio of measured CH4 recovery to modeled CH4 generation is the apparent landfill gas collection efficiency. If the apparent landfill gas collection efficiency exceeds 95% or 100%, this indicates that the modeling assumptions are incorrect.”* (see: [https://www3.epa.gov/ttnchie1/efpac/ghg/GHG\\_Biogenic\\_Report\\_draft\\_Dec1410.pdf](https://www3.epa.gov/ttnchie1/efpac/ghg/GHG_Biogenic_Report_draft_Dec1410.pdf), p. 2-9.)

Table 1 illustrates this discrepancy. The modeled CH4 Generation HH1 does not agree well with the CH4 recovery. In fact, it shows the generated CH4 is *less* than the Recovered CH4 for every year shown in Table 1. In this case the efficiency would exceed 100%, showing the model assumptions for CHRLF are incorrect for the HH1 model.

**Row: TOTAL GHG Emissions HH6:** Because the *“modeling assumptions are incorrect”* for the HH1 formula, EPA developed a formula to calculate the unknown production amount of CH4, using Recovered gas and estimated cover efficiency percentages. Once the unknown total is modeled, they calculate fugitive emissions. Cover efficiency variables can greatly affect the results, so mis-categorization of covers will impact the result.

Below we discuss potential discrepancies in the e-GGRT:

1. **Cover variables** — Unfortunately, EPA definitions used in the HH6 formula for covers are not very specific, thus allowing wide interpretation. Incorrect area and collection efficiency can dramatically change the emissions results. CHRLF determines the surface area for each cover category. The surface area is two dimensional, not the actual surface area the landfill (i.e., looking down from above – with no contours). In *Table 1* above:
  - a. *Daily* cover is considered the “active” area of 1 acre and never changes. 29% of total area if one calculates it from *Table 1*. Covered with a tarp every night.
  - b. *Intermediate* cover is considered the current cell – Area 7, in this *Table 1*. 11.4% of total area if one calculates it from *Table 1*. Covered with 1 foot of soil, compacted to 6 inches.

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

- c. *Final* cover is the rest of the landfill. 88.3% of total area if one calculates it from *Table 1*. Note that Areas 5 and 6 do not have “*final cover*,” but CHRLF feels the cover qualifies for Final Cover classification: “*Soil or exposed geomembrane interim cover is placed on surfaces that will be exposed for one or more wet seasons or areas that will be inactive for extended periods of time and will be covered by future landfilling.*” (p. 2-13). The remaining closed areas have covers sealed to the bottom liners of lined areas as required by WAC 173-351. Unlined areas have closed covers as required by WAC 173-304.

**Table HH-3 - Landfill Gas Collection Efficiencies**

Description	Landfill gas collection efficiency
A1: Area with no waste in-place	Not applicable; do not use this area in the calculation
A2: Area without active gas collection, regardless of cover type	CE2: 0%
A3: Area with daily soil cover and active gas collection	CE3: 60%
A4: Area with an intermediate soil cover, or a final soil cover not meeting the criteria for A5 below, and active gas collection	CE4: 75%
A5: Area with a final soil cover of 3 feet or thicker of clay and/or geomembrane cover system and active gas collection	CE5: 95%
Area weighted average collection efficiency for landfills	$CE_{ave1} = (A2*CE2 + A3*CE3 + A4*CE4 + A5*CE5) / (A2+A3+A4+A5)$

Note:

- A3: Considered “*Daily Cover*” by CHRLF. The definition doesn’t really define what daily soil cover is.  
A4: Considered “*Intermediate Cover*” by CHRLF. The definition doesn’t really define “intermediate soil cover”, other to say it is not Final cover.  
A5: Considered “*Final Cover*” by CHRLF. The definition doesn’t specify criteria for a geomembrane cover system – how thick is the geomembrane? are the strip edges sealed or just overlapped, etc.

However, the EPA Efficiency ratings are in question. In an email from Janet Dobrowolski, resident, to Michael Van Brunt, Sr. Director, Sustainability for Covanta, dated April 5, 2019, there was a question posed concerning the difference in cover efficiencies in the WARM model verses the MRR:

*“The %’s don’t correspond with the MRR cover efficiency - do you know if there’s a reason?”*

Michael Van Brunt response was:

*“Yes – the collection efficiencies in the MRR couldn’t be supported by available published science. EPA took the default efficiencies for the MRR from an industry position paper. During the process of establishing reasonable defaults for lifecycle modeling (including both WARM and the MSW-DST), the stakeholder team (which I was involved with) found that the published work didn’t support the MRR’s averages.”*

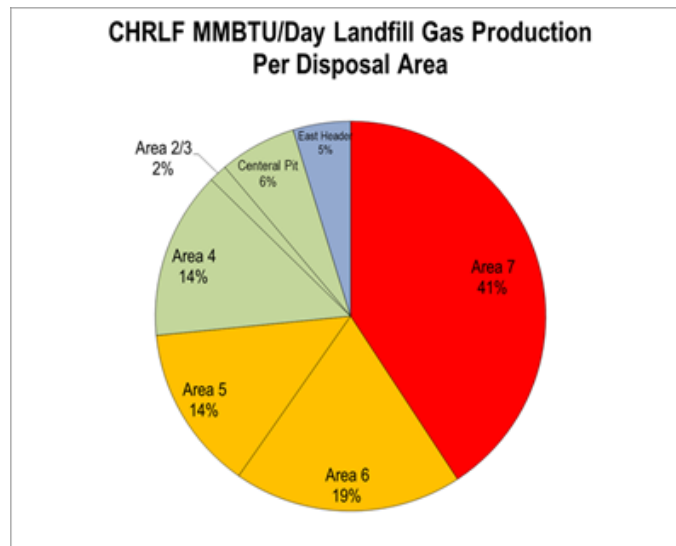
The EPA’s WARM models use cover efficiency ratings of 50%, 75%, 82.5%, and 90%. If CHRLF has classified its covers wrong, then the calculation of fugitive emissions can be off substantially. The efficiency percentages are all *estimates*. In fact, how accurate is CHRLF at defining its covers? How accurate are the EPA estimates of efficiency? How uniform are the covers of dirt in terms of depth? **All of these questions must be addressed in the Final EIS.**

2. CO<sub>2</sub> equivalent calculations — Controversy exists as to the CO<sub>2</sub> equivalency factor for Methane. Although Methane emissions are lower than CO<sub>2</sub> emissions, it is considered a major GHG because each Methane molecule has 25 x the global warming potential of a CO<sub>2</sub> molecule. Therefore, determining this

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

equivalency coefficient is important. To calculate the CO<sub>2</sub>e, the quantity for Methane is multiplied by the Global Warming Potential (GWP). The EPA uses a 25x factor in the e-GGRT, yet on its website it states: "*Methane (CH<sub>4</sub>) is estimated to have a GWP (Global Warming Potential) of 28-36 over 100 years.*" (see: <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>). The Intergovernmental Panel on Climate Change (IPCC) states the GWP is 34 for 100 years, but 86 for 20 years (2013 IPCC AR5 Fifth Assessment Report, p.714). Because of the uncertainty of the equivalency coefficient, the fugitive gas calculated in the e-GGRT report is understated, given that all other assessments for this factor are higher than 25. **This must be recognized in the Final EIS.**

3. Assumption of uniform production of Landfill Gas (LFG) in all areas — The e-GGRT doesn't take into account *where* the LFG is being generated. The active cells start producing gas after 1 year. Based on calculations, sent in an e-mail dated 9/30/2020 from Toraj Ghofrani, CHRLF Engineer, Area 7 generated 41% of the gas (see Ghofrani-generated chart below), yet when the formula is applied, it doesn't take that into account. If it were, the fugitive gas total would be higher, because the cover isn't as efficient. **There is nothing prohibiting CHRLF to further refine some of the data for their own information and document same in the Final EIS.**
- 4.



5. Accounting for catastrophic events — How was the major pipeline break in 2012 accounted for in the model? The break occurred between the flares and the BEW plant, so the amount captured would be correct and BEW would have record of how much it received. However, there is no place to enter the fact there was a break. Is the amount flared just the difference between the amount collected and the amount BEW received? Based on the numbers, it appears so, given the fugitive emissions calculated for that year were only 10,000 MTCO<sub>2</sub>, or about 1% emissions and 99% collection efficiency. The amount of landfill gas (51% Methane) released was 10,000 cf/min for 5 hours.
6. Lateral movements — Methane moving laterally, as in the 2011 methane migration to the western buffer, is not accounted for in the equations, as only gas emitting through the covers considered, applying the capture efficiency.
7. Waste-Characterization variable — Methane is produced by the digestion of organic material by anaerobic bacteria. In order for the models to predict the amount of methane generated by waste, assumptions must be made as to how much of the waste it is believed to be organic. The EPA has determined the default bulk waste characterization for degradable organic carbon (DOC) is 20%. CHRLF has chosen to use this default value. This DOC, used to assume *all* waste for every year the landfill has

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

been open, is 20%. Landfills, including CHRLF, will periodically have waste trucks dumped and the content “counted” and categorized to see if they are “close” to the DOC default. However, this is not necessarily representative of *all* years of waste. This is but another variable that, if wrong, can dramatically alter the emissions calculations.

The Draft EIS confirms that estimates are “*highly dependent on the assumptions behind the analysis*” (p 8-9) for the WTE, yet doesn’t look at the assumptions used for modeling other GHG gas emissions. **The Final EIS must consider ALL assumptions for all models as to their validity or accuracy when estimating GHG emissions.**

### **EPA’s Waste Reduction Model — WARM**

As stated earlier, the WARM uses the HH1 formula for calculating GHG emissions and has been proven to be inaccurate and understates the GHG produced. In the Draft EIS the WARM has been used to estimate differences in GHG emissions between WTE, Export, and landfills, yet there are many assumptions that affect the results. No evidence has been presented as to why this particular model is more accurate than another, or why it was chosen. Yet, the County continues to use the WARM in its decision-making process, even knowing it is inaccurate and has flaws, as described in a series of e-mails with KCSWD:

Resident, Janet Dobrowolski, writes to Pat McLaughlin, Director of KCSWD (9/22/2020):

*“The one area I do disagree with, rather strongly, is the use of WARM for THIS landfill. While I know it is the method of choice to evaluate landfills, it has its flaws and doesn’t work for Cedar Hills.”*

Pat McLaughlin, Director of KCSWD, writes to resident, Janet Dobrowolski (10/2/2020):

*“You’re right! WARM has some flaws, however, it is a broadly accepted approach provided by the regulator for comparing disposal alternatives. Using such a standard tool is helpful to inform probable comparative impacts. That being said, it is just one point of input and other data must be considered. The other regulatory prescribed measuring models (HH-1, HH-6, HH-8) also have value, but we are working with national experts to explore models that can provide us with even more accurate insights that are specific to the Cedar Hills operation.”*

The EPA knows the formulas aren’t accurate and continues to make improvements. Notes from an US EPA webinar on *Updates to Methodology Improvements for MSW Landfills*, December 13, 2017, ([https://www.epa.gov/sites/production/files/2018-10/documents/webinar\\_4\\_sumrpt\\_0.pdf](https://www.epa.gov/sites/production/files/2018-10/documents/webinar_4_sumrpt_0.pdf)) stated:

*“One sector in the annual report is the waste sector, which includes municipal solid waste (MSW) landfills, industrial landfills, composting, and wastewater. With each Inventory report, EPA strives to improve the data inputs and calculations used.”*

**The flaws and inaccuracies touched on herein should be addressed in the Final EIS and in crude discussion of the ramifications.**

### **EPA Municipal Solid Waste Decision Support Tool (DST) – Alternative to WARM**

Article from WASTEDIVE.com, “How utilizing EPA’s Decision Support Tool can greatly improve waste management systems” <https://www.wastedive.com/news/how-utilizing-epas-decision-support-tool-can-greatly-improve-waste-managem/421707/>

*“We would love to see it be the standard for communities,” said Susan Thorneloe, a senior chemical engineer with the EPA’s Office of Research and Development. “A lot of times people don’t have a good idea or sense of what their current system is doing or what it costs.”*

*“Essentially, the DST is meant to take the guesswork out of big decisions for state and local planners by providing a better picture of how their current waste management system is working and what*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*effects changes could have. Greenhouse gases, cost, energy consumption, and the potential release of pollutants can all be measured for a wide range of collection and disposal methods.”*

*“For example, a municipality may be considering the most effective program for increasing its recycling diversion rate. The DST could show the trade-offs between single-stream recycling or targeted programs for specific materials. Or perhaps a company is looking for ways to reduce its emissions and transportation costs. The DST could analyze which parts of that company’s waste stream offer the most opportunity for reduction.”*

EPA supports use of the DST for decision making: “EPA Tools Help Local Decision-Makers Deal with Waste Resulting from Major Natural Disasters,” <https://www.epa.gov/sciencematters/epa-tools-help-local-decision-makers-deal-waste-resulting-major-natural-disasters>

*“The MSW DST can also be used to calculate diversion from landfill, energy requirements, emissions, and energy recovery from waste and landfill gas combustion. An optimization feature allows the tool to select the best performing management strategy given the specific objectives of a user, accounting for their existing infrastructure, waste composition, and the type of community, whether it is rural, urban, or suburban. For these reasons, the tool is valuable to decision makers to develop more strategic, resilient, and sustainable materials management.”*

Over the years, the DST was peer reviewed by top experts and received input from government, academia, industry and other organizations. Those involved included the Environmental Defense Fund, the New York Department of Sanitation, Waste Management, and many more (see: *Municipal Solid Waste Decision Support Tool*, RTI International (formerly Research Triangle Institute), <https://mswdst.rti.org/> for a complete list). EPA scientists use DST when doing published, peer reviewed studies. DST is transparent, and provides for separate reporting of emissions (methane, biogenic CO<sub>2</sub>, fossil CO<sub>2</sub>), energy credits, and carbon storage.

Consequently, we have two statements – one from a KCSWD knowing the e-GGRT and WARM are flawed, yet continues to use them because they are an “accepted” approach (see e-mail exchange with KCSWD Director pat McLaughlin, cited earlier) and one from the EPA recommending the use of the DST for municipal solid waste decisions.

**Given the evidence that the e-GGRT and WARM methods possess flaws, there is insufficient evidence to justify using the DST in this analysis. The Final EIS must justify the use of any of the models presented, as well as explore other suitable and available models including those identified, described, and presented herein.**

### **Monitoring surface concentrations and gas extraction wells**

**PSCAA Operating Air Permit #10138, Specific Monitoring, (b) Quarterly Surface Monitoring for Fugitive Landfill Gas** states (p. 36):

*“KCSWD shall monitor surface concentrations of methane along the entire perimeter of the gas collection area and along a pattern that traverses the landfill at 30 meter intervals. The background concentration of methane shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from perimeter wells. Surface emission monitoring shall be performed in accordance with Section 4.3.1 of EPA Method 21, except that the probe inlet shall be placed within 5 to 10 centimeters of the ground. Any reading of 500 ppm or more above background at any location shall be recorded as a monitored exceedence.”*

Issues with this monitoring, as well as gas-extraction wells are:

- In talking with employees at the CHRLF we were told employees uses something like a golf cart to traverse the landfill and is not required to cover any area that is dangerous to the employee. On p. 206 of the 40 CFR 60 Federal Regulation regarding quarterly methane **Surface Emission Monitoring** for



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

landfills, it says: *“Areas with steep slopes or other dangerous areas may be excluded from the surface testing.”* Dangerous areas also include, as related by Laura Belt on a tour, active areas where heavy equipment is being operated, including the active cell. In addition, Areas 5 and 6 were not monitored for a period of time because of the dirt moving equipment.

- Low, undetected levels of emissions are not noted, so the landfill could be emitting landfill gas (LFG) without anyone knowing and this is cumulative.
- Infrequency of monitoring—only four times a year to detect problems and leaks—means a lot of fugitive emissions could be spewing into the atmosphere.
- This monitoring is not enough to prove the collection efficiency (i.e., recovered 95% - emitted 5%) claims of CHRLF.
- Evidence presented in the 2017 lawsuit for the December 2013 pipeline break, *Sharon Kay and Jim Howe vs. King County Solid Waste Division*, included expert witness statements agreed some percentage of landfill gas is not captured. A County consultant, who had conducted a comprehensive analysis of all of the over 600 landfill gas pipes and concluded: *“...57% of the wells had air intrusion and another had 20% air leakage.”* A CHRLF employee described a number of problems that can cause increased gas releases – broken or disconnected flex hose and construction projects and that capture rates were ~ 70% (vs. 95%). County CHRLF experts called the landfill a *“living organism”* – affected by many factors – like barometric pressure and moisture.

An information obtained through Public Records Request discovery for a lawsuit brought by Brad Jones, Attorney at Law, CHRLF employee, *Toraj Ghofrani, PE, e-mail to James Freely with a cc to Laura Belt* (both CHRLF employees), *March 31, 2014*, stated:

- *“The most remarkable transformation in the CHRLF operation began post 2008 when approximately 13,000,000 cu ft of LFG was eventually converted to approximately 130 tons of usable energy each day, rather than wasting this natural source of energy to the thermal destruction of the north Flare Station. Unfortunately, the existing infrastructure of the CHRLF LFG control system is not designed to handle the operational vicissitudes of the LFG to energy (LFGTE), thereby complicating the day-to-day operations of the LFG conveyance system at CHRLF.”*
- *“Currently, three blowers and 614 horizontal and vertical wells are utilized for the extraction of the above-referenced 130 tons of methane generation each day. Naturally by design, one would expect about 400 pounds of methane extraction from each of the 614 LFG extractions wells. That is not the case. In fact, based on our historical bimonthly monitoring of fixed landfill gases (methane, carbon dioxide, oxygen, and nitrogen) and theoretical estimations of methane generation, more than:”*
  - *“40% of the LFG extraction wells are not functional most of the year.”*
  - *“5% of the generated methane is not currently captured.”*
  - *“40 parts per million of methane seeps out through unsealed surfaces of the CHRLF top deck.” (Note: PSCAA regulations only consider measurements above 500 ppm as non-compliant and notable.)*
- *“Whether it is generated by refuse decomposition or by equilibrium with the Landfill Leachate system, LFG has been identified as a secondary source of shallow perched groundwater (GW) contamination at CHRLF. While LFG, LFL and GW issues at the CHRLF are inextricably entwined, the root cause analysis is still incomplete. The vector of blame could point to poor engineering design poor construction materials, or poor understanding of the complexity of Mother Nature at its biogenic micro-environment, within which the change in temperature, moisture, pH, and pressure is constantly affecting the decomposition rate of the aging refuse.”*
- *“There are numerous uncertainties hovering over the LFG generation, transmission, and capturing efficiency.”*

Clearly, both monitoring and extraction are not exact sciences, as they often give conflicting results which are open to interpretation.



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*Waste-To Energy and Waste Export by Rail Feasibility Study, Arcadis, 2019, Appendix D, pp. 6-12 thru 6-13* provides calculated average Landfill Gas Collection Efficiency rates based on several scenarios using the WARM version 15 model.

The scenario with a maximum collection efficiency rating for a landfill with gas collection, using the “*California regulatory scenario*” (i.e., landfill management based on California regulatory requirements), was 83.6% - resulting in 16.5% fugitive gas emissions. Please note that the National Average for this scenario is 78.8%. Again, KC SWD claims the CHRLF’s collection efficiency is 95% - resulting in only 5% fugitive gas emissions.

**Such discrepancies must be resolved in the Final EIS.**

### **Methane Monitoring Studies**

Several studies using aerial detection methods, have found current methods to computer GHG emissions tend to underestimate them.

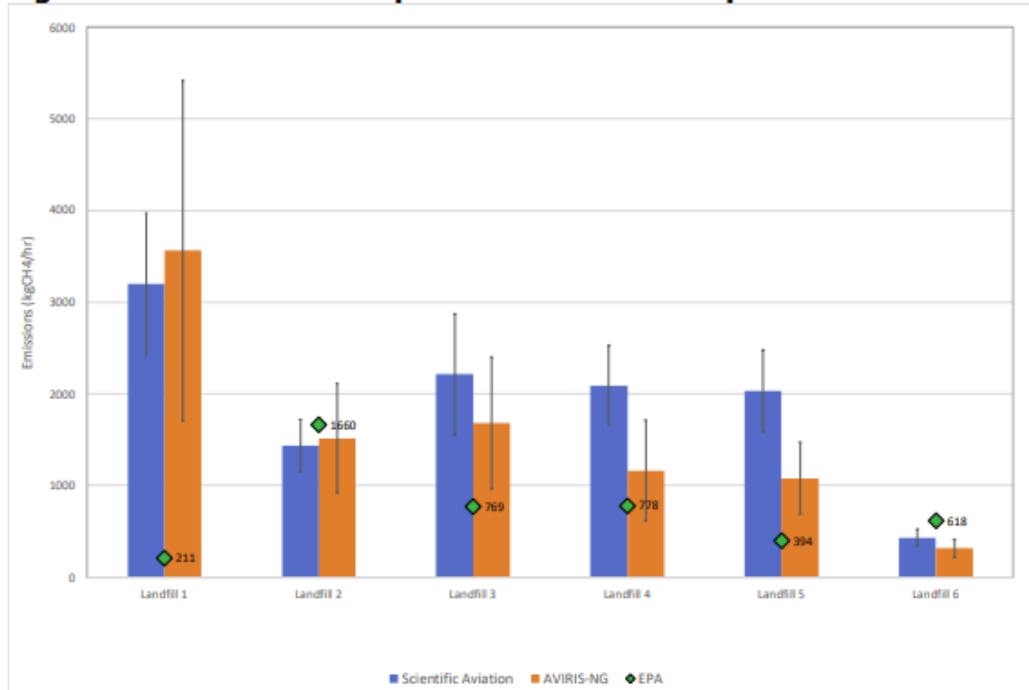
The *California Methane Survey, July 2020, Jet Propulsion Laboratory* (<https://ww2.energy.ca.gov/2020publications/CEC-500-2020-047/CEC-500-2020-047.pdf>): Researchers in California conducted an aerial methane survey to find point-source methane emissions, using an airborne imaging spectrometer capable of rapidly mapping methane plumes. It was determined that the 30 landfills and 2 composting facilities are the highest emitting point-source sectors in California, representing 43% of the total:

*“The high-resolution images suggest that some of the strong methane plumes at these landfills may be associated with gaps in intermediate cover, delays in construction projects and/or leaking gas capture wells – all indicating a significant mitigation opportunity.”*

California has one of the most stringent regulations in regards to air pollution, so to have landfills leaking is unusual. This points to how difficult it is to control. At the CHRLF leak sources also can include caps being knocked of gas probes, elk hooves poking holes in the liners, the 3 areas that do not have final cover on them, and, of course, the current open lifts. The following two figures are from the report cited immediately above:

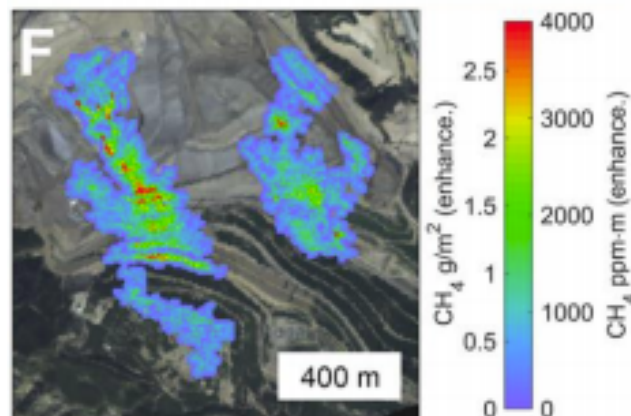
# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

**Figure 26: Measured vs Reported Emission for Representative Landfills**



Comparing landfill emissions reported to the EPA for 2017 (EPA 2018) with persistence adjusted average emission estimates from this study and mean values from a series of coordinated Scientific Aviation flights (CARB 2018b) – the last 4 of which were not contemporaneous with AVIRIS-NG flights. Since Scientific Aviation measures the net facility emissions (area + point sources) and AVIRIS-NG only measures point sources, the latter will be lower than the former in many cases

Source: Duren *et al.*, 2019



**F. Landfill** (Duren *et al.*, 2019)

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

**Fugitive emissions will continue for all alternatives and should be included in the Final EIS for all alternatives to compare with WTE or Export.** Methane will continue to be produced for years *after* each cell is closed. The Main Hill (1960-1980) *still* is producing methane. And fugitive methane will continue to impact the environment for many years to come.

Further, the Draft EIS does not address how each alternative will affect the release of fugitive GHG emissions. The longer the site stays open, the more fugitive gas will occur. Even after a site is closed and no longer accepts waste, it still will produce some GHG emissions. **The Final EIS must address these emissions.**

### **BOTTOM LINE:** **Models, methodology, and Monitoring**

There is plenty of evidence to suggest that the e-GGRT- and the WARM-estimated collection rates for CHRLF are understated. KCSWD has been reluctant to use anything but the “*industry standard*” of WARM, even though it admits it has shortcomings. KCSWD needs to *prove* the accuracy of the 95% efficiency by either using actual measurements or possibly employing a more trusted tool by industry experts such as the EPA’s Municipal Solid Waste Decision Support Tool (DST), which is peer reviewed and developed in conjunction with the EPA, US Department of Energy, academic institutions, and research firms. Consequently, emissions continue to be underestimated and, thus, downstream impacts are not fully identified and quantified. **All of this should be discussed in the Final EIS, along with the ramifications therefrom.**

### **Daily Operations and Construction:**

*“Similar emissions from construction equipment are created from the construction of regional landfill disposal areas or WTE Facilities.” (p. 8-2)*

No data has been presented showing the GHG from construction of Regional landfill disposal or the construction of a WTE facility.

The assumption that operational GHG emissions from a regional landfill vs. Action Alternatives 1, 2 or 3 is flawed when you consider GHG’s from construction of landfill cells. Regional landfills are planned from the start to maximize landfilled area and therefore do not require the costly relocation of support facilities and the attendant GHG emissions for that effort.

Regarding *Table 8-7*, given the differences in construction, especially of Action Alternative 3, it is not clear how emissions associated with construction of a WTE plant are similar to *all* alternatives:

- Each alternative requires different construction design.
- No Action – Capacity remaining – 11 mcy<sup>2</sup>.
- Action Alternative 1 – Capacity built – 12 mcy<sup>2</sup>, 34 acres developed.
- Action Alternative 2 – Capacity built – 13 mcy<sup>2</sup>, 34 acres developed.
- Action Alternative 3: Additional capacity, over Action Alternatives 1 and 2 is 14 & 13 mcy<sup>2</sup>, respectively, for a total additional capacity of 26 mcy<sup>2</sup>. 66 acres. In addition, more activity is involved that is not common to the other alternatives, including:
  - Construction of MSE berm on NW corner, 20 ft high soil berm on NE boundary.
  - Excavation of Refuse in the NW corner.
  - Sorting and recovery of soil from the refuse.
  - North Storm Water Lagoon & North Siltation pond retrofit and possible relocation of Siltation pond.

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

There is no data to support the *"similar emissions"* statement.

## **Waste Transport**

*"For those alternatives with an earlier closure date, waste that would otherwise be disposed of at the CHRLF would be transported to an alternative landfill site and waste would be trucked from the rail unloading facility to the alternate landfill; or waste would be transported to a WTE facility somewhere in King County." (pp. 8-2 through 8-3)*

This Draft EIS assumes one WTE facility would be the only option. Fuel, emissions, and truck trips could be saved and thereby reduce the impact from moving waste from transfer stations to CHRLF. The GHG analysis could be greatly affected if truck trips from transfer stations to CHRLF by:

1. Portable WTE at each transfer station: Waste itself can be reduced locally into useful components, such as energy and recyclable materials. Portable (wheel mounted) *"Waste to Energy"* mobile plants would do this and could be located at previously used waste sites, including abandoned ones (King County has over a dozen such sites). Power could be returned to the regional electrical power company and also used on site to run operations. An MIT researcher and his colleagues have developed a system that can make liquid fuels from an abundant, familiar, and troublesome source—trash. It may be possible that units could be made portable and modular for transportability to needed sites (see: *Turning Waste into Clean Fuels*: <https://energy.mit.edu/news/turning-waste-into-clean-fuels/>).
2. Three or four smaller scale, non-portable plants located at central hubs across King County: As an example, KC owns property next to the Redmond transfer station that could site a small WTE plant. This could eliminate trips from Redmond to CHRL. Placing WTE plants in the north end, east side and sound end could greatly reduce the GHG gases by reducing the number of truck trips to CHRL.

**The Final EIS should incorporate the impact having WTE plants either at all transfer stations or at multiple (e.g., 3 or 4) hubs throughout the county as part of the GHG transport alternative.**

*"Any out-of-county regional landfill was assumed to have comparable environmental protection systems and operations as those described for CHRLF and to meet applicable federal and state requirements" (p 8-3)*

Fugitive emissions for any *"out-of-county regional landfill"* should also be included in the study, not just the protection systems and operations.

## **WTE Facility**

*"Combustion of waste in a WTE facility introduces the potential indirect effects of GHG emissions that are unique to that long-term option, discussed in Section 8.2.1" (p. 8-3)*

Section 8.2.1 has very little information concerning this topic.

*"Additional information about GHG emissions from WTE facilities can be found in the Final EIS for the Solid Waste Comp Plan,..." (p. 8-3)*

The document referenced, *Final EIS for the Solid Waste Comprehensive Plan*, contains an analysis that uses WARM Version 14, which includes *biogenic emissions*. WARM Version 15 was used in the analysis by Arcadis for use in this Draft EIS, which does not include *biogenic emissions*. Consequently, any numbers used from the *Final EIS for the Solid Waste Comprehensive Plan* would be comparing apples to oranges.

## **8.2 ENVIRONMENTAL IMPACTS**

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **8.2.1 Direct and Indirect Impacts** (pp. 8-3 through 8-10)

*“The CO<sub>2</sub> contained in the landfill gas and the CO<sub>2</sub> created by the combustion of methane in the flares or engines is considered biogenic (i.e., part of the natural carbon cycle) and was not included in the direct GHG emissions accounting.” (p 8-4)*

The CH<sub>4</sub> fugitive emissions created from the anaerobic digestion should be counted as a GHG gas.  
*Arcadis Report, p. 6-1:*

*“CH<sub>4</sub> is counted as an anthropogenic GHG because, even if it is derived from sustainably harvested biogenic sources, degradation would not result in CH<sub>4</sub> emissions if not for deposition in landfills.”*

### **8.2.1.1 No Action Alternative**

*“A 2019 King County study comparing the feasibility of waste-to-energy and waste export by rail (King County 2019e) evaluated GHG emissions in metric tons of carbon dioxide equivalents per ton of waste (MTCO<sub>2</sub>e/ton) disposed by (a) landfilling at an out-of-county landfill using waste export by rail and (b) by combustion in a WTE facility, using the latest version of the EPA’s Waste Reduction Model (WARM).” (p. 8-4)*

In referencing the *Waste-to-Energy and Waste Export by Rail Feasibility Study*, Arcadis, September 2019, p. 6-3:

*“Based on these conclusions and the broader discussion throughout this Study, the Arcadis Team recommends that the County consider pursuing additional preliminary evaluation, permitting and siting considerations, and other steps necessary to move forward with WTE facility disposal over WEBR.”*

Conclusion from the *Waste-to Energy Options and Solid Waste Export Considerations*, Normandeau Associates, Inc., September 28, 2017, (for the King County Solid Waste Division Comprehensive Solid Waste Plan), p. 97:

*“Based on the WTE Options and Solid Waste Export Considerations of this Report and previous Memoranda, it is recommended that the County consider WTE in their future plans as an appropriate option to address the County’s long-term solid waste management needs.”*

**The Final EIS should take into account the assumptions, analyses, and findings contained in both the Arcadis and Normandeau Associates studies quoted above.**

Unfortunately, the Draft EIS downplays the Arcadis study and the concept of credits:

*“However, because of the uncertainty associated with the applicability or longevity of the utility and other credits, they are not included in the analysis of the alternatives.” (p. 8-5)*

**The Final EIS should include, such as the “other” credits received for recycling in the WTE calculations.** Of note – the credits are for aluminum and steel cans that are diverted (recycled), fly ash, and energy credits. Evaluation of WTE options should assume that operationally they would employ “best practices” to fully optimize the benefits.

Table 8-2 is misleading. The Draft EIS has chosen to display the worst case scenarios for WTE and Export, yet portrays the best case (if not fantasy) scenario for the landfill by claiming there is virtually no GHG emissions. At the least, Table 8-2 should show the *range* of MTCO<sub>2</sub>e that is possible by including the credits. For example, WTE TOTAL for 2028-2046, using tonnage from Table 1-4 (p. 1-20 through 1-21) MTCO<sub>2</sub>e for the No Action Alternative utilizing the credits would be **(1,041,200)**. Export by rail totals would be **1,665,900 – 6,038,900**.

For comparison, since the recovered and flared landfill gas is not counted, but the *fugitive* gas is, one can estimate, using the *Table 1* MRR report (shown in comments under 8.1.1.1) how much fugitive gas might be emitted for the 19 years after the landfill closes after 2028. Using the 2018 fugitive gas emissions of 68,422

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

MTCO<sub>2</sub>e, Total emissions would optimistically be **+1,300,018**. This is done just to show the relative value of WTE to fugitive emissions.

Fugitive emissions should be included in the tables showing GHG emissions for each alternative

*“As shown in Table 8-2, waste disposed after closure of the CHRLF in 2028 under the No Action Alternative would produce a large quantity of GHG emissions with either long-term option: about 560,000 MTCO<sub>2</sub>e per year for WTE and about 482,000 MTCO<sub>2</sub>e per year for waste export.” (p. 8-6)*

It is not clear how those numbers were derived, e.g, based on average tonnages for those years OR total from Table 8-2 just divided by number of years OR ??? **The Final EIS should make this clear and provide underlying rationale.**

Any calculations showing GHG emissions from WTE and Export should include figures *with* and *without* credits.

*“The GHG emissions associated with construction of a new landfill disposal area at an alternate disposal site or WTE facility as long-term disposal options would occur after closure of the CHRLF with any of the alternatives and are also considered indirect impacts. **These emissions were not quantified** because the potential difference between them is considered insignificant.” (p. 8-6)*

If *“these emissions were not quantified,”* then how can the statement, from p. 8-2, *“Similar emissions from construction equipment are created from the construction of regional landfill disposal areas or WTE facilities”* be claimed? Either they’ve been calculated or not. **The Final EIS must make this clear.**

### **8.2.1.2 Impacts Common to All Action Alternatives**

*“GHG emissions from operation of diesel- and gasoline-powered equipment for disposal operations would be the same for the intervening years at CHRLF or an out-of-county landfill between year of closure and 2046.” (p. 8-7)*

Just to be clear --- WTE would have NO diesel or gasoline powered equipment (bulldozers, compactors, tractors, etc.) for disposal operations, so for this impact, WTE is far better than either landfill or export. **The Final EIS should better clarify this fact.**

There appears to be no table or emissions calculations for this particular GHG emissions operation – actual landfilling. Other tables show Off-Site Construction (Table 8-6) and Landfill Construction (Table 8-7), but no specifics for the landfill operations. **The Final EIS must include information/data.**

*“GHG emissions from waste decomposition would be the same for all action alternatives and the No Action Alternative through 2028. Thereafter, once CHRLF closes under each action alternative, GHG emissions from waste decomposition and LFG control system operation would be the same for the intervening years at CHRLF or an out-of-county landfill between year of closure and 2046.” (p. 8-6)*

Since the Draft EIS assumes fugitive emissions are negligible and all of the recovered and flared gas is biogenic and not counted, then it appears there would basically be zero GHG emissions for all years. **This false assumption must be corrected in the Final EIS.**

The Draft EIS does not indicate time between when waste is no longer taken and when the cells have final covers placed. It does not indicate in the Action Alternatives 1, 2, & 3 – the timeframe for WHEN the areas that are to be top lifted and closed will occur – before or after the new pits (Area 9 or NE Corner) are dug. The longer a final sealed cover is not installed, the more fugitive gas will leak. GHG emissions from landfilling would not be the same for all alternatives.

1. No Action: This would close ALL areas of the landfill and put final covers on all pits by 2028. By putting final covers on, the amount of fugitive gas is reduced.



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

2. Alternative 1: Areas 5, 6, 7 & 8 would remain open (no final sealed cover), while area 9 becomes the active area. This allows fugitive gas to be released from all 5 areas, since final sealed covers would probably not be placed until after area 9 is full, around 2037.
  - a. The alternative is not clear as to *when* during the expected life Areas 5, 6, 7, & 8 final cover will be placed.
  - b. CHRL has practiced techniques to increase air space by stockpiling dirt to compress areas or just waiting while the pits naturally settle. To maximize airspace, it could be assumed that top lifting will be performed after Area 9 is complete, leaving these areas open until 2037 and leaking more methane.
3. Alternative 2: Areas 5, 6, 7, & 8 would remain open (no final sealed cover), area 9 would remain open longer than Alternative 1 as a result of the additional height and have more refuse due to the 43 acres (unless this is a typo in the draft and it should be 34) of development vs the 34 acres in Alternative 1, allowing more fugitive gas to be emitted over Alternative 1.
  - a. Top lifting of Area 8 would last longer than Alternative 1 because of the increased height to 830.
  - b. Top lifting would probably occur after Area 9 to allow for additional settling in the other areas. Additional fugitive gas will occur over No Action and Alternative 1.
  - c. Final closure covers would not be placed until at least 2038, leaking more methane.
4. Alternative 3: Since the order of when landfilling and top lifting will occur is unclear, it will be assumed that top lifting for all areas mentioned, will be done after the North east corner is filled and developed. At that point, all other areas have had the maximum time to settle and create more airspace in which to add waste. It has been the practice of CHRL to leave areas open, without final cover so they can go back and top lift the new airspace created from settling. This Alternative is the worst possible one for fugitive gas emissions because all the areas are kept “open” (no final sealed cover) until 2046.

**The Final EIS must include details of *when* final covers will be placed with accompanying analyses in order to fully understand the impacts of fugitive GHG emissions. In addition, the Final EIS also must clearly state that the more waste is landfilled and the longer the landfill delays installing final covers, the more fugitive GHG emissions occur, as well as account for the fact that the landfill continues producing fugitive emissions long after the landfill closes.**

**Alternative 1, 2, & 3:** Adding additional waste on top of previously closed waste cells *with* liners could jeopardize the liner’s integrity and cause leaks by adding undue stress, which could lead to lateral migration of methane from those old areas.

In a paper by Ian D. Peggs, I-CORP International, Inc. “GEOMEMBRANE LINER DURABILITY: CONTRIBUTING FACTORS AND THE STATUS QUO, 2003, <https://www.geosynthetica.com/Uploads/IDPigsUKpaper.pdf> it states, in regards to the High Density Polyethylene (HDPE) membrane in Municipal Solid Waste (MSW) landfills:

*“Ultimate durability will be a function of the stress cracking resistance of the specific HDPE resin used, the effectiveness of its antioxidation additives, the stresses generated in the geomembrane during installation and landfill operation, and the stress relaxation rate.”*

*“Of the many HDPE geomembrane liners that have “failed” in the past 20 years, all have failed in a very limited number of ways, but none have just “worn-out” or generally degraded to nothing, nor is it expected that they will. However, our practical experience with HDPE geomembranes is limited to about 25 years.”*

*“HDPE liners in landfills and other applications fail or are made to fail as follows:*

- Inadequate welding and attachment to structures*
- Imposed stresses during construction*
- Mechanical damage during construction*
- Stress cracking at stress points*
- Service stresses that separate welds”*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

The paper defines stress cracking as: *"essentially a brittle cracking phenomenon that occurs at a constant stress lower than the short term yield strength or break strength of the material."* Such structural phenomena are difficult to predict, especially when trying to account for ever-changing weather conditions over life of the membrane.

The liners were installed in 1986 for the Central Pit Refuse area, 1988 for Area 2/3, and 1991 for Area 4.

**Alternative 3:** This alternative proposes adding waste to a previous landfilled area that is unlined. The LOURA system they propose that will be placed on top of the old refuse area does nothing to protect migration of landfill gas laterally due to added pressure. In 2011, explosive levels of methane were found to have migrated to the western property line. It was believed the methane was migrating under areas 6 and 7. A portion of Area 6 overlies a portion of the unlined Main Hill Refuse Area. Potential migration of landfill gas, laterally from the unlined East Pit caused by pressure from Alternative 3 could be another source of fugitive GHG emissions.

### **8.2.1.3 Action Alternatives**

#### **Landfill Development**

*"Table 8-5 shows net GHG emissions for each action alternative with WTE and Waste Export by Rail compared to the No Action Alternative." (p. 8-8)*

Again, using the MTCO<sub>2</sub>e *without* the credits for either WTE or Export is misleading and disingenuous. **At the very least the table should have 2 more columns showing the values with credits.** This would show the range of possible GHG emissions. But to show only the absolute *worst* case scenario is to sabotage the process.

Table 8-5 clearly indicates the no action alternative with conversion to waste export vs. WTE results in lower GHG emissions for Alternatives 1 or 2 and identical emissions to Alternative 3 that continues operation of the landfill until 2046. When you add in the increased emissions for construction of new waste cells at the CHRL and relocation of existing facilities the result indicate the No Action alternative with a conversion to waste export is the best decision in terms of controlling GHG emissions and meeting the County's legislated goals. However, if Table 8-5 were to use GHG emissions including *credits*, then the No Action alternative with a conversion to WTE would be the best decision. **Table 8-5 fails to adequately delineate all GHG gases that are included in the table and is not transparent as to the figures used.** It must include credits, even if in a "range". The table must have a column showing GHG for CHRLF landfill activities, including details for fugitive gases, construction, off-site construction trips, & landfill disposal activities. Cumulative totals should clearly be stated. **The Final EIS must clarify this and the estimated Fugitive gas emissions from each alternative must be added to reflect all GHG emissions , as well as include emissions *with* credits.**

*"All action alternatives produce significantly more GHG emissions at CHRLF than the No Action Alternative. However, it is assumed that the GHG emissions associated with construction of a new landfill disposal area at CHRLF would occur similarly at a regional landfill or for development of a WTE facility with any of the alternatives after CHRLF closes." (p. 8-10, our **emphasis**)*

**The bases for these assumptions, along with relevant data must be supplied in the Final EIS.** For example:

1. For export, no data is provided for another landfill. The assumption is made that the another landfill would be identical in design and operation to the CHRLF. No data is provided for another landfill in terms of climate (e.g., potential export sites such as Eastern WA and Eastern OR are very different than Western WA), transportation services, etc.
2. To claim that a WTE facility would be similar to ANY of the alternatives after it closes only points to inadequacies in the Draft EIS. Given that Alternative 3 GHG emissions are estimated at 30,483 MTCO<sub>2</sub>e, which is an additional 11,400 MTCO<sub>2</sub>e over Alternative 2, or nearly 57% higher, to claim that WTE would be similar to *"them"* does not make sense.

#### **Support Facilities**

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*"When support facilities are relocated, there would be a short-term increase in GHG emissions associated with construction equipment. The GHG emissions are expected to increase under action alternatives, including facility relocation options, at a similar level as for the No Action Alternative." (p. 8-10)*

No data is shown for the GHG emissions support facilities construction, at a *"similar level as for the No Action Alternative."* What is that *"level"*?

*"The majority of employee and staff vehicles would go to the Renton site rather than to CHLRF. However, these vehicles are coming from various locations around the Seattle metropolitan area and **it is assumed** that the aggregate distance traveled to the Renton site would be similar to the aggregate distance traveled to the CHRLF." (p. 8-10)*

**The Final EIS must describe on what are these Support Facilities assumptions based?**

### **8.2.2 Cumulative Impacts**

*"Production of GHG associated with any of the alternatives, including the facility relocation options, when combined with other past, present, and reasonably foreseeable future global sources, could contribute to an incremental cumulative effect on climate change. Indirect beneficial impacts associated with WTE may reduce the cumulative effects on climate change." (p. 8-11)*

In no way has the Draft EIS expressed the full **past** contribution and cumulative effects on this landfill to the environment.

- It has operated for 60 years.
- Only since 2008 has the captured landfill gas been sent to the BEW plant for processing to pipeline gas rather than flaring it. Up until then, it's been flared.
- No mention is made of how much fugitive methane has been released into the atmosphere.
- No mention of the major landfill gas pipeline breakage in 2013 that emitted toxic landfill gas into the atmosphere for 5 hours, at 10,000 cu ft / minute, forcing 2 families from their home. They eventually sold their property to KC. The break forced them to the hospital with severe symptoms from exposure to the gas.
- No mention of the numerous violations of emissions that have occurred over the years have been made.

**The Final EIS should consider ALL aspects of past operations to evaluate the potential future impact, including frequency of violations and non-compliance.**

The Draft EIS has not considered all impacts of the **future**, either. It assumes a fully compliant, 100% efficiently operated landfill using best practices with no issues. **Such an assumption is not credible and should be reassessed in the Final EIS.**

No consideration is given to the impacts that *could* happen; many of which could be disastrous to the environment.

- Earthquake – comments in this document don't address the impact on:
  - On the extraction wells, gas transport pipes, flares (1 operates 24/7) or the pipeline to BEW (it has ruptured once before in 2013). Breakage of any of these could be disastrous.
  - Integrity of the liners. Liners don't last forever. They can become brittle through chemical oxidation, develop tears, etc. and an earthquake could exasperate and weakness in the liners causing leaks of methane, leachate and garbage.
- Fires.
- Historical violations could be an indicator of future problems if they consistently occur.

**The Final EIS should consider best case AND worst case scenarios for future impacts each alternative could impose.**

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

Landfills are the 3 largest man-made sources of GHG emitters in the United States. The Draft EIS does not mention that this is the largest *active* landfill on the West Coast. Puente Hills in California is larger, but is closed now. Locating or expanding a landfill in our wet climate is not recommended.

**Due to faulty assumptions regarding negligible emissions compared to the U.S. and global emissions, the Draft EIS has neglected a set of emissions that are not negligible at all. Those emissions and cumulative impacts need to be included and discussed in detail in the Final EIS.**

### **8.3 MITIGATION MEASURES (p. 8-11)**

There is no additional mitigation measures proposed. The items mentioned are part of their ongoing operations and not new. It only mentions KCSWD would *"also seek other ways of achieving further reductions in GHG emissions."* The Draft EIS should be more specific concerning any additional mitigation efforts – Are they talking about landfill gas? Or vehicle emissions?

Also mentioned is *"purchasing carbon neutral offsets for all GHG emissions associated with replacement or upgrades of existing facilities"* (p. 8-11) as mitigation. While purchasing carbon neutral offsets can be a valuable aid to reducing GHG gases, there can be pitfalls if the offset purchased is not properly vetted. According to an article from Vox, <https://www.vox.com/2020/2/27/20994118/carbon-offset-climate-change-net-zero-neutral-emissions>, *"carbon offset projects have a long history of overpromising and underdelivering, threatening fragile progress on climate change."* **Specific offset projects should be identified in the Final EIS.**

*"...and installation of interim and final covers with geomembrane liner material. KCSWD would continue these measures under all action alternatives and also seek other ways of achieving further reductions in GHG emissions."* (p. 8-11)

CHRLF has not put final covers on areas 4 & 5 in order to create more *"air space"* by stockpiling dirt on these areas so additional waste can be added. To truly mitigate fugitive emissions from areas like this, they should put final covers on all areas when they are full. In addition, the *"active 1 acre"* sites should have 6 inches of dirt added as daily cover. Better gas monitoring is needed, above and beyond what PSCAA and other regulations state. Using aerial monitoring, whether from drones or planes should be used over the entire landfill on a regular basis (not just 4 times a year) and any leaks detected should be immediately fixed.

The strict federal and state regulations are not enough to truly mitigate fugitive emissions – frequency of monitoring is a problem. Regulations don't help AFTER the fact when violations, non-compliance, regulatory exceedences, and non-operational extraction wells occur – the damage is done. Monitoring monthly, quarterly, yearly, or even every 5 years in some cases, do not allow timely reactions to problems that could be ongoing until finally detected.

WTE plants are far stricter in regulatory requirements. WTE plants can measure everything that comes out of the stacks, and can measure it on a far more regular basis. Some plants take measurements constantly during the day. There is no question on what a WTE plant is emitting. And because of the constant monitoring, they can react on a timely basis to fix errors. On the other hand, landfills don't know what's coming out of the landfill on any regular basis.

The earlier comments assessing the faulty assumptions as to the efficiency of CHRLF gas collection system should be taken into account when proposing additional mitigation efforts. **Such mitigation measures need to be included and discussed in detail in the Final EIS.**

### **8.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS (p. 8-11)**

*"Given the relatively small contribution of GHG emissions from the action alternatives compared to total US output from landfills and construction activities and total global output of GHG, no significant GHG-related impacts would be expected to result from these emissions. None of the alternatives or long-term disposal*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*options have any bearing on the continued production of waste in King County. Waste disposal will continue under some combination of the alternatives under consideration and the long-term disposal option selected by King County. While all alternatives produce GHG emissions that are not significant in and of themselves, when combined with other global emissions, they would be anticipated to contribute to climate change." (p. 8-11, our emphasis)*

Comparisons to total global output are irrelevant. Similar to what was mentioned previously, *all* excess GHG emissions are impactful, especially Methane. To discount the effect is negligent. **The Final EIS must account for all excess GHG emissions.**

The statement we emphasized above seems to be contradictory to other statements made in the Draft EIS. On the one hand, emissions are compared to the global output and said to be insignificant, yet then states they would contribute to climate change when combined with the global emissions.

Any and all GHG emissions have long term adverse impacts on the environment. Landfills can continue producing methane for over 50 years once closed. **The Final EIS must account for this.**

**The Final EIS must justify any assumptions made as to equivalency, models, and "similar" as to their use and inclusion in this analysis.**

In general, the information presented in this section is inconsistent, vague in some parts, and somewhat misleading. Data tables should be more consistent in terms of units. A summary table should be included to show *all* aspects of the GHG emissions impact, including all alternatives and long term options; all facets including construction, transportation, operations, etc.; and move of facilities so comparisons can be made side by side. Statements such as: *"GHG emissions are similar"* should have data presented to back up this claim. **The Final EIS must address these deficiencies.**

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **Human Health**

### **9.0 HUMAN HEALTH** (pp. 9-1 through 9-9)

The Draft EIS states:

*“This environmental review determined that there would be no significant unavoidable adverse impacts to human health at CHRLF or the Renton site during construction or operation of any of the alternatives, including the facility relocation options.” (p. 9-1)*

There have never been studies done to determine if there have been any associated health issues in the communities in the vicinity of CHRLF to justify that there are *“no significant unavoidable adverse impacts to human health.”*

Further, the Draft EIS’s **HUMAN HEALTH** section is deficient in that it is *supposed to* bring together *all* the adverse sources that impact human health, such as Air and Odor; Surface Water and Groundwater; Noise and Vibrations; Aesthetics, Light, and Glare; etc.—all the subject of other *Environmental Element* sections of the Draft EIS; however, it does not discuss each of these, both individually and in combination, as they impact human health.

**The Final EIS must rectify these omissions.**

### **9.1 AFFECTED ENVIRONMENT** (pp. 9-1 through 9-6)

The Draft EIS states:

*“Potential exposure pathways relevant to the CHRLF are:” (p. 9-1)*

It lists the three pathways to exposure as water, air, and disease vectors. Another vector should be added to the list – acoustical vibrations. During the construction of roadways, a dirt compactor was used that created a low, acoustical vibration that caused severe headaches in some people. Evidence exists that low frequency noise and vibrations can cause health effects. Research reported in the paper *Noise and Health – Effects of Low Frequency Noise and Vibrations: Environmental and Occupational Perspectives*, Kerstin Persson Waye, December 2011, [https://www.researchgate.net/publication/258400137\\_Noise\\_and\\_Health\\_-\\_Effects\\_of\\_Low\\_Frequency\\_Noise\\_and\\_Vibrations\\_Environmental\\_and\\_Occupational\\_Perspectives](https://www.researchgate.net/publication/258400137_Noise_and_Health_-_Effects_of_Low_Frequency_Noise_and_Vibrations_Environmental_and_Occupational_Perspectives) states: *“Low frequency noise annoyance is related to headaches, unusual tiredness, lack of concentration, irritation, and pressure on the eardrum. Data suggest that sleep may be negatively affected.”*

**The Final EIS must include additional human health impacts from these types of vibrations.**

There is a long history of proven violations, lawsuits, complaints, questionable studies, mis-use of data by self-managed governing departments and agencies which continue to maintain a disregard of public and environmental health standards and enforcement since 1960.

It is clear by the evidence and the history that CHRLF gas and leachate (all are toxic waste) contaminate and pollute the environment and people, air, water, and ground. This combination of known and unknown toxins in the air, water and ground are forever more; impacting past, present, and future public and environmental health. The *cumulative* effects of long-term exposure to low levels of environmental contaminants and pollutants are excluded and, thus, ignored, in the Draft EIS. Chronic diseases are incited by these cumulative effects.

Below is but one example regarding the dangers of leachate and how it is handled by CHRLF:



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

On 6/30/20, Darshan Dhillon, Solid Waste Program Supervisor Health & Environmental Investigator at Seattle-King County Public Health, e-mailed the following article: *“Leachate Management: Effectively Managing Landfill Leachate Odor Control with Permanganate,”* WasteAdvantage Magazine website to Jennifer Keune, Environmental Scientist III, Joan Kenton, Environmental Scientist III-TLT and cc'd Mark Monteiro SWD Operations Supervisor II. Mark Monteiro then e-mailed as FYI to Scott Barden, the CHRLF Interim Operations Manager for effectively managing landfill leachate odor control. The article link contained information stating (our emphases):

*“leachate is acutely toxic when inhaled. Leachate production is a significant concern for municipal solid waste (MSW) landfills and causes substantial odor emissions that have negative health and environmental effects.”*

This email verified scientific knowledge of landfill leachate and suggests an odor masking agent that removes the odor, but does NOT remove the toxins presenting adverse health and environmental effects.

Darshan Dhillon works in the Environmental Health Services Division (EHD), which focuses on *“prevention of disease through sanitation, safe food and water, proper disposal of wastes and toxics, and promoting safe and healthy environmental conditions throughout King County for the benefit of all residents and visitors.”*

Jennifer Keune and Joan Kenton work KC DNRP/SWD/FESS - Environmental/Permit Compliance and report to Neil Fuji, Managing Engineer, who, in turn, reports to Glynda Steiner, Deputy Director SWD, which *“Ensures compliance with regulations and permits that impact the environment while promoting environmental responsibility.”*

At a minimum, all these King County government departments/divisions are knowledgeable about the substantial landfill leachate emissions that have created cumulative past, present, and future substantial negative health Public health and environmental effects. As a County-owned, operated, and self-regulated landfill of 60 years, this is a grossly negligent demonstration of the failure to mitigate such impacts; and represents a disregard and lack of accountability for human and environmental life, health and safety, surrounding communities, school, parks, trails, etc.

Further, this contradicts the King County Equity and Social Justice Strategic Plan. <https://www.kingcounty.gov/elected/executive/equity-social-justice/strategic-plan.aspx>

The CHRLF *“normal operations”* continue to generate significant public and environment health impacts. We fear, in fact, that it is an ongoing public and environmental health crisis that can't be undone.

**Since the Draft EIS falsely assumes that all existing controls in place preclude any human health impacts, the conclusions it draws—that no additional mitigation is needed for any of the alternatives—are flawed and must be rectified in the Final EIS.**

### **9.1.1 Water Pathways**

#### **9.1.1.1 Cedar Hills**

*“Leachate is contaminated with various biological and chemical contaminants that are either contained in the solid waste or formed during solid waste decomposition. Leachate is captured through a system of pipes and pumps, conveyed to leachate aeration lagoons, and then conveyed to the KCWTD POTW for treatment and eventual discharge. Surface water that runs off the active face of the landfill is handled as contaminated stormwater and is collected in a separate conveyance system and routed through the leachate treatment system and to the wastewater treatment system.”* (p. 9-2)

Not only are the emissions full of TAP compounds, the leachate itself should be considered as part of this study as it also contains biological and chemical contaminants. The fact that it is pumped offsite should not eliminate it from study, as it would now become a regional issue.

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*“Landfill gas can contain trace amounts of toxic compounds that may be harmful to human health at high enough concentrations” (p. 9-2)*

The question becomes what is *“high enough concentrations.”* The accuracy of the numbers used in the models to predict levels of TAPs comes into question. It appears they could have been understated.

## **9.2 ENVIRONMENTAL IMPACTS (pp. 9-6 through 9-9)**

### **9.2.1 Direct and Indirect Impacts**

#### **9.2.1.2 Impacts Common to All Action Alternatives**

This subsection essentially states there are no impacts; however, we have detailed many current and potential impacts in sections herein that discuss several, of the *Environmental Elements* addressed in the Draft EIS. Rather than repeating those concerns here, we refer the reviewer to those sections.

There will be human health impacts following CHRLF closure for *all* the alternatives to varying degrees due to closure dates and the length of operational periods. None of these are identified, nor discussed. **These must be addressed in the Final EIS.**

#### **Landfill Development**

#### **Water Pathways**

*“Despite the lack of engineered bottom liners in the oldest areas of the landfill, routine monitoring shows that downgradient groundwater is in compliance for primary drinking water standards (KCSWD 2020) in the regional aquifer.” (p. 9-7)*

For Action Alternative 3 it is proposed to add additional waste on top of the Main Hill, an unlined area. The Draft EIS addresses protecting the top line with a LOURA line system, but does not address the impact of adding tons of waste on an unlined area in regards to water drainage and seepage. Since the top liner of the Main Hill is not sealed to a bottom liner, it is not clear if additional pressure would push waste outward from under the protection of the top cover. If that were to occur, water could come in contact with the waste, causing contamination to areas below the waste. There are some homes on the eastern side of the landfill that use wells for their water. Any potential contamination of these wells will cause a health risk.

**The Final EIS needs to address impacts on the unlined areas with regards to possible outward migration of the waste and water infiltration, causing any further contamination of the well water, perched or regional aquifer.**

Since *“leachate is contaminated with various biological and chemical contaminants,”* it too should be considered another pathway to health impacts. Leachate is conveyed to King County Wastewater Treatment Division (KCWTD) Renton Public-owned treatment works (POTW) plant for *“treatment and eventual discharge.”* At the treatment plant it is treated and separated into treated water and *“LOOP”* (King County’s biosolid fertilizer) that is applied to farms and forest lands across the state.

In an email exchange between Janet Dobrowolski, resident, to Ashley Mihle, Compost Project Manager, Resource Recovery, King County: (our **emphasis**):

**Janet Dobrowolski:** Friday, June 21, 2019:

*“How, exactly, do you remove dissolved chemicals from the water? If you can do that for some, where do the chemicals go, once removed?”*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*"How do you extract the chemicals from the bio-solids? I assume you can do some but certainly not all. What do you do with any of the extracted chemicals? Are they trapped in the filters? What do you do with the filters?"*

*"I know Cedar Hills landfill produces thousands of gallons of toxic leachate each day that ends up at the South Plant. I also am aware that on occasion, there are exceedences for the chemicals. This stuff is highly toxic ----- Are you telling me you can remove the chemicals from this?"*

**Mihle, Ashley** <Ashley.Mihle@kingcounty.gov> Thursday, June 27, 2019 at 5:13 PM

*"Thank you for the clarification around your questions, specifically chemicals in wastewater. The short answer is that nationwide, decades ago, wastewater treatment technology was **not designed to remove chemicals, it was designed to remove pathogens, so we do not specifically "filter" out chemicals. Doing so would require technology advances and costly equipment upgrades.** This is something that is considered in our planning efforts and technology assessments, but it is extremely difficult to do and expensive. Current biosolids regulations include only nine metals, not chemicals."*

*"Loop testing: We test Loop quarterly for **173 chemical compounds, many of which are EPA priority pollutants. We are not required to conduct this testing and we are not required to meet any limits,** but we do it voluntarily because we are committed to high product quality for our customers. EPA has repeatedly conducted biosolids surveys and risk assessments and found that biosolids are beneficial and do not pose negligible risk to human health and the environment. EPA does not require additional biosolids regulations beyond the 9 regulated metals. Out of the 173 compounds we test for, we detect 10-15 and at very low concentrations. In 2018, we detected only 11. As I mentioned below, those data are online."*

*"Cedar Hills Landfill leachate: The King County Industrial Waste Program is a federally delegated pretreatment program. Under this authority, the wastewater is **pretreated to meet our discharge limits,** with the final treatment occurring at the wastewater treatment plant. In the case of the Cedar Hills Landfill, the final treatment occurs at the South treatment plant in Renton. It is true that the Cedar Hills Landfill is encountering challenges getting some discharge parameters into compliance and they are currently under a compliance order from the King County Industrial Waste Program to do just that. The King County Wastewater Treatment Division monitors biosolids quality at our main treatment plants on a monthly basis to observe if there are any trends that could impact biosolids quality. To date we have not seen any trends of metal pollutants that have diminished the biosolids quality at the South plant from the Cedar Hills Landfill."*

*"Lastly, Washington State requires beneficial use of biosolids (Chapter 173-308 WAC). This means we are required by state law to use biosolids on land to improve the quality of the soil, as a soil amendment, which we have done for more than 40 years."*

Please note that Arsenic levels in the CHRLF leachate were not in compliance. Pretreatment is aeration of the leachate ponds.

Further, King County has admitted they cannot remove chemicals from the sewer sludge. Ms Mihle further explained in her email that any chemicals in the LOOP product was minute and not a problem:

*"In 2016, we also tested Loop for pharmaceuticals, personal care products, and PBDEs (flame retardants) at an independent lab that specializes in these test methods, as part of a nationwide survey. At the minute concentrations in biosolids, plants generally do not take up these compounds, especially to the shoot or edible portion of the crop – and many degrade in the soil via microbial activity."*

- PBDEs are persistent, but these compounds are present in our couches, carpets, etc. at far higher concentrations than in biosolids. Research shows that sometimes PBDEs stay in soil, and sometimes they are reduced in soil over time. Also that they are found in plant roots but not plant shoots."*

## GMVUAC Comments—Draft EIS: CHRLF Site Development Plan

- You would need to eat two Metro buses full of Loop biosolids to get the same amount of acetaminophen (Tylenol) as you'd get in 2 tablets. And you would not have occasion to eat any Loop at all.
- There is 3000 mg/kg of triclosan (antimicrobial) in toothpaste, which we put directly in our mouths – but only 10.4 mg/kg in Loop biosolids from South Plant. Again, you wouldn't be putting Loop directly in your mouth."

However, Ms. Mihle's comparison to Tylenol is not relevant when talking about highly toxic compounds. In addition, testing for personal care products is not relevant. Tests should have been done for more toxic substances such as *Chromium VI*, *furans*, *dioxins*, *PFAs* and others. Small amounts of those pollutants can be harmful to humans, as well as salmon, animals and plants. The comment about plants "*not taking up these compounds*" is not true.

According to a NIH (National Institute of Health) report: *Absorption and translocation of polybrominated diphenyl ethers (PBDEs) by plants from contaminated sewage sludge*, 08/03/2010, <https://pubmed.ncbi.nlm.nih.gov/20684973/#:~:text=The%20majority%20of%20PBDEs%20was,the%20ability%20to%20translocate%20PBDEs>:

*"Our results suggest that absorption, accumulation and translocation of PBDEs by plants and their transfer to the food chain could represent another possible risk for human exposure."*

A more persistent pollutant King County for which does not test is PFAs. Research shows PFA's as another pollutant that is a "forever" chemical found in biosolids. According to a NIH report: *Accumulation of perfluorinated alkyl substances (PFAS) in agricultural plants: A review*, 10/30/2018, <https://pubmed.ncbi.nlm.nih.gov/30502744/> (our **emphasis**):

*"PFASs have been shown to interact with blood proteins and are suspected of causing a number of pathological responses, including cancer. Given this threat to living organisms, we carried out a broad review of possible sources of PFASs and their potential accumulation in agricultural plants, from where they can transfer to humans through the food chain. Analysis of the literature indicates a direct correlation between PFAS concentrations in soil and bioaccumulation in plants. Furthermore, plant uptake largely changes with chain length, functional group, plant species and organ. **Low accumulations of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) have been found in peeled potatoes and cereal seeds, while short-chain compounds can accumulate at high levels in leafy vegetables and fruits.** Significant variations in PFAS buildup in plants according to soil amendment are also found, suggesting a particular interaction with soil organic matter. Here, we identify a series of challenges that PFASs pose to the development of a safe agriculture for future generations."*

The EPA Office of the Inspector General issued a report: *EPA unable to Assess the Impact of Hundreds of Unregulated Pollutants in Land-Applied Biosolids on Human Health and the Environment*, November 15, 2018, [https://www.epa.gov/sites/production/files/2018-11/documents/epa\\_oig\\_20181115-19-p-0002.pdf?fbclid=IwAR0nOM6wMxQno1THBTGnBQ3A4rYqb9fxR2iOPG0\\_R\\_AuyhyXWzFch9wUue4#:~:text=Pollutants%20found%20in%20biosolids%20can%20include%20pharmaceuticals%2C%20steroids%20and%20flame%20retardants.&text=This%20is%20our%20report%20on,Environmental%20Protection%20Agency%20\(EPA\)](https://www.epa.gov/sites/production/files/2018-11/documents/epa_oig_20181115-19-p-0002.pdf?fbclid=IwAR0nOM6wMxQno1THBTGnBQ3A4rYqb9fxR2iOPG0_R_AuyhyXWzFch9wUue4#:~:text=Pollutants%20found%20in%20biosolids%20can%20include%20pharmaceuticals%2C%20steroids%20and%20flame%20retardants.&text=This%20is%20our%20report%20on,Environmental%20Protection%20Agency%20(EPA)).

*"The EPA's controls over the land application of sewage sludge (biosolids) were incomplete or had weaknesses and may not fully protect human health and the environment. The EPA consistently monitored biosolids for nine regulated pollutants. However, it lacked the data or risk assessment tools needed to make a determination on the safety of 352 pollutants found in biosolids."*

The EPA's website mentions 400 pollutants, but still is not regulating any of them. The pollutants that are currently regulated are only metals: <https://www.epa.gov/biosolids/regulatory-determinations-pollutants-biosolids>

Biosolids might otherwise be safe if it were just human waste. However, that is not the case for King County's LOOP product due to CHRLF leachate being mixed into it.

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

Biosolids are an unregulated source of pollutants that have not been determined to be safe for the environment and health. Research is finding more and more “forever” chemicals in the biosolids that have been applied as fertilizer and end up in our food chain. Dairy farmers are feeling the pressure as milk from the cows is now testing positive for PFAs because of food eaten that was grown with biosolids applied.

**Given the uncertainty of the safety of biosolids produced with the leachate from CHRLF, the Final EIS must include this as a pathway to human health hazard. Furthermore, since the Draft EIS references the impacts to “regional” area throughout, leachate must be included because has wide ranging regional impacts when processed into LOOP.**

### **Air Pathways**

#### **Toxic Air Pollutants**

*“As described in Chapter 4, modeled concentrations of TAP expected to be emitted through CHRLF operations under a worst-case scenario (Alternative 3 in 2047) are all below their respective ASILs.” (p. 9-7)*

As discussed in our **Air and Odor** section herein, there is question as to the accuracy of the assumptions used in the models and the validity of the results. The LandGEM models produce concentrations of the TAPs that are likely highly understated.

The Draft EIS looks at *individual* ASILs for the TAPs, when it should be looking at them as a whole. Residents are not breathing in one chemical at a time, but rather they are breathing in up to 85 chemicals that are *individually* tested, but any potential interactions are not evaluated. Further, it is not known how many more chemicals may be in the fugitive emissions from the CHRLF and leachate that citizens are breathing in, because they are not on *any* list for testing.

**The Final EIS must take this into account and how it affect human health.**

*“Based on this, human health impacts from toxic air pollutants generated by the landfill are not anticipated to be significant.” (p. 9-7)*

CHRLF cannot definitively say: *“health impacts from toxic air pollutants generated by the landfill are not anticipated to be significant,”* simply because there is no proof of their significance or not. TAPs are labeled toxic for a reason. In researching nearly every chemical listed in *Appendix D* for fugitive gas and leachate emissions, the results are stunning as to the myriad of symptoms these chemicals can cause in humans.

Using the website *PubChem*, from the NIH, National Library of Medicine, chemical compounds information can be found, including the hazard classification, odor, toxicity, symptoms of exposure, carcinogenicity, and many, many more details. Analysis of 84 chemicals, including those listed in *Appendix D, Tables 2 and 3* for both the 24-hr and annual *De Minimis* and additional chemicals found in CHRLF stack test documents revealed:

- 57 were classified as irritants to combinations of eyes, nose, throat, lungs, and skin.
- 32 were classified as environmental hazards.
- 47 were classified as health hazards
- 27 were classified as acute toxic.
- 36 were classified as flammable.

Most had at least 2 classifications. Nearly all had odors associated with them. Thirty-one were either possibly, probably, likely or known human carcinogens, the rest were either not classified as carcinogenic, not evaluated, unknown, or inadequate information. Immediate symptoms associated with **inhalation** of those classified as irritants or health hazards include any or all of these, although this is not an exhaustive list:

Cough, sore throat, burning sensation, labored breathing, shortness of breath, nausea, dizziness, headache, weakness, vomiting, confusion, convulsions, lethargy.



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

Other symptoms, such as cancer or chronic disease may not manifest itself for years. The fact that there *only* are 85 chemicals listed is cause for concern, given there are thousands of chemicals in the world, yet the State of Washington *only* regulates a small fraction of them—389.

Exposure, taken individually in a single instance is unlikely to cause any sort of symptoms. However, when exposed to the entire gamut of these chemicals, either in one odor event or over a long period of time, the effects can be quite adverse. Complaints submitted to PSCAA include symptoms such increased asthma issues, burning nose and throat, difficulty breathing, coughing and headaches.

**The Final EIS must consider the TAPs as a *whole*, not simply compared to individual ASILs. The Final EIS also must take into account the probable *understatement* of the levels of these TAPs in the fugitive emissions as has been modeled. Lastly, the Final EIS must consider the potential effects of long term exposure – past, present and future.**

### **9.2.1.3 Indirect Impacts**

*“A regional landfill accepting waste from the County is likely to be an existing facility with measures in place to control human health impacts, so significant human health-related indirect impacts associated with that landfill are unlikely to result from the County’s waste export.” (p. 9-8)*

This same basic statement can be found repeated for nearly every *Environmental Element* throughout the Draft EIS. While true, what really matters are the impacts to human health related to keeping the CHRLF operating further out into the future beyond the No-Action Alternative’s 2028 closure. Unfortunately, the Draft EIS does not discuss this, but simply provides the link to the March 2019 *Comprehensive Solid Waste Management Plan Final EIS*, which looked at 16 alternatives, so it is not clear to which of these alternatives the Draft EIS refers. Consequently, the reader of the Draft EIS cannot review *“a more detailed description of potential impacts associated with the long-term disposal options.”*

### **9.2.2 Cumulative Impacts**

The Draft EIS does not discuss human health *“cumulative impacts.”* It surmises that *“Cedar Grove Composting Facility historically has been a major source of odors in the surrounding community.”* Further, it only mentions odor and not any other human health impact. **This must be rectified in the Final EIS, which must include cumulative impacts related to all human health-related issues.**

## **9.3 MITIGATION MEASURES (p. 9-9)**

The Draft EIS simply states:

*“...KCSWD has been implementing best management and engineering practices in designing, operating, and maintaining environmental control systems, including disease vector control and the landfill gas, leachate, stormwater, and surface water systems.” and “With these controls in place, no additional mitigation measures are necessary.”*

These statements clearly attempt to paint a picture of everything is working perfectly at the CHRLF in terms of limiting health impacts and, therefore, nothing needs to change as landfill life is extended for the three Action Alternatives out to 2046. Based on such false assumptions, the conclusions are flawed. **At a minimum, the Final EIS must address Mitigation Measures related to: (1) Capping, covering, and sealing the various areas and (2) Requiring all gasses, aerosols, and volatiles be captured, processed, and precluded from local release.**

## **9.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS (p. 9-9)**



## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

The statement, which comprises this entire subsection of the Draft EIS, provides no discussion whatsoever and is completely unacceptable:

*“None of the alternatives would result in significant unavoidable adverse impacts to human health.”*

**The Final EIS must discuss significant unavoidable impacts and their ramifications for human health.**

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **Noise And Vibration**

### **10.0 NOISE AND VIBRATION** (pp. 10-1 through 10-16)

The Draft EIS does not adequately consider the quiet use of the Cedar River, Trails, and Natural Areas. Many residents use the area (parks, trails and lakes) around and across from CHRLF for getting away, reducing the stress of daily life and appreciating nature in its natural habitat. Noise, light, air and water pollutions can have adverse behavioral effects on wildlife; it affects native birds perching, nesting and feeding. Water pollution affects Salmonoids ability to return to spawn and lay their eggs. Air pollution, as evidenced with the 2020 fire season, adversely affects humans and animals ability to breathe.

The Draft EIS states:

*“These studies included measurements of existing noise and vibration levels at locations around the perimeter of and on the landfill property and the Renton site.”* (p. 10-1)

This implies the studies do not take into account that sound carries. Noise studies should be performed on local streets within at least a 1 mile radius (or more), because noise acts differently in a canyon environment than it does on a flat landscape. **The Final EIS should include such assessments.**

### **10.1 AFFECTED ENVIRONMENT** (pp. 10-1 through 10-10)

#### **10.1.4 Existing Noise Levels**

##### **10.1.4.1 Cedar Hills**

The Draft EIS states:

*“During the noise study of the North Flare Station conducted in 2013/2014 (King County 2014), the operation of the station’s large flares created low frequency sound that was visible on a spectrum analyzer, but it was not readily noticeable to study personnel who were on site.”* (p. 10-8)

This proves that while audible noises may not be in a pitch that the human ear can hear, it does not mean it does not move the surrounding air. It is suspected that much of these sounds that cannot be heard are still recognized by humans and animals alike:

*“Noise pollution is one of the most harmful ambiance disturbances. It may cause many deficits in ability and activity of persons in the urban and industrial areas. It also may cause many kinds of psychopathies. Therefore, it is very important to measure the risk of this pollution in different area.”* (Iranian Journal of Public Health, Oct 2016 issue <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5149497>)

*“In nature, sound frequencies below 200 Hz are signals of thunder, volcano eruptions, earthquakes, or storms – events that are likely to induce arousal or fear.... Human hearing in the low frequency range is, compared to the higher frequencies, less sensitive and has, for many years, led to the misconception that low frequency sounds are also less annoying. Today, it is known that low frequency noise has a great annoyance potential, and that some people seem to react adversely even to levels just above their hearing threshold. Factors inherent in most low frequency noises such as the throbbing characteristics, the intrusion of low frequencies felt when other frequencies in the sound are attenuated, and the vibration sensations sometimes felt contribute probably to annoyance.”* (“Effects of Low Frequency Noise and Vibrations: Environmental and Occupational Perspectives,” published by KP Waye, Institute of Community Medicine and Public Health, Sahlgrenska Academy, Go’teborg University, Go’teborg, Sweden in 2011, [https://www.researchgate.net/publication/258400137\\_Noise\\_and\\_Health\\_-\\_Effects\\_of\\_Low\\_Frequency\\_Noise\\_and\\_Vibrations\\_Environmental\\_and\\_Occupational\\_Perspectives](https://www.researchgate.net/publication/258400137_Noise_and_Health_-_Effects_of_Low_Frequency_Noise_and_Vibrations_Environmental_and_Occupational_Perspectives))

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

Noise studies need to include measuring decibel levels for moving vehicle alarms or changes in engine loading or hydraulics loading. The equipment used to manage the landfill operations do not idle 100% of the time, when the machine is put into reverse, it engages the “*backup beeper*” which has been known to emit 120 dBA. When the machine is required to perform an action, it takes more power to complete the action, when the power level is increased, so does the noise that is emitted – that increased level of noise needs to be measured and, if necessary, mitigated. **The Final EIS should address this.**

### **10.1.5 Existing Vibration Levels**

Vibration travels through the air as a pressure wave. It also travels through water, which is about 800 times denser than air. Vibrations also travel through the ground. The ground, which is the lithosphere—the earth’s out plates—has varied materials with different compositions, and each of these have varied densities and react differently to the imposition of vibrations.

Examples of how different materials react can be readily found. One readily demonstrable example may be found in the setting of concrete. One can pour a layer and let it begin to set up, and walk on it. One can then expose it to a regulated vibration, and find the concrete will turn to liquid again. This property is used in laying concrete in large forms while successive batches are being poured in. It allows the mixing of successive batches, the rising out of air bubbles, and also allows the extension of the “*pot life*” of the material before it sets. Another place where this may be easily seen is where wet sand is placed in a large pail and heavy objects set upon it. When the large pail is vibrated, and the sand is vibrated also, the sand becomes “*liquefied*” and the objects then settle into the sand. This phenomenon may be seen in a process called “*liquefaction*,” where a seemingly stable layer of gravel, sand, and soil becomes disturbed by vibrations, it then becomes unstable and causes objects above to move and sink into this. But liquefaction events, due to earthquakes, are seemingly not often seen.

As stated above, serving as a preface, what is seemingly not discussed in the Draft EIS are the effects vibrations have on local geomorphology, e.g., the natural process of rock, clay, gravel, sand, and soils to flow from one place to another, as the earth changes shape over time. There are many questions that need to be addressed. How does “*vibration*” affect how water moves through rock, gravel, sand, and soils of this region? Can it affect the load bearing qualities of soils (etc.), and cause an increased rate of “*settling*.” Can vibrations affect certain kinds of soils, sands, etc. in a way that may cause an uneven movement within those features? Can it cause uneven settling in buildings, and thus cause a distorting or twisting in foundations and other support structures? How does this rate of distortion (or rate of change) differ from a state or condition where these vibration(s) may not be present?

While the Draft EIS provides some indication as to what a projected vibration velocity (in vibration dBs) may be at “*26 feet*,” it does not relate to the spectral frequency for the vibration created and how it relates to the natural frequencies and material strength, plasticity, and other “*cold flow*” movements over time within the lithosphere directly below and surrounding the CHRLF. **The Final EIS must assess these phenomena and the resulting impacts to vibration-caused noise levels both in the air and the grounds.**

Under the various alternatives assessed for the CHRLF in the Draft EIS, it is not clear what the effect will be of placing millions of tons per year of additional weight piled high on the geologic features of this canyon rim. Every material has a yield point, and an ultimate strength. Material properties change with the introduction of intrusions, with the addition of other materials (such as water, or lack of it). Material properties also change with “*cycling*,” and with the introduction of other factors (such as vibrations). Other factors may affect it as well, including such factors as stress concentration and point loading, stretch, and age.

Unfortunately, the Draft EIS does not address these phenomena, but rather presents a simplistic table of vibration source levels for construction equipment without providing any discussion. **The Final EIS must assess all known and expected vibration sources and how they reach and affect the Public and wildlife.**

Further, the Draft EIS clearly misses one important contributor to vibrations: Loud noise. As noise travels through the air, it is moving air, air movement that hits a physical thing, then can cause that thing to be continually hit with the moving air, hence creating a *vibration*. This can also happen through the much denser lithosphere. Vibrations move through the various layers and structures of different densities at different rates, and also bend and reflect.

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

There are “*standing wave*” effects of vibrations on structures and the lithosphere. With regard to the impact of water concentration and movements, and its affects on density, strength, yield properties, elongation, etc., there is extensive literature on the phenomena such as liquefaction, “*settling*,” strength of stone, and stability of structures (e.g., mine shafts, caves, etc.). **The Final EIS should evaluate such varying sources of vibrations and their possible deleterious effects on nearby structures.**

### **10.2 ENVIRONMENTAL IMPACTS** (pp. 10-10 through 10-14)

Due to the unique location of CHRLF within the Cedar River Canyon, much of the noise created can be compounded by the sound waves reflecting back from the canyon wall itself. Echoes bounce around in a canyon. Further, for the Action Alternatives, there is no way that an accurate noise study can be performed for any that involve rebuilding the site facilities and/or harvesting the trees from the property, since sound waves bounce off of physical items removal of items that absorb the sound waves is only going to increase the nuisance complaints about noise. **The Final EIS should account for these phenomena and the resulting environmental impacts.**

**Further, the Final EIS also seriously must address the concept of “nuisance,” as described in: RCW 7.48.120 – Nuisance defined.** (our emphases below):

*“Nuisance consists in unlawfully doing an act, or omitting to perform a duty, which act or omission either annoys, injures or endangers the comfort, repose, health or safety of others, offends decency, or unlawfully interferes with, obstructs or tends to obstruct, or render dangerous for passage, any lake or navigable river, bay, stream, canal or basin, or any public park, square, street or highway; or in any way renders other persons insecure in life, or in the use of property.”*

### **10.3 MITIGATION MEASURES** (pp. 10-10 through 10-16)

#### **10.3.1 Cedar Hills**

Several mitigations are listed in the Draft EIS intended “*to bring noise levels within regulatory requirements.*” (p. 10-14). However, it is not clear each were technically assessed to determine if they can indeed do what is intended.

None of the mitigations proposed acknowledge the Cedar River canyon and undulating character of the grounds and the surrounding land features, and that many of the emission sources will be only partially effected (if at all) during their mobile operations. Similarly, no proposal has been made to “*residential package*” any of the vibration and noise emissions sources, and essentially isolate them from affecting their surroundings. Though the technology to almost completely isolate and quiet this equipment has existed and been in practical use for many decades, in many industries, the Draft EIS makes no reference to such technologies.

**The Final EIS must assess each of the potential mitigation measures listed in the Draft EIS and determine their usefulness in meeting regulatory requirements, as well as explore other potential mitigation measures to address a myriad of Public common concerns.**

**The Final EIS also should evaluate and discuss:**

- 1. The BEW, which has demonstrated exceedances and the HVAC (i.e., the cell tower that has fans that cause vibrations) in its noise studies, not only in near-decade-old studies from 2012.**
- 2. Harmonic vibrations as the cause from flare-stack rumbles, as identified in the 1999 lawsuit, as well as gas exceedances at the property line.**
- 3. New harmonic studies including, but not limited to, general operations and existing or potential equipment used at the landfill considering the various heights at which works is performed.**

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

### **10.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS (p. 10-16)**

The statement below, which comprises this entire subsection of the Draft EIS, provides no discussion whatsoever and is completely unacceptable. In fact, it goes so far as to say that CHRLF noise will continue, yet theorizes that no impacts would occur.

*“With implementation of mitigation measures described above, the communities surrounding the landfill would experience landfill noise for a longer period in the future under any of the action alternatives. However, no significant unavoidable adverse noise impacts should occur.”*

This seemingly disregards the past history of complaints by surrounding neighborhoods and schools districts over health issues, etc., who have had to endure the community and wildlife degenerating slow expansion of an almost two square-mile parcel of land.

**The Final EIS should not include such empty statements as quoted above, but must discuss significant unavoidable noise impacts and their ramifications.**

As an example of just *one* instance of significant adverse impacts that should have been avoided, but were not:

Acoustical vibration-induced damage to two homes and resulting health impacts began 4/23/18 as a direct result of equipment used at the landfill for a construction project by Scarcella. Nearby residents suffered intense pressure in head, ears, ear pain, and headaches. These exceedances affected residents and animals, devastating to their homes and property. One homeowner took video (showed to Scott Barden, Interim Operations Manager, and Pat McLaughlin). The homeowner was present at the time of testing at the property line. The County’s sound consultant confirmed it would be a lot louder in their homes and buildings, bouncing off of them. The consultant stated sound travels in air molecules, called acoustical resonance.

Vibrations experienced became worse when KC SWD changed the compaction mode to a lower frequency/level. This was reported to Scott Barden and Tom Creegan. Vibrations continued off and on throughout the construction project. KC Ombudsman Elizabeth Hill became involved with Glynda Steiner, KC SWD Deputy Director, as KC SWD was not being responsive in effectively mitigating the substantial impacts. Glynda visited one home to see the damage and said she could see there were impacts and could smell the odor on the road. Unfortunately, Ms. Hill ceased assistance.

Damages were denied homeowners due to KC SWD’s claims that seismic motions could have caused problems, not any of its work. However, the damages were not caused by natural seismic motions, with which homeowners are familiar in this area and have experienced in the past. No mitigation measures were taken and KC SWD chose not do any studies to better understand the phenomena.

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **Land and Shoreline Use**

### **11.0 LAND & SHORELINE USE** (pp. 11-1 thru 11-22)

#### **11.1 AFFECTED ENVIRONMENT** (pp. 11-1 thru 11-17)

##### **11.1.1 Land Uses**

###### **11.1.1.1 Cedar Hills**

###### **Surrounding Land Uses**

As the draft EIS states, the area immediately surrounding the CHRLF is predominantly single-family residences, with >1,200 homes within 1 mi of the property line. The impacts to these residences over the years has been large and continual. Such impacts will continue far into the future with the selection of any of the three Action Alternatives.

###### **11.1.2 Land Use Plans, Policies, and Regulations**

###### **11.1.2.1 Cedar Hills**

###### **King County Comprehensive Plan Policies**

###### **Essential Public Facilities**

The draft EIS cites *King County Comprehensive Plan (KCCP)* Policy:

*“F-226 Proposed new or expansions to existing essential public facilities should be sited consistent with the King County Comprehensive Plan. Listed existing essential public facilities should be preserved and maintained until alternatives or replacements for such facilities can be provided.”*

As discussed below under “*Rural Areas and Natural Resource Lands*,” this policy is not met in that the original siting and the continuous operation of the CHRLF violates multiple KCCP policies and, thus, is not “consistent” with said policies.

###### **Management of Solid Waste**

The draft EIS cites several KCCP Facilities Policies (**F-265** through **F-271**) that deal with the County striving towards zero waste by 2030 through waste reduction, recycling, reuse, etc. All are admirable goals and can only be achieved through the first step of selecting the *No Action Alternative* of closing the CHRLF by 2028.

###### **Rural Areas and Natural Resource Lands**

There is nothing in this subsection that applies to “*extending the useful life of the CHRLF*” either under the King County Comprehensive Plan’s (KCCP’s) **Chapter 3 Section III, Rural Densities and Development** or **IV, Rural Public Facilities and Services** that pertain to the CHRLF.

KCCP **Section III, Subsection D, Nonresidential Uses**, states (with our emphases):

*“Although low-density residential development, farming and forestry are the primary uses in the Rural Area, some compatible public and private uses are appropriate and contribute to rural character. Compatible uses might include small, neighborhood churches, feed and grain stores, produce stands, forest product sales and home occupations such as woodcrafters, small day care facilities or veterinary services. In addition, it may be necessary to locate some public facilities in the Rural Area, such as utility installations that serve rural homes.”*



## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*Any allowed nonresidential uses should be designed to blend with rural residential development and resource uses.”*

The CHRLF is not “some public facilit(y),” it is a massive industrial operation sited in the middle of the Rural Area. It is not like “*utility installations that serve rural homes.*”

KCCP Policy **R-324** is not relevant to the CHRLF:

*“R-324 Nonresidential uses in the Rural Area shall be limited to those that:*

- a. Provide convenient local products and services for nearby residents; [not the case here]*
- b. Require location in a Rural Area; [not the case here]*
- c. Support natural resource-based industries; [not the case here]*
- d. Provide adaptive reuse of significant historic resources [not the case here]; or*
- e. Provide recreational and tourism opportunities that are compatible with the surrounding Rural Area. [not the case here]*

*These uses shall be sited, sized and landscaped to complement rural character as defined in policy **R-101** and **R-201**, prevent impacts to the environment and function with rural services including on-site wastewater disposal.”*

KCCP Policies **R-101** and **R-201**, referred to in Policy **R-324**, do not support “extending the useful life of the CHRLF”:

*“R-101 King County will continue to preserve and sustain its rural legacy and communities through programs and partnerships that support, preserve, and sustain its historic, cultural, ecological, agricultural, forestry, and mining heritage through collaboration with local and regional preservation and heritage programs, community groups, rural residents and business owners including forest and farm owners, rural communities, towns, and cities, and other interested stakeholders.”*

KCCP Policy **R-101** has nothing to do with “extending the useful life of the CHRLF.”

*“R-201 It is a fundamental objective of the King County Comprehensive Plan to maintain the character of its designated Rural Area. The Growth Management Act specifies the rural element of comprehensive plans include measures that apply to rural development and protect the rural character of the area (Revised Code of Washington 36.70A.070 (5)). The Growth Management Act defines rural character as it relates to land use and development patterns (Revised Code of Washington 36.70A.030 (15)). This definition can be found in the Glossary of this Plan. Rural development can consist of a variety of uses that are consistent with the preservation of rural character and the requirements of the rural element. In order to implement Growth Management Act, it is necessary to define the development patterns that are considered rural, historical or traditional and do not encourage urban growth or create pressure for urban facilities and service.*

*Therefore, King County’s land use regulations and development standards shall protect and enhance the following attributes associated with rural character and the Rural Area:*

- a. The natural environment, particularly as evidenced by the health of wildlife and fisheries (especially salmon and trout), aquifers used for potable water, surface water bodies including Puget Sound and natural drainage systems and their riparian corridors;*
- b. Commercial and noncommercial farming, forestry, fisheries, mining, home-occupations and home industries;*
- c. Historic resources, historical character and continuity important to local communities, as well as archaeological and cultural sites important to tribes;*
- d. Community small-town atmosphere, safety, and locally owned small businesses;*
- e. Economically and fiscally healthy Rural Towns and Rural Neighborhood Commercial Centers with clearly defined identities compatible with adjacent rural, agricultural, forestry and mining uses;*
- f. Regionally significant parks, trails and open space;*
- g. A variety of low-density housing choices compatible with adjacent farming, forestry and mining and not needing urban facilities and services;*
- h. Traditional rural land uses of a size and scale that blend with historic rural development; and*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

### *i. Rural uses that do not include primarily urban-serving facilities.”*

KCCP Policy **R-201** has nothing to do with “*extending the useful life of the CHRLF*” and, in fact, explicitly states “*King County’s land use regulations and development standards shall protect and enhance the following attributes associated with rural character and the Rural Area: i. Rural uses that do not include primarily urban-serving facilities.*” The CHRLF is a “*primarily urban-serving facility(y).*”

**Section IV, Rural Public Facilities and Services**, states this section: “*sets forth King County’s general approach to providing services and setting facility standards for the Rural Area and provides guidance for siting facilities that require Rural Area locations.*” Policies **R-401**, **R-402**, and **R-403** are cited

*“R-401 King County shall work with cities and other agencies providing services to the Rural Area and Natural Resource Lands to adopt standards for facilities and services in the Rural Area and Natural Resource Lands that protect basic public health and safety and the environment, but are financially supportable at appropriate densities and do not encourage urban development.”*

KCCP Policy **R-401** has nothing to do with “*extending the useful life of the CHRLF.*”

*“R-402 Public spending priorities for facilities and services within the Rural Area and Natural Resource Lands should be as follows:*

- a. First, to maintain existing facilities and services that protect public health and safety;*
- b. Second, to upgrade facilities and services when needed to correct level of service deficiencies without unnecessarily creating additional capacity for new growth; and*
- c. Third, to support sustainable economic development that is sized and scaled at levels appropriate for Rural Areas and Natural Resource Lands and does not foster urbanization.”*

KCCP Policy **R-402** has nothing to do with “*extending the useful life of the CHRLF*” and, in fact, *paragraph c.* makes it clear that it was written for those facilities and services that actually support the Rural Area economy, which the CHRLF does not.

*“R-403 In the Rural Area and Natural Resource Lands, standards and plans for utility service should be consistent with long-term, low-density development and resource industries. Utility facilities that serve the Urban Growth Area but must be located in the Rural Area or on Natural Resource Lands (for example, a pipeline from a municipal watershed) should be designed and scaled to serve primarily the Urban Growth Area. Sewers needed to serve previously established urban “islands,” Cities in the Rural Area, Rural Towns, or new or existing schools pursuant to R-327 and F-264 shall be tight-lined and have access restrictions precluding service to other lands in the Rural Area and Natural Resource Lands.”*

KCCP Policy **R-403** has nothing to do with “*extending the useful life of the CHRLF*” and, in fact, simply discusses “*utility service*” or “*utility facilities that serve the Urban Growth Area but must be located in the Rural Area.*” The CHRLF primarily serves the Urban Growth Area and does not need to be located in the Rural Area.

Clearly, all the above KCCP Policies cited in the draft EIS as applying to “*extending the useful life of the CHRLF*” do not in any way do so. **The Final EIS must address these inconsistencies with the KCCP Policies.**

### **11.1.3 Zoning**

#### **11.1.3.1 Cedar Hills**

#### **Land Use Permitting**

The *September 12, 1960, Special Permit* allowed development and operation of the CHRLF subject to four conditions:

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*“1. A 1,000-foot buffer strip surrounding the entire site will be left in its natural state for the protection of the surrounding properties. There will be no sanitary operations in this strip other than access.*

*2. Access will be from Cedar Grove Road over a new right of way entering the property from approximately the Southeast corner.*

*3. The operation is to be a true sanitary landfill. Not an open garbage dump.*

*4. There will be no burning of garbage.”*

Clearly, all the *Action Alternatives* would require Special Permit changes (or a new Special Permit). As the draft EIS points out, the applicable King County Code (**Title 21A.44.050**) that sets out criteria to be followed for Special Use Permits states the following:

*“A special use permit shall be granted by the county, only if the applicant demonstrates that:*

*A. The characteristics of the special use will not be unreasonably incompatible with the types of uses permitted in surrounding areas; **This criterion is not met by any of the three Action Alternatives.***

*B. The special use will not materially endanger the health, safety and welfare of the community; **This criterion is not met by any of the three Action Alternatives.***

*C. The special use is such that pedestrian and vehicular traffic associated with the use will not be hazardous or conflict with existing and anticipated traffic in the neighborhood;*

*D. The special use will be supported by adequate public facilities or services and will not adversely affect public services to the surrounding area or conditions can be established to mitigate adverse impacts;*

*E. The location, size and height of buildings, structures, walls and fences, and screening vegetation for the special use shall not hinder or discourage the appropriate development or use of neighboring properties; and **This criterion is not met by any of the three Action Alternatives, especially Action Alternatives 2 and 3, both of which would landfill some areas up to 830 ft.***

*F. The special use is not in conflict with the policies of the Comprehensive Plan or the basic purposes of this title. (Ord. 10870 § 626, 1993).” **This criterion is not met by any of the three Action Alternatives, as detailed under 11.1.2 above.***

The Final EIS must address these inconsistencies with the King County Code.

### **11.2 ENVIRONMENTAL IMPACTS** (pp. 11-18 thru 11-22)

#### **11.2.1 Direct and Indirect Impacts**

##### **11.2.1.2 Action Alternatives**

##### **Landfill Development**

##### **Consistency with Land Use Plans, Policies, and Regulations**

##### King County Land Use Comprehensive Plan

The Draft EIS states that under KCCP **CHAPTER 9 — SERVICES, FACILITIES AND UTILITIES, II. Facilities and Services** in subsection **G. Essential Public Facilities** policies **F-228 through F-230** and in subsection **J. Solid Waste** policies **F-265 through F-271b** support CHRLF expansion *“...has been assured through the development and implementation of the Solid Waste Comp Plan.”* (p. 11-18) Simply preparing and approving the

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

2019 Solid Waste Management Plan does not constitute “consistency” with the KCCP policies cited above. **The Final EIS must review each of these KCCP facilities policies one-by-one to assess such consistency and whether to not each are met, especially KCCP policies F-230 (required siting analyses), F-270 (environmental constraints), and F-271b (King County Equity Impact Review Tool).**

The Draft EIS states:

*“King Comp Plan policies relating to Rural Areas focus on preserving the character of rural areas by discouraging the development of urban infrastructure and urban types and levels of development in rural areas. At the same time, the KC Comp Plan acknowledges that some non-residential uses require location in the Rural Area (Policy R-324), either because they directly serve rural residents or because of their intrinsic nature. The CHRLF, because it is intrinsically a land-extensive use, requires location in the Rural Area designation of King County. Sufficiently large parcels of land are not available in non-rural areas of the County.” (p. 11-19)*

Once again, KCCP Policy **R-324** is not relevant to the CHRLF:

*“R-324 Nonresidential uses in the Rural Area shall be limited to those that:*

- a. Provide convenient local products and services for nearby residents; [not the case here]*
- b. Require location in a Rural Area; [not the case here]*
- c. Support natural resource-based industries; [not the case here]*
- d. Provide adaptive reuse of significant historic resources [not the case here]; or*
- e. Provide recreational and tourism opportunities that are compatible with the surrounding Rural Area. [not the case here]*

*These uses shall be sited, sized and landscaped to complement rural character as defined in policy R-101 and R-201, prevent impacts to the environment and function with rural services including on-site wastewater disposal.”*

All five limitations of KCCP Policy **R-324** on “(n)on-residential uses in the Rural Area” are not met. The Draft EIS states that “*the KC Comp Plan acknowledges that some non-residential uses require location in the Rural Area... because of their intrinsic nature*” However, **R-324** clearly does not state that, as it gives five limitations—all of which are not met by the CHRLF itself, nor its expansion. **The Final EIS must correct this error and re-evaluate KCCP policies.**

### King County Zoning

The Draft EIS states:

*“The characteristics of the special use will not be unreasonably incompatible with the types of uses permitted in surrounding areas.” and “The special use will not materially endanger the health, safety and welfare of the community.” (p. 11-19)*

Yet, neither are being met for any proposed expansion of the CHRLF. **The Final EIS needs to seriously address these incorrect assumptions and land-use incompatibilities.**

### **11.2.1.3 Indirect Impacts**

The Draft EIS states (our emphases):

*“A WTE facility, located at a site in the county, could result in land use impacts, although the extent of any impacts would be highly dependent on the specific facility location and design. The County’s siting process to determine a location for a major facility such as an intermodal facility or a WTE would favor land use compatibility and consistency with applicable land use policies and regulations.” (p. 11-21)*

It would be nice if all this were true, but there is no evidence it is. **The Final EIS needs to address exactly each of these statements emphasized above.**

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **11.2.2 Cumulative Impacts**

The Draft EIS states:

*“Other foreseeable actions in the area of the landfill, such as additional residential development, would be expected to be compatible with surrounding land uses and consistent with applicable land use policies and regulations.” (p. 11-22)*

It is not clear what the bases are for such “*compatible*” and “*consistent*” assumptions.

Although “*cumulative impact*” is not specifically defined in the SEPA rules, it is defined under Federal rules implementing the National Environmental Policy Act (NEPA). “*Cumulative impact*” is defined in the Council on Environmental Quality (CEQ) Regulations as the “*impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions*” (40 CFR Part 1508). Washington courts have limited the requirement for cumulative impact analysis under SEPA, stating that an analysis of the cumulative impacts of a proposed project is not required under SEPA unless: (1) there is some evidence that the project will facilitate future action that will result in additional impacts, or (2) the project is dependent on subsequent proposed development. A project's cumulative impacts that are merely speculative need not be considered (*Boehm v. City of Vancouver*, 111 Wn. App. 711(2002) – *Cumulative impacts*).

The above applies to the CHRLF expansion. **The Final EIS must seriously address cumulative impacts as required by WAC 197-11-060 Content of environmental review.(4) Impacts (e).**

## **11.3 MITIGATION MEASURES (p. 11-22)**

This section states:

*“No measures are necessary to address potential CHRLF impacts on land use compatibility or land use policy and regulatory consistency other than those described in other chapters for potential impacts related to traffic, noise, air quality and odor, surface and ground water, and visual quality and light and glare. Impacts at the CHRLF site on housing, recreation, and historic and cultural resources are unlikely to occur, and no mitigation measures are needed.”*

Actually, there are “*potential CHRLF impacts on land use compatibility or land use policy and regulatory consistency.*” As we point out above there is much inconsistency with KCCP Policies **R-101** (Rural Area heritage and preservation), **R-201** (Rural Area character), **R-324** (non-residential uses in the Rural Area), and **R-401**, **R-402**, and **R-403** (all dealing with Rural Area Public Facilities and Services).

The only mitigation available to rectify the inconsistencies of siting the CHRLF in the Rural Area with KCCP Policies is to close it as soon as possible. The draft EIS's “*No-Action Alternative*” is the only option identified that comes closest to doing so.

**The Final EIS must address these inconsistencies with the KCCP Policies.**

## **11.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS (p. 11-22)**

This section states:

*“With implementation of mitigation for potential impacts related to traffic, noise, air quality and odor, surface and ground water, and visual quality and light and glare, further development of the CHRLF under any of the alternatives would be consistent with King County land use policies and zoning regulations. All of the alternatives are unlikely to result in significant unavoidable adverse impacts to land use or cultural resources.”*

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

We discuss such “*mitigations*” in each of the other **Environmental Element** sections herein. **Again, herein we have documented many inconsistencies with KCCP policies that need to be recognized and addressed in the Final EIS.**



# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **Transportation**

### **13.0 TRANSPORTATION (pp. 13-1 through 13-42)**

#### **13.1 AFFECTED ENVIRONMENT**

The affected environment is *inadequately* described for traffic purposes in three significant ways:

##### **SR 169 Corridor between I-405 and SE Cedar Grove Rd is not fully discussed**

For traffic purposes, the affected environment described includes only three signalized intersections on SR 169, at I-405 and at SE Cedar Grove Rd (*Table 13-1, p. 13-3*). It fails to account for four other signalized intersections on SR 169 between those termini:

- 140th Ave SE,
- 149th Ave SE,
- 154th PI SE, and
- 196th Av SE.

Every vehicle traveling to/from the site and I-405 uses that entire length and impacts these intermediate intersections. **Absent any attention on these intersections, the discussion of background conditions, cumulative impacts, indirect impacts, and unavoidable adverse impacts is plainly incomplete. This would need to be rectified in the Final EIS.**

##### **13.1.3 Traffic Operations**

##### **Background traffic growth on SR-169 and other affected roads is inadequately discussed**

The analysis of future traffic conditions understates future travel demand for SR-169 due to the methodology chosen (details below), and, thereby, understates the adverse traffic consequences of unavoidable future growth for that highway. The methodology used allocates the remainder of future demand for that highway to other arterials without revealing those impacts. Adjustments are needed to show the true state of total future travel demand on SR-169 and alternative routes serving the surrounding region. This is necessary to provide a fair description of cumulative impacts, indirect impacts, and unavoidable adverse impacts beginning with the No Action Alternative. **This would need to be rectified in the Final EIS.**

##### **13.1.5 Construction**

##### **Construction impacts are inadequately treated**

The discussion of traffic impacts of construction similarly relies on the wider arterial network surrounding SR-169 without revealing the impacts thereof. The text states (p. 13-42) that mitigation for construction truck traffic impacts would consider *“not routing all [construction truck traffic] via SR 169 to reduce impacts at the intersection of SR 169/SE Cedar Grove Road.”* In the Final EIS the potential routes to be used as substitutes for SR-169 must be identified and evaluated for the impacts of construction traffic on those alternate routes as well.

#### **13.2 ENVIRONMENTAL IMPACTS**

The transportation impacts of all alternatives have been *inadequately* accounted for as follows.

##### **SR-169 Corridor between I-405 and SE Cedar Grove Rd**

The site trip distribution maps in *Appendix J - Transportation* show 80% of King County hauls (Fig. 4-1) and 60% of commercial hauls (Fig. 4-2) travel on SR-169 between the site and I-405. But the traffic analysis fails to consider conditions at four signalized intersections between those termini – intersections which are known to

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

experience high congestion at present and for which further increases in traffic volumes are expected as the surrounding region is growing.

Moreover, the traffic operations on SR-169 road segments between intersections are not discussed – most notably the highly congested two-lane portion from SE Cedar Grove Rd to the beginning of the four lane section slightly north of 196<sup>th</sup> Ave SE. Existing traffic counts were included in *Appendix J - Transportation* for two of these four intersections, but inexplicably they were not evaluated for level of service (LOS), nor for traffic accident histories. These four additional SR 169 intersections must be accounted for in the EIS in order to fully account for existing conditions and cumulative and indirect impacts due to background growth as well as direct site impacts and potential mitigation for any of those impacts.

**Both of the above omissions must be addressed in the Final EIS.**

### **Background traffic growth on SR 169 and other affected roads**

All future-year traffic analysis is based on traffic volume forecasts produced by traffic forecasting models. Traffic models in turn rely on various technical and policy assumptions. Some of the undocumented underlying assumptions must be *reconsidered* because the forecasts of future traffic volumes are unreasonably low. The result is the description of future traffic flows on SR-169 falling within acceptable boundaries per adopted LOS standards, whereas both the public perception and actual traffic data of that highway show high congestion already existing, which will surely degrade to worse in the future since the surrounding region is growing.

The underlying assumptions of the traffic forecasting models and methodology described in *Appendix J - Transportation* must therefore be described in detail so as to support the forecast conditions that result, or revise the forecasts if the assumptions cannot be justified (see next paragraph). At p. 13-42 the assumptions are refuted by stating the I-405 ramp intersections will unavoidably operate in the future with unacceptable delays as depicted by LOS E or LOS F with all Action Alternatives and the No-Action Alternative, but **turns a blind eye to any other issues in the entire SR-169 corridor from I-405 to SE Cedar Grove Rd and, as such, must be rectified in the Final EIS.**

More evidence of questionable assumptions is found in *Appendix J - Transportation*. Adding up the directional turn volume data in *Appendix J - Transportation* Figs. 4-7, 4-9, and 4-23 produced the following results. The Existing volumes were compared to the *Design Year (2040)* volumes on SR-169 just north of the Cedar Grove Rd intersection. Total two-way future volumes rise by just 13% in the AM Peak Hour (1340 existing, 1520 future) and 24% in the PM Peak Hour (1605 existing, 1994 future). These growth factors are low compared to PSRC land use forecasts for the cities of Maple Valley, Covington, and Black Diamond (source: *VISION 2040* Land Use, FAZ's 3310 and 3320). These PSRC population and employment growth trends imply roughly 40% growth of trip generation in those cities by 2040. Still worse, Black Diamond has an adopted growth plan that adds about 6,000 more homes to that PSRC vision, grossly exceeding its prescribed Growth Targets. **The Black Diamond plan is likely not included in the background growth forecasts of the traffic model, but should be, as the Final EIS is prepared.**

It is, therefore, not credible that future demand on SR -169 would not fall in a range closer to the 40% level beyond existing volumes. That in turn suggests future delays and LOS much worse than described. **The Final EIS must address that concern and explain where the amount of future demand has been allocated by the traffic model, and also to discuss a future scenario wherein all the “latent demand” for travel via SR-169 is assigned to that highway instead of other alternative routes.** That future situation is of course attributable to the No-Action Alternative, not the three Action Alternatives, but that future situation needs to be assessed to provide the right foundation for evaluation of the latter.

The behind-the-scenes allocation of excess demand to alternative corridors is a well-known aspect of traffic forecasting models. Traffic forecasting models use the power and speed of computers to apply a procedure known as “*capacity restrained assignment*” to assign all trips through a road network via multiple competing routes. This method tends to spread total traffic demand across all available routes in rough proportion to their capacities, aiming to produce an equilibrium of travel times between competing routes. Since no new lanes have been assumed for SR-169 (nor are they planned for), its capacity does not change between Renton and Maple Valley for the duration of the study period. But future demand for that corridor is ever increasing – at least the 24%

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

that the analyses state for the PM Peak Hour and, more likely, something akin to the 40% traffic growth that is implied by the PSRC land-use vision for the three cities named above. Due to that set of input assumptions, the traffic assignment model is apparently allocating some of the future demand for SR-169 to other less congested roads. A simple glance at a road map will confirm that the most likely alternative routes (depending on which trip origins and destinations are considered) are Issaquah-Hobart Road and 196<sup>th</sup> Ave SE. To a lesser degree, diversions from SR-169 could make use of SR-516 (Kent-Kangley Rd), SR-18, and 140<sup>th</sup> Ave SE as well. **All these routes must be accounted for in the Final EIS.**

This is no idle speculation. Residents of southeast KC are well aware traffic volumes are increasing on local arterials, even where no local land use changes have occurred. **This is direct evidence of an existing pattern of steady traffic diversions away from SR-169, due to the serious existing congestion problems in the SR-169 corridor. In the future, such diversions will surely increase, since SR-169 is not assumed to be expanded within the time period addressed—this must be recognized in the Final EIS.**

The diversion effect of capacity restrained assignments is generally thought by traffic modelers to depict how drivers would act in consideration of relative congestion levels on alternative routes. It also corresponds inversely to the phenomenon known to the public as “if you build it they will come.” This is called “latent demand” by transportation engineers. It describes the common situation that arises when a given road is expanded, such as by adding lanes for more capacity. Immediately after the road is opened, traffic volumes will suddenly jump up seemingly from nowhere. Traffic modelers familiar with capacity restrained assignments understand that the “latent demand” for the improved road is not new trips arising from nowhere, but existing trips that were using other alternative routes until the day the road was opened with higher capacity. Clearly, this well known phenomenon presents a problem of logical interpretation for environmental analysis.

The policy choice not to raise capacity on SR-169 before the Design Year 2040 is implied in the description of the No-Action Alternative, but the consequences with respect to “latent demand” and impacts on alternative routes is not disclosed, nor evaluated. Therefore the Draft EIS is deficient for not showing how surrounding area growth creates demand for use of SR-169 that cannot be served in the No-Action Alternative nor for all future Action Alternatives. There is no presentation of the end result — that adjacent arterials are being put into service as substitutes for that highway — to the detriment of the quality of life of those living along or near such roads. SR-169 is in fact classified as a *Highway of Statewide Significance*, and should carry all the intercity traffic that would want to use it rather than divert some of that traffic to other routes for lack of capacity on SR-169 itself. This can be viewed as an issue of social justice as well, whereby rural area residents are made to bear the traffic impacts of growing amounts of through travel between cities via local arterials rather than on the primary regional routes. **These concerns , along with their ramifications, must be addressed in the Final EIS.**

The description of the No-Action Alternative should assign all the “latent demand” to SR-169 and show the no action future for that highway as operating with more congestion and lower LOS ratings than have been presented in this Draft EIS, and then describe the diversion of excess demand to other corridors as the *de facto* policy mitigation for that adverse future. **This would greatly modify the discussion of cumulative impacts and unavoidable adverse impacts, which must be done in preparation of the Final EIS.**

It follows logically that if the No-Action Alternative is a scenario with insufficient capacity on SR-169 to serve all demand on SR-169, then the addition of the traffic associated with any of the Action Alternatives will cause a further diversion of SR-169 demand onto other already congested routes. **The Final EIS will need to identify this impact and measure it using the ordinary measure of traffic delay found in every level of service analysis – but apply it systematically to all the affected road network, not just selected portions cherry-picked from the whole.**

### **Construction impacts**

The Draft EIS discussion of mitigation for construction impacts directly confirms that congestion on SR-169 is indeed a current problem known to WA State Department of Transportation (WSDOT) and to KC. That text states “...consideration would be given to not routing all traffic via SR 169 to reduce the impact at the SR 169/SE Renton Maple Valley Highway/Cedar Grove Road SE intersection.” (emphasis added)

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

**In the Final EIS all site-related traffic - whether for construction or for ongoing operations - must be described for all alternatives as an additional impact on an already overburdened highway.**

### **13.3 MITIGATION MEASURES**

#### **SR-169 Corridor between I-405 and SE Cedar Grove Rd**

The Final EIS should address mitigation of impacts for the entire corridor along SR 169 between SE Cedar Grove Rd and I-405, and not, as the Draft EIS has done, disregard the four additional intersections identified previously. Since some or all of the intersections in that corridor are or will be operating at or below level of service standards in the future, it is not acceptable to simply calculate a percentage of impact and dismiss the impacts at each intersection on a case by case basis, and declare that none are significant. Some form of mitigation is appropriate to account for the corridor-long increase in delay that results from the impact of the Action Alternatives. One such possibility is to provide an improvement at any one intersection in the corridor (such as right turn lane, left turn lane, etc) to reduce aggregate delay throughout the corridor to the level of the No-Action alternative. **These issues must be addressed in the Final EIS.**

#### **Background traffic growth on SR-169 and other affected roads**

The Final EIS will have to carefully separate the direct and indirect impacts of the Action Alternatives on the SR-169 corridor and on alternative roads, so that the adverse impact on other roads as well as SR-169 is included and quantified, not by volumes or LOS brackets, but by aggregate delay accumulated across all affected roads. **The Final EIS should identify mitigation consisting of one or more improvements, such as adding turn pockets at key intersections, to reduce aggregate delay to the level of the No-Action Alternative.**

#### **Construction impacts**

The Draft EIS discussion of mitigation for construction truck traffic impacts (p 13-42) includes consideration of *“not routing all [construction truck traffic] via SR 169 to reduce impacts at the intersection of SR 169/SE Cedar Grove Road.”* A simple map inspection will reveal that the available alternative routes to/from the CHRLF site are exactly two: SE Cedar Grove Rd to/from the east and Lake Francis Rd SE to/from the south. Both of these routes could potentially connect with areas south of the landfill site, via Issaquah-Hobart Rd or SR-18. But any truck traffic going north on Issaquah Hobart Rd would be forced to follow May Valley Rd to SR-900, since Issaquah does not allow trucks to enter the city from Issaquah-Hobart Rd.

Neither Lake Francis Rd nor May Valley Rd is classified for such purposes, nor constructed to a standard for serving large numbers of trucks. The Draft EIS is remiss for not identifying that these routes are in consideration to be used as *substitutes* for SR-169, and for failing to address the traffic impacts on those routes of adding construction traffic to alleviate SR-169.

The Draft EIS mitigation statement about seeking ways to avoid SR-169 is itself clear evidence that the congestion problems on that highway are in fact well known to WSDOT and KC. This gives further credibility to the concerns expressed previously about **properly describing the full future demand on SR 169 and its alternative routes, as must be done in the Final EIS.**

### **13.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS**

The Draft EIS contends there remain no significant and unavoidable impacts to traffic for any of the Action Alternatives compared to the No-Action Alternative, after assuming the provision of a right-turn lane at the intersection of SR-169 and SE Cedar Grove Rd. But the Draft EIS has failed to account for many of the other impacts in the SR-169 corridor from that intersection to I-405, and failed to even document conditions on any of several alternative routes which carry some of the regional traffic that SR-169 cannot for lack of capacity. It is not acceptable to simply ignore the pervasive addition of such impacts to a number of locations in the surrounding area. Failing to discuss those situations does not support a conclusion that there are no impacts nor that they are unavoidable. **This must be recognized and rectified in the Final EIS.**

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

If those situations are identified, documented, and evaluated systematically, it will become clear that there is a systematic increase in delay throughout the road network due to the addition of the proposed action's traffic onto an already heavily loaded and sometimes overloaded road network. Delay information is available in the technical documentation for every intersection and road segment between intersections. It is only necessary to expand the scope of analysis to account for the entire affected road network, add up the incremental contributions at each and every location, and then devise a suitable mitigation project to inject a delay savings of comparable magnitude into the system, such as intersection upgrades at any of several intersections in the SR 169 corridor itself. **The Final EIS should address this.**

# GMVUAC Comments—Draft EIS: CHRLF Site Development Plan

## V. OPTIONS

### ...Common Landfill Development Activities...Post-Closure Options

#### Common Landfill Development Activities

The Draft EIS's Section 2.3.1 states the following (our *emphases*):

*"All action alternatives assume that existing landfill disposal Areas 5, 6, and 7 will be filled to a height not to exceed 788 feet above mean sea level and permanently closed, and Area 8 will be filled to a height of 788 feet above mean sea level. These activities constitute landfill development components of the No Action Alternative discussed in Section 2.4.1. The action alternatives are designed to expand the capacity of the landfill beyond that of the No Action Alternative by developing new or expanded disposal areas, leading to increased years of life."*

*The following landfill development would occur under all action alternatives:*

- **Development of a new refuse area:** *For all action alternatives, construction of a new landfill disposal area would occur in the southeastern corner of the landfill (proposed Area 9) that contains the existing landfill support facilities and would extend east to the Southeast Pit, north to Area 6, west to Area 8, and south to the BPA easement. Before any landfilling, the area would be prepared with a liner system and other environmental controls as described in Section 2.3.1.1. All action alternatives would develop additional landfill capacity to at least 800 feet above mean sea level in Areas 8 and 9.*
- **Excavation/relocation of soil and solid waste, and soil surcharging:** *Each action alternative would involve the excavation and relocation of a substantial amount of soil. The clean soil (i.e., soil free of solid waste) would be stockpiled and used for landfill cover material – either as daily cover on the active face of the landfill or interim/final cover on areas being prepared for closure. This soil would be stored for use on site by stockpiling it over previously filled areas as a soil surcharge.*

*Soil surcharging involves placing soil in stockpiles 20 to 30 feet high over previously landfilled areas to increase and accelerate the rate of settlement. After surcharging, the soil stockpile and interim cover would be removed, and additional solid waste could be placed in the disposal area, before the placement of final cover. The surcharge soil would then be used as daily or final landfill cover material. Soil stored on closed areas would be removed and used as daily or final landfill cover material.*

*At no time during stockpiling or surcharging would the maximum elevation of those areas exceed 830 feet above mean sea level; soil surcharging or stockpiling would not exceed 788 feet above mean sea level in Areas 5, 6, and 7. Soil that is mixed with solid waste will be sorted on-site to separate the materials and recover any clean soil that can be reused at the landfill. Material not recovered for reuse, and any unsorted materials, would be disposed of in the active area of the landfill each day." (pp. 2-10 through 2-11)*

It is clear that *prior* to closure under any of the Action Alternatives there will be major activities continually underway at the CHRLF far beyond the "*soil surcharging or stockpiling*" described above, which alone is called "*substantial*."

These *pre-closure* major activities include creation of additional areas for refuse, which will result in larger footprints for more surface water runoff; continual operations creating noise/vibrations, odors, GHG emissions, and, thus, additional impacts to human health; extension of traffic impacts along major roads and at several key intersections; and ongoing impacts to plants and animals. Yet, none of those continuing impacts *prior* to closure for each of the Action Alternatives are discussed in the Draft EIS.

**The Final EIS must identify and address all of these impacts for up to 18 years all the way up to the planned closure of Action Alternative 3 in 2046.**



# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **Post-Closure Options**

The *post-closure* options presented in the Draft EIS and provided by the 2019 *Comprehensive Solid Waste Management Plan* are described as:

*"Waste export by rail to a regional landfill"*

or

*"Waste-to-energy (mass burn) facility located somewhere in King County."*

The Draft EIS states under subsection **1.7 How This EIS Analyzes Impacts** the following (our *emphases*):

*"For each element of the environment (Chapters 3 through 14), the potential direct, indirect, and cumulative impacts for each alternative are evaluated and compared to the No Action Alternative to the point at which each alternative reaches capacity. However, in order to compare equally the potential impacts from the action alternatives and the No Action Alternative over the same period into the future, this EIS considers potential impacts in the intervening years between the estimated year of capacity for the No Action Alternative and Action Alternatives 1 and 2, and 2046, which is the estimated capacity year for Action Alternative 3. This necessarily involves documenting potential indirect impacts associated with the alternative long-term disposal options under policy consideration. For each element, a qualitative summary of these indirect impacts is provided for ease of comparison, with more detailed discussion of potential impacts located and incorporated by reference herein, in the Final EIS for the 2019 King County Comprehensive Solid Waste Management Plan...." (p. 1-22)*

In section **IV. ENVIRONMENTAL ELEMENTS** herein we have detailed many omissions in the Draft EIS—which we do not repeat here, including *"impacts associated with the alternative long-term disposal options under policy consideration."* **Such omissions should be rectified in the Final EIS.**

Also, as highlighted above, the Draft EIS simply provides the link to the March 2019 *Comprehensive Solid Waste Management Plan Final EIS*, which evaluated 16 alternatives, so it is not clear to which of these alternatives the Draft EIS refers. Consequently, the reader of the Draft EIS is at a disadvantage because he or she cannot review *"a more detailed description of potential impacts associated with the long-term disposal options."*

Further, we see flaws in the post-closure options—Waste-to-Energy (WTE) and Waste-Export-By-Rail (WEBR)—under consideration. According to the *Waste-To Energy and Waste Export by Rail Feasibility Study*, Arcadis, 2019 (our *emphases*):

WTE:

*"Modelling lifecycle GHG emissions for a WTE facility is complex and depends heavily on the assumptions utilized for offsets due to recovered materials and energy generation. However, with or without offsets, WTE has known anthropogenic (fossil fuel-based) GHG emissions for every ton of MSW combusted. Even with offsets for recovered materials, WTE will likely require carbon capture and sequestration technology installed in order to remain viable past deadlines in 2030 and 2045 for carbon neutral and non-emitting utility sources mandated by the Washington State legislature. These GHG capture systems are on the cusp of commercial viability, but would be the first of its kind installed in a commercial fashion on a WTE facility in the US. If complications arise with installation or operation of the system, it could have associated long-term risk of non-compliance with State law, if the law remains unchanged. Those risks are complex and are discussed further in Section 3.9 and 3.11. However, if carbon capture was completely non-functional, the County would be required to purchase off-set credits off the open market (this market does not yet exist in a sophisticated manner), lobby Washington regulators to provide a carve-out similar to the one that exists for the Spokane facility, or show that the facility's offset credits (as shown in the WARM model analysis section) make the facility GHG neutral in order to continue selling electricity in the Washington market after 2030. After 2045, all utility retail electricity is mandated to be from non-emitting and renewable resources. It is possible that this*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*could be ameliorated by lobbying to include MSW as a renewable source and the commercial market perfecting flue gas capture prior to 2045, and as the legislation currently only applies to regulated utilities, it is possible that the County could self-wheel power to its own facilities and/or buildings in the future and save enterprise costs rather than sell on the open market.” (pp. ix-x)*

It is clear from the above that much depends on the viability of technology for carbon capture, which is near non-existent today, thus increasing implementation and costs risks substantially. Added to these risks are the near non-existent carbon offset credit market, which, unfortunately, is very much dependent often on political whims, not on science. The conclusions reached in the above study rely on some very shaky assumptions and political maneuvering and do not constitute a comprehensive set of engineering technical conclusions on which to base further recommendations for action.

### **WEBR:**

*“WEBR costs have a high potential for future escalation due to the limitations in existing rail capacity and the potential monopoly effect if an IMF served by both rail lines cannot be found, reducing competition during future re-negotiation of the initial contract. These risks are not built-in to the current pricing comparison and represent a large unknown for future disposal cost and solid waste rate impacts....GHG estimates of WEBR depend on the waste composition used in the analysis and whether or not carbon sequestration credits for landfilling non-degradable biogenic wastes are included in the analysis. Carbon sequestration credits applied to a landfill is a controversial topic and there is no clear consensus on this issue....”*

It is clear from the above that significant costs risks also are associated with WEBR including *“(c)arbon sequestration credits.”*

**Due to the above conclusions from Arcadis it is not clear the County has viable *post-closure* options to implement and would seriously need to look at *additional* options, possibly including *multiple* small WTE facilities located throughout the area, as well as *multiple* destinations for WEBR.**

For example, modular WTE conversion plants could be built and located at each of the County's 8 transfer stations and 2 rural drop boxes. Whatever residuals that remain then could be transferred to an arid location (e.g., eastern Washington State) for final processing. While existing waste pick-up and hauling from businesses and homes to the transfer stations and rural drop boxes may remain the same, the waste stream volume flowing from the subject drop boxes and transfer stations may be *reduced* to a fraction, which may reduce the truck trip miles (and resulting GHG emissions) by a large factor.

The site waste at these two major types of hubs (8 transfer stations and two rural drop boxes result in 10 locations for refuse consolidation, “*recycling*” separation, and residuals processing and forwarding) may only then require trucking residuals to a Seattle-based freight yard a few times a week or month, which, for many stations, would be a shorter trip length than driving to the CHRLF. Further, a diesel locomotive gets about 400 ton miles per gallon of diesel fuel, and a truck's mileage is ~90% less. The residuals would emit no GHGs, and, depending on the type of waste-to-energy process used (such as the one pioneered by MIT over a decade ago: “*Turning Waste into Clean Fuels*,” Nancy W. Stauffer, July 1, 2009 - MIT, <https://energy.mit.edu/news/turning-waste-into-clean-fuels/>), the residuals themselves have a market as a glass-infused stone or gravel-like material than can be used as a road building material, leaving little, if any, residual material remains for wasteful transport to someplace else. The *dispersed* WTE conversion sites would distribute their stack emissions over a large area rather than a single, large, focused discharge WTE sited at the CHRLF, which possesses an adverse geography (e.g., canyon location flanked by two salmon bearing waterways) with a fickle meteorology (e.g., frequently cloaked in low lying temperature-inversion cloud layering).

Embracing containerized and compartmentalized distributed WTE technology, sooner rather than later, could result in the lowest impact and most far-reaching solution.

**The Final EIS should evaluate system-wide alternatives and impacts to not only the immediate neighborhoods and community, but also impacts to *all* stakeholders along the waste processing course. The alternatives under analysis should *not* be limited to the CHRLF being a sole-source location in terms**

## ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

of being a WTE conversion site that locks in potentially wasteful transportation ton-mile trips from 8 transfer stations and 2 rural drop boxes to the current CHRLF site.

The Final EIS could explore these concepts, which could show significant ton-mile savings and GHG emission reductions resulting from a distributed network of WTE plants. The Final EIS should evaluate the associated environmental impacts which, we expect, will be reduced, especially for the neighborhoods surrounding the CHRLF site, as well as ecosystems and wildlife.

# **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

## **REFERENCES**

**...Executive Summary...Introduction...Air and Odor...Plants and Animals...Greenhouse Gas Emissions...Human Health...Noise and Vibration...Land and Shoreline Use...Transportation**

### **EXECUTIVE SUMMARY**

*"Overview of GHG Emissions," U.S. EPA website, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>*

### **INTRODUCTION**

*Letter from King County attorney, Norm Maleng, to the citizen class-action lawsuit attorney, Brad Jones, dated November 2, 2001.*

*King County Equity and Social Justice Strategic Plan, 2016-2022, <https://aqua.kingcounty.gov/dnrp/library/dnrp-directors-office/equity-social-justice/201609-ESJ-SP-FULL.pdf>.*

### **AIR AND ODOR**

*"Frequently Asked Questions About Landfill Gas and How it Affects Public Health, Safety and the Environment," U.S. EPA, June 2008.*

*"New Source Review (NSR) Permitting, "Ambient Air" Guidance," U.S. EPA, <https://www.epa.gov/nsr/ambient-air-guidance>.*

*Multiple Citizen—KC SWD Complaint Correspondences, 2019-2020.*

*The First Quarter 2013 Flare Source Testing at Cedar Hills Regional Landfill report, submitted by AMEC Environmental & Infrastructure, Inc. (AMEC).*

*National Institute of Health PubChem website, <https://pubchem.ncbi.nlm.nih.gov/>.*

*BOSSTEK, Odor Boss, <https://bosstek.com/products/odorboss-odor-control-solutions/>.*

*"Landfill Gas Primer - An Overview for Environmental Health Professionals: Chapter 4 Continued: Ambient Air Monitoring Agency for Toxic Substances & Disease Registry" <https://www.atsdr.cdc.gov/HAC/landfill/html/ch4a.html>.*

### **PLANTS AND ANIMALS**

*Noxious Weeds: <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/laws/list.aspx>; <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/maps.aspx>; and <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/tansy-ragwort.aspx>.*

*Seymour Salmonid Society, PO Box 52221, N. Vancouver, BC V7J 3V5; (604) 288-0511*

*"Advanced Sensing and Structural Health Monitoring," at <https://www.hindawi.com/journals/js/2017/7214975/>*

*Bald and Golden Eagle Protection Act; <http://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter5A/subchapter2&edition=prelim>*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*"Chemicals In Our Waters Are Affecting Humans And Aquatic Life In Unanticipated Ways,"*  
<https://www.sciencedaily.com/releases/2008/02/080216095740.htm>

Clean Water Reference: [https://cdn2.hubspot.net/hubfs/481889/PDFs/Whitepapers/wp\\_safe\\_water.pdf](https://cdn2.hubspot.net/hubfs/481889/PDFs/Whitepapers/wp_safe_water.pdf).

Storm Water Reference: [https://www.environment.fhwa.dot.gov/env\\_topics/water/ultraurban\\_bmp\\_rpt/3fs5.aspx](https://www.environment.fhwa.dot.gov/env_topics/water/ultraurban_bmp_rpt/3fs5.aspx).

*"The Woods in Your Backyard section 2.6 Wildlife Ecology,"* University of Maryland, <https://umd.instructure.com/courses/1214816/pages/2-dot-6-wildlife-ecology>.

*Bald Eagle Management Guidelines, US Fish and Wildlife Service,* [https://www.fws.gov/pacific/eagle/all\\_about\\_eagles/Bald\\_Eagle\\_Management\\_Guidelines.html](https://www.fws.gov/pacific/eagle/all_about_eagles/Bald_Eagle_Management_Guidelines.html).

*2017 Forest Action Plan, Washington Department of Natural Resources,* <https://www.stateforesters.org/wp-content/uploads/2018/07/FINAL-Washington-State-Forest-Action-Plan-2017.pdf>.

*"The Woods in Your Backyard," Section 2.6 Wildlife Ecology, University of Maryland Extension,* <https://umd.instructure.com/courses/1214816/pages/2-dot-6-wildlife-ecology>.

### **GREENHOUSE GAS EMISSIONS**

*Federal Mandatory Reporting Rule (MRR) under 40 Code of the Federal Regulations, Part 98, Subpart HH.*

*PSCAA Operating Air Permit #10138.*

*Sharon Kay and Jim Howe vs. King County Solid Waste Division, 2017 Lawsuit, Brad Jones, Attorney at Law*  
*2017 Lawsuit for the December 2013 pipeline break.*

*"Turning Waste into Clean Fuels," Nancy W. Stauffer, July 1, 2009 - MIT,* <https://energy.mit.edu/news/turning-waste-into-clean-fuels/>

*"Waste-To-Energy and Waste Export by Rail Feasibility Study," Arcadis, 2019, Appendix D.*

*"Greenhouse Gas Emissions Estimation Methodologies for Biogenic Emissions from Selected Source Categories: Solid Waste Disposal Wastewater Treatment Ethanol Fermentation," RTI International* [https://www3.epa.gov/ttnchie1/efpac/ghg/GHG\\_Biogenic\\_Report\\_draft\\_Dec1410.pdf](https://www3.epa.gov/ttnchie1/efpac/ghg/GHG_Biogenic_Report_draft_Dec1410.pdf)

*Greenhouse Gas Emissions: Understanding Global Warming Potentials, U.S. EPA* <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

*"Summary Report for the Fourth Stakeholder Webinar on Methodology Improvements for MSW Landfills," December 13, 2018, U.S. EPA* [https://www.epa.gov/sites/production/files/2018-10/documents/webinar\\_4\\_sumrpt\\_0.pdf](https://www.epa.gov/sites/production/files/2018-10/documents/webinar_4_sumrpt_0.pdf)

*"Energy Research and Development Division Final Project Report: California Methane Survey," July 2020, Jet Propulsion Laboratory,* <https://www2.energy.ca.gov/2020publications/CEC-500-2020-047/CEC-500-2020-047.pdf>

[Cited in the reference above] Duren, R., A. Thorpe, K.T. Foster, T. Rafiq, F. M. Hopkins, V. Yadav, B. Bue, D.R. Thompson, S. Conley, N. Colombi, C. Frankenberg, I. McCubbin, M. Eastwood, M. Falk, J. Herner, B. E. Croes, R. Green, C. Miller, *California's methane super-emitters, Nature*, 575 (180-184) (2019). Doi 10.1038/s41586-019-1720-3, <https://www.nature.com/articles/s41586-019-1720-3#citeas>

*"Methane Required Reporting (MRR)," submitted to the US EPA and Department of Ecology, CHRLF Engineer Toraj Ghofrani.*

## **GMVUAC Comments—Draft EIS: CHRLF Site Development Plan**

*"Updates to Methodology Improvements for MSW Landfills,"* December 13, 2017, [https://www.epa.gov/sites/production/files/2018-10/documents/webinar\\_4\\_sumrpt\\_0.pdf](https://www.epa.gov/sites/production/files/2018-10/documents/webinar_4_sumrpt_0.pdf)

*"How utilizing EPA's Decision Support Tool can greatly improve waste management systems,"* *WASTEDIVE.com*, June 28, 2016, <https://www.wastedive.com/news/how-utilizing-epas-decision-support-tool-can-greatly-improve-waste-managem/421707/>

*"EPA Tools Help Local Decision-Makers Deal with Waste Resulting from Major Natural Disasters,"* February 12, 2019, <https://www.epa.gov/sciencematters/epa-tools-help-local-decision-makers-deal-waste-resulting-major-natural-disasters>

*Municipal Solid Waste Decision Support Tool*, RTI International, <https://mswdst.rti.org/>

*"Waste-to Energy Options and Solid Waste Export Considerations,"* Normandeau Associates, Inc., September 28, 2017, (for the King County Solid Waste Division Comprehensive Solid Waste Plan).

*"GEOMEMBRANE LINER DURABILITY: CONTRIBUTING FACTORS AND THE STATUS QUO*, Ian D. Peggs, I-CORP International, Inc. 2003, <https://www.geosynthetica.com/Uploads/IDPigsUKpaper.pdf>.

*"Can you really negate your carbon emissions? Carbon offsets, explained,"* VOX, February 27, 2020, <https://www.vox.com/2020/2/27/20994118/carbon-offset-climate-change-net-zero-neutral-emissions>

### **HUMAN HEALTH**

*Noise and Health – Effects of Low Frequency Noise and Vibrations: Environmental and Occupational Perspectives*, Kerstin Persson Waye, December 2011, [https://www.researchgate.net/publication/258400137\\_Noise\\_and\\_Health\\_-\\_Effects\\_of\\_Low\\_Frequency\\_Noise\\_and\\_Vibrations\\_Environmental\\_and\\_Occupational\\_Perspectives](https://www.researchgate.net/publication/258400137_Noise_and_Health_-_Effects_of_Low_Frequency_Noise_and_Vibrations_Environmental_and_Occupational_Perspectives).

*"Absorption and translocation of polybrominated diphenyl ethers (PBDEs) by plants from contaminated sewage sludge,"* National Institutes of Health, 08/03/2010, <https://pubmed.ncbi.nlm.nih.gov/20684973/#:~:text=The%20majority%20of%20PBDEs%20was,the%20ability%20to%20translocate%20PBDEs>.

*Accumulation of perfluorinated alkyl substances (PFAS) in agricultural plants: A review*, 10/30/2018, <https://pubmed.ncbi.nlm.nih.gov/30502744/>.

*EPA unable to Assess the Impact of Hundreds of Unregulated Pollutants in Land-Applied Biosolids on Human Health and the Environment*. November 15, 2018.

### **NOISE AND VIBRATION**

*Iranian Journal of Public Health*, Oct 2016 issue <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5149497>

*"Effects of Low Frequency Noise and Vibrations: Environmental and Occupational Perspectives,"* published by KP Waye, Institute of Community Medicine and Public Health, Sahlgrenska Academy, Go'teborg University, Go'teborg, Sweden in 2011, [https://www.researchgate.net/publication/258400137\\_Noise\\_and\\_Health\\_-\\_Effects\\_of\\_Low\\_Frequency\\_Noise\\_and\\_Vibrations\\_Environmental\\_and\\_Occupational\\_Perspectives](https://www.researchgate.net/publication/258400137_Noise_and_Health_-_Effects_of_Low_Frequency_Noise_and_Vibrations_Environmental_and_Occupational_Perspectives)

**RCW 7.48.120 – Nuisance defined**, <https://app.leg.wa.gov/rcw/default.aspx?cite=7.48.120>.



# ***GMVUAC Comments—Draft EIS: CHRLF Site Development Plan***

## **LAND AND SHORELINE USE**

*2016 King County Comprehensive Plan (as updated in 2018).*

*King County Code Title 21A.44.050 Special use permit.*

*Council on Environmental Quality (CEQ) Regulations, 40 CFR Part 1508*

*Boehm v. City of Vancouver, 111 Wn. App. 711(2002) – Cumulative impacts*

## **TRANSPORTATION**

*VISION 2040, PSRC.*