FINAL

Environmental Impact Statement

Cedar Hills Regional Landfill
2010 Site Development Plan

July 2010

King County

Department of Natural Resources and Parks

Solid Waste Division

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July 27, 2010

Subject: Final Environmental Impact Statement for Cedar Hills Regional Landfill, 2010 Site Development Plan

To Whom It May Concern:

The King County Department of Natural Resources and Parks, Solid Waste Division (KCSWD) has completed preparation of the Final Environmental Impact Statement (Final EIS) on alternatives for future development of the Cedar Hills Regional Landfill (CHRLF). The Final EIS addresses the potential environmental impacts of extending the life of the landfill so that it could continue to receive solid waste beyond its estimated closure date of 2018.

The CHRLF is located on a 920-acre site in unincorporated King County at 16645 228th Avenue SE, Maple Valley. The site is approximately 6 miles east of Renton and 4 miles south of Issaquah. CHRLF operates under a Special Permit granted by the King County Board of County Commissioners in 1960.

In December 2007, the King County Council approved the *Solid Waste Transfer and Waste Management Plan*, which contains the following recommendation for CHRLF:

> Explore opportunities for taking advantage of available landfill capacity to extend the life of this cost-effective disposal option; revise the Cedar Hills Site Development Plan and seek to maximize the capacity (lifespan) of the landfill, subject to environmental constraints, relative costs to operate, and stakeholder interests.

Under this direction, KCSWD initiated the process to update the Site Development Plan and prepare the EIS. This Final EIS describes the evaluation of five action alternatives as well as a No Action Alternative. All of the action alternatives propose development in the southern portion of the landfill, located within areas permitted for landfilling activities under the Special Permit. Landfill development under the alternatives is incremental in nature, beginning in the southwest area and extending progressively east toward the boundary of the buffer. None of the alternatives propose solid waste disposal within the protective 1,000-foot buffer around the site.

A brief synopsis of the alternatives is provided below. KCSWD is recommending Alternative 2 as the preferred alternative.

- Under the **No Action Alternative** existing Refuse Areas 6 and 7 would be filled to capacity and the landfill would close. Under this alternative, the landfill is expected to reach capacity and close in 2018, based on 2009 tonnage forecasts.

- **Alternative 1 – Southwest Corner Development** would develop 31.2 acres for construction of a new refuse area in the southwest portion of the landfill and would extend the useful life of the landfill by 3 to 4 years.
- **Alternative 2 – Southwest Corner and Main Stockpile Development** ***(preferred alternative)*** would develop 56.5 acres for construction of one to two new refuse areas and would extend landfill life for 5 to 6 years.
- **Alternative 3 – South Area Development with Partial Wall** would develop 78.4 acres for construction of up to three new refuse areas and would extend landfill life for 8 to 9 years. This alternative would include the construction of a mechanically stabilized earthen wall along the southeast portion to support solid waste placed behind it and to provide a protective barrier for landfill facility uses. This alternative considers the relocation of some maintenance and administrative facilities to the buffer.
- **Alternative 4 – South Area Development Including Support Area and Partial Main Hill** would develop 96.5 acres for construction of up to three new refuse areas and would extend landfill life for 9 to 10 years. The new development would extend to the eastern boundary of the buffer. This alternative considers the relocation of some maintenance and administrative facilities to the buffer.

  KCSWD has withdrawn Alternative 4 from further consideration as discussed in Chapter 2 of the Final EIS.
- **Alternative 5 – South Area Development Including Support Facility** would develop 95.1 acres with construction of up to three new refuse areas and would extend landfill life for 12 to 13 years. It would include the area developed under Alternative 2, extending across the maintenance and administrative facility area to overlay the west side of the south main hill. This alternative considers the relocation of some maintenance and administrative facilities to the buffer.

The Final EIS determined that there would be no significant unavoidable adverse environmental impacts during construction or operation of any of the alternatives. The document describes mitigation measures that have already been implemented at the landfill, as well as measures that are planned for the future. Where necessary, additional measures are described to further mitigate impacts.

Copies of the Final EIS are available for public review at the Issaquah, Fairwood, and Maple Valley branches of the King County Library System, as well as at the Renton Public Libraries. The Final EIS may also be reviewed on-line at http://your.kingcounty.gov/solidwaste, and is available at the Solid Waste Division office located at 201 South Jackson Street, Suite 701, Seattle. A copy of the Final EIS may be purchased for $35.00 for the printed copy or $5.00 for the CD.

If you have questions, please contact Mizanur Rahman, Project Manager, at 206-296-8444, TTY Relay: 711.

Sincerely,

Kevin E. Kiernan, P.E.
Division Director

Fact Sheet

Project Title

Final Environmental Impact Statement (EIS): Cedar Hills Regional Landfill, 2010 Site Development Plan

Project Proponent

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Project Description

The Cedar Hills Regional Landfill (CHRLF) is located on a 920-acre site in unincorporated King County at 16645 228th Avenue SE, Maple Valley, approximately 4 miles south of Issaquah and 6 miles east of Renton. The site is accessed from Cedar Grove Road and consists of the north one-half of Section 28 and Section 21 (except the northeast quarter of the northeast quarter), Township 23 North, Range 6 East, Willamette Meridian. Use of the CHRLF site for solid waste disposal is allowed under a Special Permit approved by the King County Board of County Commissioners in 1960.

In December 2007, the King County Council (KCC) approved the *Solid Waste Transfer and Waste Management Plan*, which contains the following recommendation for the Cedar Hills Regional Landfill (CHRLF):

> Explore opportunities for taking advantage of available landfill capacity to extend the life of this cost-effective disposal option; revise the Cedar Hills Site Development Plan and seek to maximize the capacity (lifespan) of the landfill, subject to environmental constraints, relative costs to operate, and stakeholder interests.

Under this direction, KCSWD initiated the process to update the Site Development Plan for the CHRLF. This Environmental Impact Statement (EIS) was prepared to evaluate the potential environmental impacts of five action alternatives for future development of the landfill. The EIS determined that none of the alternatives posed any significant adverse environmental impacts compared with the No Action Alternative. No additional mitigation measures were proposed, except to provide supplementary landscaping to further obscure views of the landfill.

Under the No Action Alternative, the landfill is expected to reach capacity and close in approximately 2018, based on the 2009 tonnage forecast. Refuse Areas 6 and 7 would continue to be filled. As Areas 5, 6, and 7 approach capacity, they have received or will receive interim closure and will be used for stockpiling of some soil, allowing time for the waste to settle. Once Area 7 has received interim cover, Areas 5, 6, and 7 will sequentially resume receiving additional solid waste and then the placement of final cover. The final

elevation would not exceed 780 to 800 feet above mean sea level. The additional landfill capacity gained through this process is about 1 to 1.5 million cubic yards. All development under this alternative is allowed under the existing Special Permit.

The five action alternatives are, for the most part, incremental in nature, with added areas of development leading to increased years of life. All five proposed action alternatives expand upon the No Action Alternative and involve the following activities:

- Development of a new refuse area in the southwest corner of the landfill, which would include the area containing the contaminated stormwater (CSW) lagoon, southwest siltation pond, and all or part of the main soil stockpile.
- Removal of solid waste and soil from the South Solid Waste Area (SSWA), which would be used for relocation of the lagoon, siltation pond, and other auxiliary facilities and systems. The portion of the SSWA within the buffer would be restored.
- The option to excavate solid waste and soil from the SE Pit Refuse Area within the buffer to obtain soil for use as daily landfill cover. Under Alternatives 1 and 2 the SE Pit Refuse Area would be regarded and planted with native vegetation. Under Alternative 3, the area would either be restored or could be considered for relocation of some maintenance and administration facilities. The SE Pit Refuse Area would not be excavated under Alternative 5.

Development activities unique to each of the five action alternatives are as follows:

- **Alternative 1** would develop 31.2 acres for construction of a new refuse area in the southwest portion of the landfill. The developed portion would include the area containing the existing CSW lagoon, siltation pond, and about one-half of the main soil stockpile area. This alternative would extend the useful life of the landfill by 3 to 4 years.

- **Alternative 2** ***(the preferred alternative)*** would develop 56.5 acres for construction of one to two new refuse areas. It would develop the entire main soil stockpile area along with the CSW lagoon and siltation pond. This alternative would extend landfill life for 5 to 6 years.

- **Alternative 3** would develop 78.4 acres for construction of up to three new refuse areas. It would include the area developed under Alternative 2, extending to the northeast across the upper portion of the maintenance administrative facility area and into the southern portion of the Southwest Main Hill Refuse Area. This alternative would include the construction of a mechanically stabilized earthen wall along the southeast portion to support solid waste placed behind it. The wall would provide a protective barrier that would allow continued use of most maintenance and administrative facilities and landfill development to the north of that area. The SE Pit Refuse Area and southeast portion of the buffer zone could be considered for relocation of some maintenance and administrative facilities. This alternative would extend landfill life for 8 to 9 years.

- **Alternative 4** ***(withdrawn from further consideration)*** would develop 96.5 acres for construction of up to three new refuse areas. It would include the area developed under Alternative 2, extending across the maintenance and administrative facility area and the southern portion of the Southwest and East Main Hill refuse areas up to the

eastern boundary of the buffer zone. The division withdrew Alternative 4 from further consideration in the Final EIS as discussed in Chapter 2.

- **Alternative 5** would develop 95.1 acres with construction of up to three new refuse areas. It would include the area developed under Alternative 2, extending across the maintenance administrative facility area and the southern portion of the Southwest Main Hill Refuse Area, where it would overlay the west side of the hill. Under this alternative, no soil or refuse would be excavated from the portion of the landfill near the eastern boundary of the buffer zone or the SE Pit Refuse Area. This alternative would extend landfill life for 12 to 13 years.

Proposed Date of Implementation

Upon adoption by the KCC of a preferred alternative, a Site Development Plan for the selected alternative will be prepared and submitted to KCC for approval. KCSWD anticipates preparation of final design and subsequent construction of the selected alternative to begin in 2014.

State Environmental Policy Act (SEPA) Lead Agency

King County Department of Natural Resources and Parks, Solid Waste Division

SEPA Responsible Official

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Permits and Approvals Required

King County Council

- Approval of the Project Program Plan, Cedar Hills Regional Landfill: 2010 Site Development Plan
- Adoption of Cedar Hills Regional Landfill: 2010 Site Development Plan

King County Department of Development and Environmental Services

- Permitting to allow relocation of facilities in the buffer, which may be required under Alternatives 3 and 5
- Demolition and building permits for relocating operation and maintenance facilities under Alternatives 3 and 5
- Drainage review for stormwater management systems

King County Department of Natural Resources and Parks, Wastewater Treatment Division

- Wastewater discharge permit – existing permit for discharge of leachate to sanitary sewer system may need to be modified under all of the alternatives

Public Health – Seattle & King County

- Municipal solid waste handling permit – must be revised when new disposal areas become operational

Puget Sound Clean Air Agency

- Notice of construction and approval under the New Source Performance Standards
- Modification of the Title V air permit for the operation of a major source of air pollutants pursuant to Title V of the 1990 Clean Air Act Amendment

Washington State Department of Ecology

Baseline general permit under National Pollutant Discharge Elimination System (NPDES) for off-site discharge of stormwater runoff during construction

Authors and Principal Contributors

KCSWD authored the Final EIS with technical support from the following principal contributors.

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Date of Issue of the Draft EIS

September 30, 2009 for public review.

Time and Place of Public Hearing

October 22, 2009
6:30 p.m. to 8:30 p.m.
Greater Maple Valley Community Center
22010 SE 248th Street
Maple Valley, WA

Draft EIS Comment Due Date

Written comments on the Draft EIS were due by November 6, 2009.

Date of Issue of the Final EIS

July 27, 2010

Locations to Obtain Copies or View the Final EIS

Copies of the Final EIS are available for review at the following locations:

King County Solid Waste Division
Department of Natural Resources and Parks
201 S. Jackson Street, Suite 701
Seattle, WA 98104-3855
Office Hours: 8:30 am to 4:30 pm, Monday – Friday
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King County Library – Issaquah
10 W. Sunset Way
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Renton Public Library – Main Branch
100 Mill Avenue South
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Renton Public Library – Highland Branch
2902 NE 12th Street
Renton, WA 98056

The Final EIS is available to the public on-line at http://your.kingcounty.gov/solidwaste.

Purchase of a hard copy version is available for $35.00 or a CD for $ 5.00

Date of Final Action

King County Council's adoption of the recommended site development alternative is anticipated in late 2010.

Subsequent Environmental Review

No subsequent environmental review is anticipated.

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Appendices

A Special Permit and Related Documents
B Municipal Solid Waste Handling Permit
C Distribution List for Final EIS
D Threatened and Endangered Species Documentation
E Supplemental Technical Memoranda
F Complaint Response Plan

Acronyms and Abbreviations

$\mu g/m^3$	micrograms per cubic meter
ADCM	alternative daily cover material
ADT	average daily trips
ASIL	acceptable source impact level
BEW	Bio Energy (Washington), LLC
BMP	best management practice
BPA	Bonneville Power Administration
Btu	British thermal unit
CAA	Federal Clean Air Act
CHRLF	Cedar Hills Regional Landfill
CO	carbon monoxide
CO_2	carbon dioxide
County	King County, Washington
CSW	contaminated stormwater
CWA	Federal Clean Water Act
dB	decibel
dBA	A-weighted decibel
DCE	cis-1,2-dichloroethene
Draft EIS	Draft Environmental Impact Statement
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
Final EIS	Final Environmental Impact Statement
FTA	Federal Transit Administration
g/s	grams per second
GHG	greenhouse gas
GMA	Washington State Growth Management Act
g_n	gravity
HDPE	high-density polyethylene
ISWGP	Industrial Stormwater General Permit
KCC	Metropolitan King County Council
KCDOT	King County Department of Transportation
KCSWD	King County Department of Natural Resources and Parks, Solid Waste Division
KCWTD	King County Department of Natural Resources and Parks, Wastewater Treatment Division
L_{eq}	equivalent sound level
LOS	level of service
MCY	million cubic yards
L_v	velocity level in decibels
MG	million gallons
MGD	million gallons per day

mg/L	milligrams per liter
MSE wall	mechanically stabilized earthen wall
NHP	Natural Heritage Program
NMOC	non-methane organic compounds
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit
O_3	ozone
PCE	tetrachloroethene
PHS	Priority Habitats and Species
PM_{10}	particles smaller than 10 micrometers in mass-mean diameter
$PM_{2.5}$	particles smaller than 2.5 micrometers in mass-mean diameter
ppm	parts per million
PPV	peak particle velocity (inches per second)
Public Health	(Department of) Public Health – Seattle & King County
PSCAA	Puget Sound Clean Air Agency
PSE	Puget Sound Energy
QA/QC	quality assurance/quality control
QCF	Queen City Farms
RCRA	Federal Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RMS	root mean square
SDP	Site Development Plan
SEPA	State Environmental Policy Act
SO_x	sulfur oxides
SO_2	sulfur dioxide
SPCC	spill prevention control and countermeasures (plan)
SSWA	South Solid Waste Area
SWANA	Solid Waste Association of North America
SWDM	Surface Water Design Manual
SWPPP	stormwater pollution prevention plan
TAC	toxic air contaminant
TAP	toxic air pollutant
TCE	trichloroethene (trichloroethylene)
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VC	vinyl chloride
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WSDOT	Washington State Department of Transportation
WSGWC	Washington State Groundwater Criteria

Glossary

alternative daily cover material (ADCM)	An approved material that may be used by landfill operators to cover waste daily in lieu of 6 inches of clean soil. Use of an ADCM typically provides landfill operators more space to place waste materials.
Aquifer	A subsurface zone that yields economically important amounts of water to wells. The term is synonymous with water-bearing formation.
Attainment	Compliance with the National Ambient Air Quality Standards (NAAQS) promulgated under the Clean Air Act (CAA).
Clean Air Act (CAA)	Enacted in 1963 and 1970 and amended in 1977 and 1990, this federal legislation authorized the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources and also substantially expanded enforcement authority.
Clean Water Act (CWA)	The objective of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, and maintaining the integrity of wetlands.
Code of Federal Regulations (CFR)	The CFR is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government. It is divided into 50 titles that represent broad areas subject to federal regulation. Each volume of the CFR is updated once each calendar year and is issued on a quarterly basis.
dB	A sound's intensity is determined by how much its pressure fluctuates above and below that of the atmosphere and is expressed in units of decibels (dB). The range of normally encountered sound can be expressed in values between 0 and about 140 dB.
dBA	A-weighted decibel: Since the human ear does not respond equally to all frequencies (or pitches), measured sound levels often are adjusted or weighted to correspond to the frequency response of human hearing and the perception of loudness. The A-weighted decibel (dBA) scale is most widely used for this purpose.
Environmental Impact Statement (EIS)	A document that the State Environmental Policy Act requires state agencies to prepare for major projects or legislative proposals having the potential to significantly affect the environment. A tool for decision-making, it describes the positive and negative environment effects of the undertaking, and alternative actions and measures to reduce or eliminate potentially significant environmental impacts.
environmental review process	A process that assesses the potential environmental effects of an action on the human and natural environment through preparation of an EIS.

floodplain	The area on the sides of a stream, river, or watercourse that is subject to periodic flooding. The extent of the floodplain is dependent on soil type, topography, and water flow characteristics.
floodway	The area regulated by federal, state, or local requirements to provide for the discharge of the base flood so the cumulative increase in water surface elevation is no more than a designated amount (not to exceed one foot as set by the National Flood Insurance Program) within the 100-year floodplain.
glaciofluvial	Glaciofluvial deposits were left behind by rivers that helped drain melting glaciers. These deposits are typically composed of coarse-grained soil.
glaciolacustrine	Glaciolacustrine deposits were created by temporary lakes that formed when glaciers were melting These deposits usually have a high concentration of fine-grained soil.
hazardous waste	Waste with properties defined under the Resource Conservation and Recovery Act (RCRA) that make it dangerous or potentially harmful to human health or the environment.
L_{dn}, L_{eq}	Hour equivalent sound level (L_{eq}) and daily day-night noise level (L_{dn}).
level of service (LOS)	Level of service (LOS) refers to the efficiency at which a roadway, intersection, or highway/rail at-grade crossing operates, and is a reflection of vehicle delay and congestion. Letters from A to F are assigned to the LOS, with LOS A indicating relatively free-flowing traffic and LOS F indicating extreme congestion.
mechanically stabilized earthen (MSE) wall	A soil berm typically constructed in layers with an overall exterior vertical face and 3 horizontal to 1 vertical interior face. During construction, a geogrid material is placed in the layers of soil as the wall is extended vertically to provide stability for the soil. Use of an MSE wall increases capacity for waste placement for a given area versus no MSE wall.
mitigation	An action taken to prevent, reduce, or eliminate potential adverse environmental effects.
moraines	The accumulations of fragments of rock brought down by glaciers.
mobile source air toxics	The Clean Air Act defined this subset of 188 air toxics. Mobile source air toxics (MSATs) are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.
National Ambient Air Quality Standards (NAAQS)	The Clean Air Act requires the U.S. Environmental Protection Agency to set National Ambient Air Quality Standards for wide-spread pollutants from numerous and diverse sources considered harmful to public health and the environment.

National Historic Preservation Act (NHPA)	The National Historic Preservation Act of 1966, last amended in 2000, established a program for the preservation of additional historic properties throughout the nation and requires federal agencies to consider how proposed actions could affect historic properties.
nonattainment	Failure to comply with the National Ambient Air Quality Standards promulgated under the Clean Air Act.
nuisance odor	Any odor which found offensive or may unreasonably interfere with any person's health, comfort, or enjoyment beyond the property boundary of a facility.
outwash	A deposit of sand and gravel carried by running water from the melting ice of a glacier and laid down in stratified deposits. The outwash may also extend many miles in length.
overburden	Soil or rock overlying a valuable mineral deposit.
ozone (O_3)	A photochemical oxidant and the major component of smog that is formed through complex chemical reactions between precursor emissions of volatile organic compounds and oxides of nitrogen in the presence of sunlight.
palustrine	Pertaining to a marsh or wetlands; wet or marsh habitats.
particulate matter (PM)	Airborne dust or aerosols.
peak particle velocity (PPV)	The maximum instantaneous positive or negative peak of a vibration signal.
peak-period	Often referred to as rush hour, peak-period typically refers to weekday morning and evening hours when traffic congestion is at its worst.
Resource Conservation and Recovery Act (RCRA)	The United States' primary law governing the disposal of solid and hazardous waste. Congress passed RCRA on October 21, 1976, to address the increasing problems the nation faced from its growing volume of municipal and industrial waste. RCRA, which amended the Solid Waste Disposal Act of 1965, set national goals for 1) protecting human health and the environment from the potential hazards of waste disposal, 2) conserving energy and natural resources, 3) reducing the amount of waste generated, and 4) ensuring that wastes are managed in an environmentally-sound manner.
release	An unwanted discharge of material into the environment.
riparian habitat	Areas adjacent to rivers and streams with a differing density, diversity, and productivity of plant and animal species relative to nearby uplands.
scoping	The process for determining the scope of environmental issues to address in the EIS and their potential significance.
Site Development Plan	Series of drawings and operational instructions to guide the preparation of new disposal areas at CHRLF.

soil surcharging	Process of placing soil in stockpiles over areas with previously placed waste to increase the rate, and total, settlement of the waste. After a sufficient amount of time, the soil surcharge is removed and additional waste is then placed in the area.
till	Unstratified soil deposited by a glacier; consists of sand and clay and gravel and boulders mixed together.
vectors	Animals capable of transmitting disease to humans including flies, rats, mosquitoes, and other animals including insects.
wetlands	Areas defined by regulatory conditions; typically areas that are inundated, or saturated, by surface water or groundwater for all or some portion of the year and that support vegetation typically adapted for life in saturated soil conditions.
wellhead protection area	Sites located within, or sufficiently close to, the capture zone of a potable water supply well that groundwater could be affected by a release of contamination.

Summary

This *Final Environmental Impact Statement: Cedar Hills Regional Landfill 2010 Site Development Plan* was prepared for the King County Department of Natural Resources and Parks, Solid Waste Division (KCSWD) to evaluate the potential environmental impacts of five action alternatives for future development of the Cedar Hills Regional Landfill (CHRLF). The purpose of the Environmental Impact Statement (EIS) is to identify any potential significant adverse environmental impacts associated with each alternative for future landfill development (Action Alternatives 1 through 5) and to propose reasonable mitigation measures to minimize any impacts identified.

Under guidance of the State Environmental Protection Act (SEPA), the EIS examines the potential for impacts to earth; air and odor; surface water; groundwater; upland vegetation, wetlands and wildlife; noise and vibration; human health; land use; scenic resources (aesthetics, light, and glare); cultural resources; transportation; public services and utilities; and greenhouse gases. The EIS conducted for the CHRLF determined that none of the five action alternatives for the landfill poses any significant adverse environmental impacts compared with the No Action Alternative.

The examination of action alternatives for the CHRLF is consistent with the recommendation presented in the *Solid Waste Transfer and Waste Management Plan* and approved by King County Council in December 2007 to "explore opportunities for taking advantage of available landfill capacity to extend the life of this cost-effective disposal option."

Under the No Action Alternative, the CHRLF is expected to reach its permitted capacity in 2018, based on 2009 solid waste tonnage forecasts; this estimate assumes that no further landfill development would occur beyond what is planned in the 1998 Site Development Plan for the CHRLF. Action Alternatives 1 through 5 provide a range of development scenarios that would extend the life of the landfill from about 3 to 13 years beyond 2018.

Based on this environmental review and considerations of operational feasibility, cost, stakeholder interest, and flexibility, the division is recommending Alternative 2 as the preferred alternative for extending the life of the landfill. This alternative was chosen for several key reasons:

- It offers landfill capacity to about 2024 with the least amount of disruption to existing landfill structures and the buffer zone, yet preserves the flexibility to implement further development if warranted in the future.
- It maximizes the use of readily available space at the landfill with no significant potential adverse impact on the environment. Additionally, it does not propose any solid waste disposal or relocation of facilities in the buffer.
- All proposed development under Alternative 2 is allowed under the existing Special Permit issued for the site in 1960.
- It presents significant cost savings over the No Action alternative. Once the landfill reaches capacity and closes, KCSWD will transition to another method of disposal, such as transporting waste to an out-of-county landfill or to a waste-to-energy or other waste conversion facility(ies). Studies conducted for KCSWD (R.W. Beck 2007) and a comparison of rates paid by other local governments that transport

waste to out-of-county landfills indicates that disposal at CHRLF is significantly less expensive than the projected cost of other disposal options. Thus by extending the life of the landfill and delaying the transition to a new disposal method, KCSWD can delay the expenses and subsequent rate increases that will be needed to accommodate this transition.

Following publication of the Final EIS, KCSWD will submit to King County Council a Project Program Plan (PPP) that provides the rationale for selecting Alternative 2 and a preliminary schedule for its implementation. Upon Council approval of the PPP, KCSWD will prepare a Site Development Plan (SDP) that provides a detailed implementation plan and budget for the selected alternative.

Background

Since 1965, the CHRLF has provided for the safe and efficient disposal of the county's solid waste. The CHRLF is located on a 920-acre site in unincorporated King County at 16645 228th Avenue SE, Maple Valley. The site is approximately 4 miles south of Issaquah and 6 miles east of Renton. The site is accessed from Cedar Grove Road and consists of the northern one-half of Section 28 and Section 21 (except the northeast quarter of the northeast quarter), Township 23 North, Range 6 East, Willamette Meridian. King County owns the landfill property; KCSWD pays rent to the county for use of the property.

Solid waste disposal at the CHRLF is allowed under a Special Permit, approved by the King County Board of County Commissioners in 1960. The permit allows the operation of a sanitary landfill and specifies that a 1,000-foot-wide buffer zone be maintained around the perimeter of the site for the protection of the surrounding properties. The Special Permit stipulates that "no sanitary operations" (i.e., waste disposal) should be allowed within the buffer. As the property owner, King County, not KCSWD, may authorize other uses within the buffer.

KCSWD is responsible for the maintenance of the buffer, as it pertains to landfill-related activities. In addition to the 920-acre parcel that defines the landfill boundary, the county owns a 20-acre parcel northeast of the landfill boundary that provides added buffer between the East Main Hill Refuse Area of the landfill and adjacent properties, although it is not included in the Special Permit.

Environmental Review Process

In compliance with SEPA, in early 2009 KCSWD initiated the process for evaluating the potential environmental impacts of each of the five action alternatives for landfill development. On March 30, 2009 KCSWD issued a Determination of Significance and began a public scoping period to gather comments on the range of issues to be evaluated during the environmental review. The scoping period for the EIS ran from March 30 until May 1, 2009. On April 20, a scoping meeting was held, and comments were received from more than 45 individuals or agencies. Based on the comments received, additional studies related to air quality, noise, and vibration were included as part of the environmental review process.

The analysis of potential impacts included gathering information about existing conditions for each element of the environment, assessing potential impacts, and recommending mitigation measures if potential impacts were identified.

A Draft EIS presenting the results of the environmental review was issued on September 30, 2009. Issue of the Draft EIS was followed by a public comment period from September 30 to November 6 to allow review and comment by regulators, other agencies, and the general public. The Draft EIS was published on the KCSWD Web site, distributed at several county libraries, and mailed to regulators, state agencies, cities, Unincorporated Area Councils, tribes, and school districts. On October 22, 2009, a public hearing was held, which included a presentation about the Draft EIS and an opportunity to ask questions and provide comment. About 22 citizens attended the public hearing. Throughout the public comment period, 28 written comments were received on the Draft EIS. The division considered all of the comments received and determined that no additional environmental studies were needed to proceed with preparation of this Final EIS.

As part of SEPA requirements, this Final EIS contains a Responsiveness Summary, which provides the public with responses from KCSWD to all the questions and comments that were received during the public comment period for the Draft EIS. The Responsiveness Summary groups the comments/questions by topic area and chapter and provides KCSWD's response. Each comment received is provided in its entirety following the summary. The text of the Final EIS was revised as needed to clarify or correct information. These changes are not substantive. KCSWD did, however, withdraw Alternative 4 from further consideration for reasons discussed in Chapter 2 of this plan. In addition, the Draft EIS included a chapter entitled *Comparative Cost Analysis*, which was removed because the cost analysis is not a required element of an EIS, and a separate cost analysis is being prepared by KCSWD.

Description of Alternatives

The Final EIS examines the action alternatives described below as well as a No Action Alternative. First is an overview of the landfill development activities that will occur under all action alternatives. Next are the unique characteristics of each action alternative and the No Action Alternative.

All of the action alternatives include:

- Completion of the final phases of landfilling in Areas 5, 6, and 7
- Excavation and regrading of the South Solid Waste Area (SSWA) and restoration of the portion of the SSWA located in the buffer
- Relocation of the contaminated stormwater (CSW) lagoon, southwest siltation pond, and possibly other auxiliary facilities or systems to the SSWA
- Use of the main soil stockpile for landfill cover material and soil surcharging
- Construction of one or more new disposal areas beginning in the west in the area containing the CSW lagoon, southwest siltation pond, and main soil stockpile area and extending incrementally east toward the boundary of the buffer zone
- To allow uninterrupted landfill operation, construction of each new disposal area(s) beginning 2 to 3 years before filling of the active landfill area is complete (assumes a construction period of April through October)

Alternative 1 – Southwest Corner Development

Alternative 1 would develop 31.2 acres for construction of a new disposal area in the southwest portion of the landfill. The developed portion would include the area currently containing the CSW lagoon, southwest siltation pond, and approximately one-half of the main soil stockpile area. The new disposal area would be constructed in a single project. In total, Alternative 1 would add approximately 4.7 million cubic yards of capacity to the CHRLF and extend its useful life by 3 to 4 years.

Implementation of Alternative 1 would require about 1.7 million cubic yards of soil for use as daily and final cover over its lifetime. This requirement would be met by excavating approximately 410,000 cubic yards of soil from the new disposal area, about 500,000 cubic yards of soil from the SSWA, and 800,000 cubic yards of surplus soil from the No Action Alternative. The excavated soil would be used for soil surcharging and landfill cover material for the new and existing disposal areas. Restoration would occur in the portion of the SSWA located in the buffer. Under this alternative, excavation of the SE Pit Refuse Area is an option for obtaining additional soil for landfill cover material and soil surcharging. If this option were implemented, the area would be regraded and planted with native vegetation. KCSWD would obtain any necessary permits and prepare an operational plan that addresses potential impacts of this activity.

Under Alternative 1, no facilities (administration buildings, maintenance facilities, etc.) located in the southeast portion of the landfill site would be relocated. No solid waste disposal or relocation of infrastructure is planned within the buffer zone; therefore, all proposed development under Alternative 1 is allowed under the existing Special Permit.

Alternative 2 – Southwest Corner and Main Stockpile Development *(Preferred Alternative)*

Alternative 2 would develop 56.5 acres for construction of a new disposal area in the southwest portion of the landfill. The developed portion would include the area currently containing the CSW lagoon, southwest siltation pond, and the entire main soil stockpile area. New area development would consist of one to two projects conducted in two phases. In total, Alternative 2 would add approximately 8.5 million cubic yards of capacity to the CHRLF and extend its useful life by 5 to 6 years.

Implementation of Alternative 2 would require about 2.2 million cubic yards of soil for use as daily and final cover over its lifetime. This requirement would be met by excavating approximately 860,000 cubic yards of soil from the new disposal area, about 500,000 cubic yards from the SSWA, and 800,000 cubic yards of surplus soil from the No Action Alternative. The excavated soil would be used for soil surcharging and landfill cover material for the new and existing disposal areas. Restoration would occur in the portion of the SSWA located in the buffer. Under this alternative, excavation of the SE Pit Refuse Area is an option for obtaining additional soil for landfill cover material and soil surcharging. If this option were implemented, the area would be regraded and planted with native vegetation. KCSWD would obtain any necessary permits and prepare an operational plan that addresses potential impacts of this activity.

Under Alternative 2, no facilities (administration buildings, maintenance facilities, etc.) located in the southeast portion of the landfill site would be relocated. No solid waste

disposal or relocation of infrastructure is planned within the buffer zone; therefore, all proposed development under Alternative 2 is allowed under the existing Special Permit.

Alternative 3 – South Area Development with Partial Wall

Alternative 3 would develop 78.4 acres for construction of a new disposal area in the southern portion of the landfill. The developed portion would include the area currently containing the CSW lagoon, southwest siltation pond, main soil stockpile area, heavy equipment maintenance shop, a portion of the trailer parking area, and the area containing the compressor building adjacent to the Southwest Main Hill Refuse Area. The new disposal area would extend eastward to the ridge of the Southwest Main Hill Refuse Area. Facilities located within the proposed area covered by the alternative would require relocation to other areas of the site.

Under Alternative 3, a mechanically stabilized earthen (MSE) wall would be constructed along the eastern end of the landfill cell footprint. The MSE wall would be used to support solid waste placed behind it. The wall would be approximately 1,200 feet long with an average height of 30 feet. The MSE wall would allow continued use of the maintenance shop and administrative facilities (to the south of the disposal area) and would allow development of the area north of the shop for waste disposal. Alternative 3 would consist of up to three landfill development projects. In total, Alternative 3 would add approximately 12.1 million cubic yards of capacity to the CHRLF and extend its useful life by 8 to 9 years.

Implementation of Alternative 3 would require about 2.4 million cubic yards of soil for use as daily and final cover over its lifetime. This requirement would be met by excavating approximately 920,000 cubic yards of soil from the new disposal area, about 500,000 cubic yards of soil from the SSWA, and 800,000 cubic yards of surplus soil from the No Action Alternative. The excavated soil would be used for soil surcharging and landfill cover material for the new and existing disposal areas. Restoration would occur in the portion of the SSWA located in the buffer.

Under Alternative 3, several facilities located in the southeast portion of the landfill site would require relocation, including the heavy equipment maintenance, contractor staging areas, a portion of the transfer trailer parking areas, compressor building, operator's crew area, and other small facilities adjacent to the Southwest Main Hill Refuse Area. The contractor entrance to the south of the existing entrance on 228th Avenue SE could be modified to serve as the new facility entrance.

Under Alternative 3, relocated facilities may be placed within the buffer near the southeast corner of the CHRLF, which borders an area zoned for mining, other resource extraction, and similar uses. Facility relocation would require permitting through the appropriate regulatory agencies. Also under consideration is restoration or facility relocation in the SE Pit Refuse Area. Similarly, KCSWD would obtain any necessary permits and prepare an operational plan that addresses potential impacts prior to excavation and restoration or facility relocation in this area.

As with all the action alternatives considered, no solid waste disposal is planned within the buffer.

Alternative 4 – South Area Development Including Support Area and Partial Main Hill

KCSWD has withdrawn Alternative 4 from further consideration for reasons discussed in Chapter 2.

Alternative 5 – South Area Development Including Support Facility Area

Alternative 5 would develop 95.1 acres for construction of a disposal area in the southern portion of the landfill. The developed portion would include the area currently containing the CSW lagoon, southwest siltation pond, main soil stockpile area, and the southeast area currently containing the administrative and maintenance facilities. Facilities located within the development area would require relocation to other on-site locations. Also under consideration is relocating facilities, such as the maintenance shop, to off-site locations such as a centrally located King County transfer station.

Alternative 5 would extend from approximately the west buffer area to the top of the Southwest Main Hill Refuse Area and would overlay the west side of the hill. Under this alternative, the west side slope of the Southwest Main Hill Refuse Area would receive a new liner and leachate collection system, but soil and solid waste would not be excavated from the area. Under this alternative, the SE Pit Refuse Area would not be excavated. Alternative 5 would consist of up to three additional landfill development projects. In total, Alternative 5 would add approximately 16.5 million cubic yards of capacity to the CHRLF and extend its useful life by 12 to 13 years.

Implementation of Alternative 5 would require about 2.8 million cubic yards of soil for use as daily and final cover over its lifetime. This requirement would be met by excavating approximately 1.8 million cubic yards of soil from the new disposal area, about 500,000 cubic yards from excavation from the SSWA, and 800,000 cubic yards of surplus soil from the No Action Alternative. The excavated soil would be used for soil surcharging and landfill cover material for the new and existing disposal areas.

As with Alternative 4, most of the existing facilities located in the southeast portion of the landfill site would require relocation. These facilities include the following: the administration buildings, equipment maintenance shop, vehicle maintenance shop, truck wash, fueling station, contractor staging areas, transfer trailer parking areas, parts and equipment storage area, compressor building, operator's crew area, and other small facilities adjacent to the Southwest Main Hill Refuse Area.

Up to 21 acres may be required for relocated facilities. The contractor entrance to the south of the existing entrance on 228th Avenue SE could be modified to serve as the new facility entrance, and the existing scalehouse could be relocated in this entrance.

Under this alternative, there would be no solid waste disposal in the buffer zone. Facilities requiring on-site relocation could be placed in the southeast corner of the property. Facility relocation would require permitting through the appropriate regulatory agencies. Restoration would occur in the portion of the SSWA located in the buffer.

No Action Alternative

Under the No Action Alternative, future development at the CHRLF would be limited to those activities that are included in the current Site Development Plan. Under this alternative, no solid waste would be removed from unlined areas of the CHRLF, and no new landfill areas would be developed. Existing Areas 5, 6, and 7 would be filled and closed.

At the current time, the top of Area 5 has received interim cover. The currently active Area 6 is being closed in stages, with interim cover on closed areas. Area 7 opened in June 2010 and would be the final disposal area developed under the No Action Alternative. Portions of Areas 5 have received soil surcharging, and other areas have been allowed to settle naturally. Once Area 7 has received interim cover, Areas 5, 6, and 7 will resume receiving additional solid waste and then permanent final cover. Beyond this time, only closure construction, post-closure activities, and monitoring would occur at the site under the No Action Alternative. Based on January 2009 projections of future waste volumes, under the No Action Alternative the CHRLF is expected to reach capacity and close in approximately 2018.

It is estimated that the main soil stockpile will contain about 800,000 cubic yards of clean surplus soil upon completion of activities under the No Action Alternative. The excavated soil has been stockpiled on-site for various operational uses, including daily and final landfill cover for Areas 5, 6, and 7, as appropriate.

Under the No Action Alternative, no facilities (administration buildings, maintenance facilities, etc.) located in the southeast portion of the landfill site would be relocated. All proposed development under this alternative is allowed under the existing Special Permit.

Potential Environmental Impacts and Mitigation Measures

Potential environmental impacts were evaluated for development of each of the five action alternatives as well as the No Action Alternative. Where appropriate for an environmental element, mitigation measures were identified which could be implemented to address adverse impacts.

Earth

No significant adverse impacts to earth were identified, and no mitigation measures are proposed for the earth element. From a geological perspective, the CHRLF site is well-suited for a landfill because of the high strength and low compressibility of the underlying glacially deposited soils found at the site. Best management practices would continue to be used under all of the action alternatives to avoid or minimize impacts to soils and geology.

Air and Odor

No significant adverse impacts were identified for air and odor, and no mitigation measures are proposed for the air and odor elements. For all of the action alternatives, potential air and odor issues would be minimized. Active landfill gas collection would be provided for all areas of the landfill that have deposited waste. Odor control measures would be provided for areas of the landfill proposed for excavation and relocation, such as the SSWA. Keeping the working face as small as possible, limiting excavation of old refuse area, limiting excavation to the cooler parts of the construction season, and using odor-neutralizing agents are examples of recommended measures to minimize potential odors. Landfill air emissions

would continue to be monitored under all the action alternatives in accordance with applicable regulations.

Based on scoping comments, an additional air quality impact analysis was performed for the existing leachate lagoons located in the southwest area of CHRLF. The analysis reviewed Acceptable Source Impact Levels (ASILs) as they are related to emissions from the leachate lagoons during aeration. Modeling results from the analysis were below ASILs and indicate that leachate lagoons should not have adverse impacts to human health.

Surface Water

With the implementation of best management practices, no significant adverse impacts were identified for surface water, and no mitigation measures are proposed for the surface water element. Surface water at the CHRLF would continue to be managed so that contaminated water (e.g., stormwater that has come in contact with waste) is separated from clean stormwater runoff. To ensure that impacts to surface water were avoided or minimized, KCSWD would continue to use best management practices to control erosion and the flow of surface water runoff during construction and operation.

Groundwater

With the implementation of best management practices, no significant adverse impacts were identified for groundwater, and no mitigation measures are proposed for the groundwater element. KCSWD currently uses several measures to protect groundwater during construction and operation of the CHRLF such as the use of cell bottom liners and monitoring of stormwater containment systems.

Upland Vegetation, Wetlands, and Wildlife

No significant adverse impacts were identified for upland vegetation, wetlands, and wildlife, and no mitigation measures are proposed for these elements. No wetlands, or upland plant communities, would be removed during construction and operation of Alternatives 1 and 2, and it is not anticipated that birds and small mammals in the CHRLF buffer area would be disturbed by construction and operation. Under Alternatives 3 and 5, up to 21 acres of vegetation in the southeast area of CHRLF may be removed. However, no significant impacts to plants and animals were identified for any of the action alternatives. Under these alternatives, KCSWD would preserve as many trees as possible and integrate existing trees into the footprint for the relocated facilities. Disturbed areas not actively involved in construction or operation would be revegetated. For all of the action alternatives, KCSWD would continue to use a bird control program for the CHRLF. KCSWD would also continue to monitor the CHRLF for rodents and take appropriate actions should they become a nuisance.

Noise and Vibration

No significant adverse impacts were identified for noise and vibration, and no mitigation measures would be necessary beyond the measures already planned (and described below) for the North Flare Station.

For all the action alternatives, noise generated from construction activities would be localized and temporary. Noise levels from operation of the CHRLF under any of the action alternatives would be similar to noise levels from existing operations. Noise from all of these sources would be expected to remain in compliance with King County's existing maximum noise limits.

In response to scoping comments, a noise survey and vibration study was completed for the North Flare Station. As a result of the additional study, some attenuation measures for the North Flare Station were proposed, including using the facility only as a backup for the landfill gas processing facility and installing acoustical pipe cladding on the fiberglass piping.

In 2009, a landfill gas processing facility located in the southeast area of CHRLF began operation. The facility is owned and operated by Bio Energy (Washington), LLC (BEW). BEW completed the SEPA process for the facility. As of the preparation of this Final EIS, the BEW facility is not fully operational. When the BEW facility is fully operational, the use of North Flare Station will diminish.

Human Health

No significant adverse impacts were identified for human health, and no mitigation measures are proposed for the human health element. For all the action alternatives, potential pathways that would impact human health were reviewed including the vector, water, and air pathways. CHRLF currently has active management systems in place that greatly minimize impacts to human health. These systems would remain in effect and could be expanded under each of the action alternatives.

Land Use

No significant adverse impacts were identified for land use, and no mitigation measures are proposed for the land use element. No changes in land use are anticipated as a result of implementing any of the action alternatives. Appropriate zoning and land use plans and policies are in place to guide future development in the vicinity of the CHRLF.

Scenic Resources – Aesthetics, Light and Glare

No significant adverse impacts were identified for scenic resources, but limited mitigation measures are proposed for this element. Under the action alternatives and the No Action Alternative, the maximum elevation of the landfill would be between 780 and 800 feet above mean sea level. During construction and operation of the CHRLF, working areas and equipment may be visible at a distance from the landfill, potentially creating a visual impact. A potential mitigation measure is to seed inactive areas with grasses and plant shrubs to add visual character. As the area around the CHRLF becomes more suburban, light and glare from the landfill would be a continuation of existing conditions and would become increasingly less obvious.

Cultural Resources

No significant adverse impacts were identified for cultural resources, and no mitigation measures are proposed for the cultural resources element. Based on a review of cultural resources data and site surveys of the CHRLF property, there are no known cultural resources that would be affected by any of the action alternatives.

Transportation

No significant adverse impacts were identified for transportation, and no mitigation measures are proposed for the transportation element. Based on a review of existing traffic conditions and future traffic projections for the landfill, no impacts to transportation were identified as a result of implementing any of the action alternatives. In response to scoping comments, a

traffic count was conducted (3 days for 15 hours per day) for three intersections near the CHRLF. The results of the traffic count indicated that most (80 percent) of the vehicles using Cedar Grove Road are passenger cars and other small vehicles.

Public Services and Utilities

No significant adverse impacts were identified for public services and utilities, and no mitigation measures are proposed for these elements. The level of service required for either public services or public utilities would not be anticipated to change substantially during construction or operation of any of the action alternatives.

Greenhouse Gases

No significant adverse impacts were identified for greenhouse gases, and no mitigation measures are proposed for the greenhouse gas (GHG) element. GHG emission impacts are essentially a function of the ton-miles that solid waste would need to be transported to an equivalent out-of-county disposal site. The GHG analysis indicated that the longer King County could postpone waste export, the lower the GHG impacts. The No Action Alternative (which would not defer any waste export) would have the highest GHG impacts.