



# Regulatory Guidance Document

**Merlin Landfill,  
Grants Pass, Oregon**

Prepared for:

**City of Grants Pass**

***SH* Consulting Engineers & Geologists, Inc.**

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275 Market Avenue  
Coos Bay, OR 97420-2219  
541-266-9890

May 2015  
615010



Reference: 615010

May 08, 2015

Mr. Terry Haugen, Public Works Department  
City of Grants Pass  
101 NW A Street  
Grants Pass, OR 97526

**Subject: Regulatory Guidance Documents Update, Merlin Landfill, Grants Pass, OR**

Dear Mr. Haugen :

SHN Consulting Engineers and Geologists, Inc. (SHN) has reviewed and edited the attached regulatory guidance document for the Merlin Landfill originally produced by Amrhein Associates, Inc. and submitted to the Oregon Department of Environmental Quality (DEQ) for review in September 2009. After the delayed review by the DEQ, we understand Amrhein Associates, Inc. is no longer in business, therefore the City requested that SHN review and update the guidance document.

Attached is the edited document to be submitted to the Oregon DEQ as final.

Sincerely,

**SHN Consulting Engineers & Geologists, Inc.**

A handwritten signature in black ink that reads "Mark J. Amrhein". The signature is written in a cursive, flowing style.

Mark J. Amrhein, PE, GE  
Geotechnical Engineer

MJA:dkl

Reference: 615010

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Prepared for:

**City of Grants Pass**  
Public Works Department  
101 NW A Street  
Grants Pass, OR 97526

Prepared by:



Consulting Engineers & Geologists, Inc.  
275 Market Avenue  
Coos Bay, OR 97420-2228  
541-266-9890

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QA/QC: SKD\_\_\_\_

# Table of Contents

	<b>Page</b>
Acronyms and Abbreviations .....	ii
1.0 Introduction .....	1
2.0 Background.....	1
2.1 Locality of Facility (LOF) .....	2
2.2 Record of Decision (ROD).....	2
2.2.1 Cleanup Levels .....	2
2.2.2 Easements.....	3
2.2.3 Groundwater Monitoring .....	4
3.0 Termination of the Consent Order .....	5
4.0 Other Environmental and Landfill Monitoring.....	6
4.1 Surface Water Monitoring .....	6
4.2 Gas Probe Monitoring .....	7
4.3 Monthly Gas Well and Flare Adjustments .....	7
4.4 Monthly Cover Inspections .....	7

<b>Tables</b>	<b>Page</b>
1. Groundwater Cleanup Levels .....	3
2. Remedial Action Concentration Limits .....	3

## Acronyms and Abbreviations

BLM	Bureau of Land Management
COC	Contaminants of Concern
DCP	Dichlorophenol
DEQ	Oregon Department of Environmental Quality
EMP	Environmental Monitoring Plan
ESA	Ecological Screening Assessment
FEA	Focused Endangerment Assessment
FFS	Final Focused Feasibility Study
FRI	Focused Remedial Investigation
HHRA	Human Health Risk Assessment
LOF	Location of Facility
MMP	Oregon DEQ's Materials Management Program
ORS	Oregon Revised Statutes
PCE	Tetrachloromethylene
RACLs	Remedial Action Communication Limits
RBCLs	Risk Based Cleanup Levels
ROD	Record of Decision
SRS	Site Response Section
SWCP	Solid Waste Closure Permit
TCE	Trichloroethene
TDS	Total Dissolved Solids
ug/L	microgramsgrams per liter

## 1.0 Introduction

This regulatory guidance document is intended as a summary of the regulatory requirements previously agreed upon by the City of Grants Pass and the Oregon Department of Environmental Quality (DEQ) for the Merlin Landfill. In all cases, the legal requirements presented in the original documents take precedence over any descriptions or requirements presented in this summary. The original regulatory documents include, but are not limited to, the following:

- Solid Waste Closure Permit # 159 (SWCP), continued June 30, 2008
- The Consent Order, WMC-SR-WR-96-05, August 14, 1996
- Consent Order Addenda Nos. 1 through 3 (modify schedule of Consent Order submittals)
- Consent Order No. 4, January 3, 2005 (includes the addition of remedial action correction limits [RACLs] to Consent Order cleanup goals)
- Record of Decision (ROD), ECSI No. 286, December 17, 2004
- Environmental Monitoring Plan (EMP), April 12, 2005 (updated March 17, 2009)

As part of the Consent Order work the following documents were prepared and used as references for this Guidance Document:

- Remedial Investigation, dated May 18, 1998, revised January 11, 1999
- Ecological Screening Assessment Report, dated March 4, 1999
- Final Human Health Risk Assessment, dated, August 30, 1999
- Final Focused Feasibility Study, dated September 20, 2004
- Addendum to the Risk Assessment, dated September 14, 2004
- Staff Report Recommended Remedial Action, dated November 2004
- Remedial Design/Remedial Action Work Plan, dated April 12, 2005

These documents are on record and available for review at the City of Grants Pass, Public Works Department by calling 541-450-6110.

## 2.0 Background

The Merlin Landfill was identified as a confirmed release site by the DEQ in September 1995 due to contamination of the groundwater. In 1994, the City and the DEQ's Solid Waste Section mutually recognized that, within the framework of existing Oregon solid waste regulations, there was not an established regulatory process to address both onsite and offsite groundwater impacts from the landfill. And, that such an approach was necessary at the Merlin Landfill. Accordingly, the City entered into an agreement with the DEQ's Materials Management Program (MMP) and the Waste Management and Cleanup Division, Site Response Section (SRS), which addressed both the onsite and offsite areas. The provisions of that agreement are set forth in the Consent Order. As stipulated in the Consent Order, "both parties intend to use the maximum flexibility allowed by law to address environmental issues of concern in a pragmatic, cost-effective manner that protects human health and the environment." As part of that agreement, DEQ's SRS has primary oversight authority for the site and receives technical support from the MMP for the onsite landfill operations and for landfill closure.

The Consent Order included a detailed Scope of Work to be completed for the landfill by the City. This Scope of Work included completing a Focused Remedial Investigation (FRI), which consisted of two parts: Part I was the completion of the FRI and Part 2 was the completion of the Focused Endangerment Assessment (FEA). The FEA was also completed in two parts, the Human Health Risk Assessment (HHRA) and the Ecological Screening Assessment (ESA). The FRI was approved by the DEQ on February 3, 1999. The HHRA and ESA were approved by the DEQ on September 20, 1999.

In addition to the regulatory oversight by the DEQ, the landfill was originally located on property leased from the Bureau of Land Management (BLM). As a condition of the lease, the BLM placed certain restrictions on the ongoing operation of the landfill. Many of the interim remedial actions implemented at the site were completed to comply with the BLM imposed conditions. In 1997, the ownership of the property was transferred to the City of Grants Pass by the U.S. Congress with the passage of Public Law 105-39 and President Clinton signed it into law on August 11, 1997. As a condition of this transfer, any previous BLM interest in the property was removed. The City now owns the property fee simple without conditions and the BLM has no further authority over the site.

## **2.1 Locality of Facility**

As part of the FRI, the Locality of Facility (LOF) was delineated. The LOF is defined as any point where a human or an ecological receptor contacts, or is reasonably likely to come into contact, with facility-related hazardous substances. The LOF for a particular environmental medium includes both current spatial extent of hazardous substances and the maximum future extent that the chemicals are expected to migrate. The LOF was delineated using the current distribution of contaminants and predicted future distribution based upon chemical transport modeling. The LOF defines the area in which remedial actions must be implemented and how future determinations demonstrate that cleanup has been achieved.

## **2.2 Record of Decision**

The Record of Decision (ROD) is mostly based upon the preferred alternatives determined in the Final Focused Feasibility Study (FFS). The FFS separated the areas of contamination into three separate Operable Units: 1) the Onsite Area, 2) the Northern Plume, and 3) the Eastern Plume. Each Operable Unit was evaluated separately and has separate approved remedial actions. The remedial actions have been deemed complete for all three units, with the exception of natural attenuation (biological and chemical degradation) of the contaminants in the groundwater to acceptable cleanup levels as described below.

### **2.2.1 Cleanup Levels**

For hazardous compounds, groundwater clean-up goals were established to achieve levels in groundwater that do not pose health risks to humans who use ground water as a domestic water source. These concentrations, "risk-based cleanup levels" (RBCLs), were calculated for contaminants of concern (COC) with risk estimates that exceeded the acceptable risk level as determined by the DEQ. Waterborne COC concentrations at or below the RBCLs listed below are not expected to pose unacceptable health risks to residents who use impacted groundwater for domestic purposes. Table 1 lists the cleanup levels for the landfill's COCs in groundwater.

<b>Table 1 Groundwater Cleanup Levels</b>	
<b>Chemical</b>	<b>Risk-Based Cleanup Level (µg/L)</b>
Benzene	0.61
1,2-DCA	0.20
1,2-DCP	0.26
Methylene chloride	6.27
PCE	1.43
TCE	2.52
Vinyl chloride	0.03
1. µg/L: micrograms per liter 2. DCA: dichloromethane 3. DCP: dichlorophenol 4. PCF: tetrachloromethylene 5. TCE: trichloroethene	

In addition, RACLs were later established for non-hazardous substances that need to be protective of human health and ecological receptors. Based upon a comparative analysis (Addendum to the Risk Assessment, dated September 14, 2004), the DEQ determined that the following RACLs are protective of ecological receptors and aesthetic qualities of surface water.

<b>Table 2 Remedial Action Concentration Limits</b>	
<b>Compound</b>	<b>Remedial Action Concentration Limit (mg/L)</b>
Chloride	533
Iron	19.5
Manganese	27
Total Dissolved Solids (TDS)	2,800
1. mg/L: milligrams per liter	

## 2.2.2 Easements

As part of the required remedial actions, the City extended its water distribution system to the residents located in the North Operating Unit. All residents were provided the option to connect to the City's water system without cost in exchange for the owner's acceptance of the easement and equitable servitude agreement (Agreement). The Agreement, in part, states the resident is not to use groundwater for domestic use; however, they may still use their well for outdoor irrigation. The Agreement was offered to any household in the North Operating Unit. The Agreement gives the City the right to access the property during normal business hours to confirm that any well on the property is not connected to the house for domestic use.

Because the Agreements were voluntary, it is the City's responsibility to track and provide an updated listing and map of all residents that are connected to City water to the City's hydrogeologic consultant every year by January 30<sup>th</sup> during the preparation period of the Annual Environmental Monitoring Report. This will allow the hydrogeologist and the DEQ to verify that

the contamination plume is not approaching a well used by a household for domestic purposes on an annual basis as part of the Annual Environmental Monitoring Report. In addition, as part of the annual review, the City will verify if any properties have been sold that are not connected to City water and will offer City water via the Agreement to the new owners. Signed Agreements have been recorded with the County and should be found during the property's transaction title search.

If a resident without a signed Agreement is determined to be at risk and they continue not to want City water, the City shall make three attempts to notify the owner of the potential risks if they continue to use the groundwater for domestic purposes. After which time the resident shall be considered dutifully warned by the City and DEQ and no further action will be required. If during the City's annual review of the property owners, it is found the ownership has changed, the City shall be required to begin the notification process again. The City may ultimately decide to exercise its right of eminent domain and purchase such properties if it is believed that the risk is severe enough to the resident that the City needs to limit its liability.

### **2.2.3 Groundwater Monitoring**

The groundwater continues to be monitored in accordance with the Sampling and Analysis Plan, which is Appendix A to the Environmental Monitoring Plan (EMP), dated April 12, 2005.

At such time that the groundwater monitoring shows the COC concentrations are below the RBCLs for at least two years, the Consent Order will terminate under its own conditions (ROD, Section 8 and Consent Order, Section 8). However, the EMP dictates that the DEQ should be consulted when the COC concentrations appear to be nearing acceptable levels. The Consent Order states that the conditions set forth in the Consent Order will terminate at the completion of the work and payment of any outstanding DEQ costs. DEQ shall issue a letter within 60 days, or as soon as reasonably practical, after receipt of the last deliverable required from the City.

In addition, Item 2 of Addendum No. 4 to the Consent Order states that the Consent Order will terminate at such time as the groundwater non-hazardous substances concentrations are less than or equal to the RACLs for a period of two years. At that time, the City will notify the DEQ of same and the DEQ shall issue a certification of completion in accordance with Oregon Revised Statute (ORS) 465.325(10)(a).

The Addendum states the Consent Order will terminate upon:

- a) DEQ's issuance of a certificate of completion,
- b) the City's satisfaction of any long-term conditions to the certification, and
- c) payment by the City of any outstanding oversight costs owed DEQ.

All requirements of the Solid Waste Closure Permit will remain in effect after termination of the Consent Order for the landfill's entire post-closure period.

Although the Consent Order is not clear whether cleanup and the termination of the Consent Order can be determined separately for the Eastern Plume and Northern Plume areas, or for onsite or offsite properties. The City and DEQ have agreed that cleanup can be determined separately for each Operable Unit. This clarification was necessary, especially for the Northern Plume Operable Unit to determine when and if the residents can return to using their wells for domestic purposes,

and when the City can start charging for water if the resident chooses to stay connected. Currently only one resident (Logan) is affected in the Eastern Plume Operable Unit.

Solid waste regulations state that the groundwater monitoring compliance point for a landfill is at the property line, but not more than 150 meters from the landfill limits. The DEQ MMP has authority over the solid waste site but not over off site properties. Therefore, the property line or not more than 150 meters from the landfill limits defines the area that the MMP will have continued authority after termination of the Consent Order. All monitoring wells are currently on City-owned property or within the County right-of-way.

The following monitoring wells are located within 150 meters of the landfill limits.

- MW-3.230
- MW-4.83
- MW-4.161
- MW-5.98
- MW-5.151
- MW-13.181
- MW-13.236
- MW-22.240

The following wells are located beyond 150 meters of the landfill boundary.

#### **Northern Area**

- MW-6.88
- MW-7.128
- MW-7.192
- MW-8.82
- MW-8.118
- MW-8.181
- MW-9.113
- MW-10.107
- MW-10.142
- MW-11.233
- MW-12.23
- MW-12.121
- MW-12.256
- MW-14.105
- MW-17.125

#### **Eastern Area**

- MW-18.88
- MW-19.160
- MW-20.171
- MW-21.111

### **3.0 Termination of the Consent Order**

The Consent Order states that cleanup will be achieved when the COCs and non hazardous substance concentrations in the groundwater monitoring wells beyond 150 meters from the landfill limits listed above are less than the RBCLs and RACLs for a period of at least two years for the Northern Plume and Eastern Plume Operable Units. At such time the Consent Order shall be terminated. The onsite Operable Unit will continue to be regulated by the MMP after the Consent Order is terminated.

The evaluation as to the cleanup progress of each Operable Unit will be presented in the Annual Environmental Monitoring Report. The first annual report determining that the remedial goals appear to have been achieved will alert the DEQ that a cleanup determination may be pending. If the cleanup goals are maintained through the second year, the second annual report will document the cleanup objectives for an operable unit have been achieved. Upon submittal of the second annual report, the City should request for the DEQ to verify:

1. the RBCL and RACL levels have been achieved,
2. all DEQ oversight costs have been paid, and
3. any other long-term conditions have been met.

Upon confirmation of these three items, the DEQ shall issue a letter or certification that the remediation is complete for that Operable Unit within 60 days. When both Operable Units have reached the cleanup goals, the Consent Order will be terminated in its entirety.

Upon the DEQ certification that the remediation goals have been achieved for an Operable Unit, the residents on City water shall be notified that the groundwater cleanup has been achieved and they may return to using their wells for domestic purposes. It should be noted that the Logans are the only resident on City water in the Eastern Plume Operable Unit, all other residents on City water are considered part of the Northern Plume Operable Unit.

The City may, at that time, notify the residents that the City will start charging normal water usage fees (plus surcharge if applicable), or they may return to using their own well water for domestic purposes. However, any cost of reconfiguring their plumbing to reconnect to their well or cost of rehabilitating their well will be the resident's responsibility.

## **4.0 Other Environmental and Landfill Monitoring**

The Solid Waste Closure Permit has other environmental and landfill monitoring requirements. The surface water, gas probe, gas well and flare and cover inspections described below support the remedial goals of the ROD, and will continue after the Consent Order has been terminated as part of the Closure Permit overseen by the MMP.

### **4.1 Surface Water Monitoring**

Surface water monitoring is conducted as part of the EMP and the sampling and monitoring requirements for the Consent Order work are described in the EMP. An annual surface water monitoring period is from July 1 through June 30 and the report is submitted to the DEQ by the July 15<sup>th</sup> after completion of the immediately previous monitoring period. The Allied Waste transfer station located on the landfill property has a separate NPDES 1200Z permit. The JO-GRO co-composting facility also had a separate NPDES 1200-Z permit, but the facility was closed in February 2014. The 1200-Z permit for the co-composting facility was terminated in April 2014.

## **4.2 Gas Probe Monitoring**

Landfill gas probes are monitored on a quarterly basis by City staff as described in the Merlin Landfill Closure/Post-Closure Plan. The results of the quarterly monitoring are provided to the City's hydrogeologic consultant (Tuppan Consultants) after the last monitoring has been conducted at the end of each calendar year for inclusion into the Annual Environmental Monitoring Report.

## **4.3 Monthly Gas Well and Flare Adjustments**

The City maintains the gas collection well field on the landfill and the flare that combusts the collected gas. This monitoring and maintenance is conducted by the City's Water Restoration Plant staff. An annual report is prepared by the City and submitted to the DEQ as a requirement of the landfill flare's Air Quality Discharge Permit. The annual report is due to the DEQ by February 15 of each year for the previous calendar year.

## **4.4 Monthly Cover Inspections**

The landfill cover is inspected on a monthly basis and after each heavy rain storm. These inspections include erosion of the cover soils and that drainage, ditches, and down slope drain pipes have not been damaged or blocked.