



PERIODIC REVIEW

**Dryden Landfill
Facility/Site ID # 336**

**9073 Highway 2
Dryden, Washington 98821**

Central Region Office

TOXICS CLEANUP PROGRAM

December 2009

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1.0 INTRODUCTION

This document is a review by the Washington State Department of Ecology (Ecology) of post-cleanup site conditions and monitoring data to assure that human health and the environment are being protected at the Dryden Landfill site (Site). Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA), Chapter 173-340 Washington Administrative Code (WAC).

Cleanup activities at this Site were completed under Agreed Order No. DE 2767 entered into with Ecology in 2005. The cleanup actions resulted in containment of contaminants associated with a municipal landfill. The MTCA Method A cleanup levels for soil and groundwater are established under WAC 173-340-740-1 and WAC 173-340-720-1. WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

- (a) Whenever the department conducts a cleanup action;
- (b) Whenever the department approves a cleanup action under an order, agreed order or consent decree;
- (c) Or, as resources permit, whenever the department issues a no further action opinion
- (d) And one of the following conditions exists:
 - 1. Institutional controls or financial assurance are required as part of the cleanup;
 - 2. Where the cleanup level is based on a practical quantitation limit;
 - 3. Where, in the department's judgment, modifications to the default equations or assumptions using site-specific information would significantly increase the concentration of hazardous substances remaining at the site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to assure long-term protection of human health and the environment.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [WAC 173-340-420(4)]:

- (a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site;
- (b) New scientific information for individual hazardous substances of mixtures present at the Site;
- (c) New applicable state and federal laws for hazardous substances present at the Site;
- (d) Current and projected Site use;
- (e) Availability and practicability of higher preference technologies; and
- (f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The department shall publish a notice of all periodic reviews in the site register and provide an opportunity for public comment.

2.0 SITE SUMMARY

2.1 Site History

The Dryden Landfill is located near the City of Dryden in Chelan County, Washington (Vicinity Map - Appendix 6.1). In conjunction with closure activities, an environmental covenant was recorded for the property in 2004 and the Site continues to undergo long-term groundwater monitoring. The Site remains unoccupied and is located in a rural residential area.

A landfill was reportedly operated at the Site from 1960 to 1987. The Site accepted municipal solid waste, domestic sludge, and agricultural solid waste. At the time of closure in 1987, the facility contains approximately 240,000 tons of solid waste and received an average of 11,000 tons per year. Prior to use as a landfill, aerial photos indicate the Site was occupied by an orchard and two residences. The Site currently operates as a municipal waste transfer station.

2.2 Regulatory Activities

During an Open Dump Inventory (ODI) inspection in 1980, leachate was observed entering the Wenatchee River. The inspection resulted in a determination of non-compliance in terms of groundwater criteria. A follow-up inspection two weeks later again confirmed the leachate discharge. In December 1980, a Regulatory Order was issued by Ecology to correct the leachate problem, and a monthly sampling program was prescribed.

In 1981, an on-site monitoring well was sampled for the first time. Metals concentrations were low except for iron; organophosphates were not detected; and chlorinated hydrocarbons were detected at 0.075 parts per billion (ppb). In 1982, the Comprehensive Solid Waste Management Plan of Chelan and Douglas counties was adopted by Chelan County. The Plan stated that the current landfill site at Dryden would be closed and replaced by a solid waste transfer station. Closure would follow the Minimum Functional Standards for Solid Waste Handling in WAC 173-304.

By 1987, mitigation activities by the Chelan Public Works Department had reduced leachate discharge to the Wenatchee River. Much of the leachate was reportedly due to leaking irrigation ditches in the vicinity of the landfill, causing excessive infiltration and discharge. Between 1985 and 1987, these ditches were lined with concrete or replaced with steel culvert. In 1987, samples were collected from several points where seeps entered the Wenatchee River below the landfill. Samples were analyzed for priority pollutants. No contaminants of concern were detected at concentrations exceeding water quality standards.

2.3 Closure Activities

Site closure was initiated in 1986. At that time, a closure plan was prepared by CH2MHill which suggested several options for closing the landfill. The accepted plan consisted of a final cover system for the landfill that used the following specifications:

1. 12-inch topsoil layer with vegetation cover.
2. Minimum of 6-inch layer of onsite stockpiled soil compacted to achieve a hydraulic conductivity of 10^{-5} cm/sec or less.
3. Minimum of 6-inch low-permeability layer of onsite stockpiled soils compacted to achieve a hydraulic conductivity of 10^{-7} cm/sec or less.
4. Minimum of 12-inch layer of onsite stockpiled soil compacted to achieve a hydraulic conductivity of 10^{-5} cm/sec or less.
5. A 5 percent minimum drainage slope with a maximum runoff travel distance on the cover of 400 feet.

Closure activities were delayed for several years. In the early 1990s, a soil cover was placed over the landfill footprint. This cover was not constructed according to the closure plan. Final closure activities began in 2003. The 1986 closure plan was adopted with several updates. The final cover system was constructed in fall 2003 with the following characteristics:

1. 6-inch layer of topsoil capable of supporting native vegetation.
2. A minimum 24-inch thick layer of compacted soil with a hydraulic conductivity of 10^{-5} cm/sec or less.
3. A gas vent system was constructed across the crest of the closure cover.
4. A 30-mil PVC ditch liner was placed in all ditches.

A total of 21,700 cubic yards of soil cover was imported and placed at the Site in 2003. In addition, a single 6-inch lift of stockpiled topsoil was spread across the cover. The surface was seeded with native vegetation in spring 2004.

2.4 Ground Water Monitoring

Groundwater monitoring wells have been regularly sampled on a quarterly basis at the Site since 2000. Samples have been analyzed for iron, manganese, sodium, potassium, calcium, magnesium, chloride, sulfate, nitrate, nitrite, ammonia, bicarbonate, carbonate, pH, dissolved oxygen, total dissolved solids, chemical oxygen demand, conductivity and alkalinity. Analytical data suggests that groundwater may be impacted by leachate. Data has indicated the presence of elevated levels of iron, manganese, ammonia, elevated conductance and low dissolved oxygen levels. None of these contaminants or indicators exceed maximum contaminant levels.

Groundwater monitoring continues to be required under the closure requirements of WAC 173-304. Up to 20 years of groundwater monitoring is required, unless it becomes apparent that landfill conditions have stabilized. Components of stabilization include physical settling, gas production, groundwater quality, and leachate production.

2.5 Environmental Covenant

In conjunction with closure activities, an Environmental Covenant was recorded for the Site in 2004. The Environmental Covenant is available as Appendix 6.3. The Environmental Covenant imposes the following limitations:

1. The property shall remain as a closed landfill and be maintained by Chelan County throughout post closure. Any activity on the Property that may result in the release or exposure to the environment of the contaminated materials within the landfill cap that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited. Some examples of activities that are prohibited in the capped areas include: drilling, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, piercing the surface with a rod, spike or similar item, without prior written permission from Department of Ecology.
2. Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.
3. The Owner of the Property must give thirty (30) day written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.
4. The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Property.
5. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. Ecology may approve any inconsistent use only after public notice and comment.
6. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, and to inspect records that are related to Remedial Action.
7. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Restrictive Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

Based upon the site visit conducted on November 13, 2009, the engineered cap at the Site continues to eliminate exposure pathways (ingestion, contact) to contaminated soils. The cap appears in satisfactory condition, and no repairs or modifications are required. The Site continues to operate as a transfer station. A photo log is available as Appendix 6.4.

The Environmental Covenant for the Site was recorded and is in place. This Environmental Covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup without Ecology's approval, and prohibits any use of the property that is inconsistent with the Covenant.

3.2 New scientific information for individual hazardous substances for mixtures present at the Site

There is no new relevant information for the petroleum contaminants related to the Site.

3.3 New applicable state and federal laws for hazardous substances present at the Site

WAC 173-340-702(12) (c) [2001 ed.] provides that,

“A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provision in this chapter on cleanup levels, unless the department determines, on a case-by-case basis, that the previous cleanup action is no longer sufficiently protective of human health and the environment.”

Cleanup levels have not changed since Site closure took place in 2004.

3.4 Current and projected Site use

The Site remains occupied by a County municipal waste transfer station. There have been no changes in current or projected future site or resource uses.

3.5 Availability and practicability of higher preference technologies

The remedy implemented included containment of hazardous substances and it continues to be protective of human health and the environment. While higher preference cleanup technologies may be available, they are still not practicable at this Site.

3.6 Availability of improved analytical techniques to evaluate compliance with cleanup levels

The analytical methods used at the time of the remedial action were capable of detection below MTCA Method A cleanup levels. The presence of improved analytical techniques would not effect decisions or recommendations made for the Site.

4.0 CONCLUSIONS

- The cleanup actions completed at the Site appear to be protective of human health and the environment.
- Soils cleanup levels have not been met at the Site; however, under WAC 173-340-740(6)(d), the cleanup action is determined to comply with cleanup standards, as long as the long-term integrity of the containment system is ensured and the requirements for containment technologies in WAC 173-340-360(8) have been met.
- Inspection, maintenance and repair of the soil cap are necessary in order for the remedy to be effective in protecting public health and the environment from exposure to hazardous substances and protecting the integrity of the cleanup action.

Based on this periodic review, the Department of Ecology has determined that the requirements of the Environmental Covenant are being satisfactorily met. It is the responsibility of the property owner to continue to inspect and maintain the soil cap.

4.1 Next Review

The next review for the site will be scheduled five years from the date of this periodic review. In the event that additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years from the completion of those activities.

5.0 REFERENCES

Golder Associates. *Construction quality Assurance Report*. April 27, 2004.

Ecology. *Notice of Closure for Dryden Landfill*. June 1, 2004.

Ecology. *Restrictive Covenant*. September 30, 2004.

Ecology. *Agreed Order No. DE 2767*. October 21, 2005.

Chelan County Department of Public Works. *Dryden Well Monitoring Results*. January 23, 2009.

Ecology. *Site Visit*. November 13, 2009.

6.0 APPENDICIES

6.1 Vicinity Map

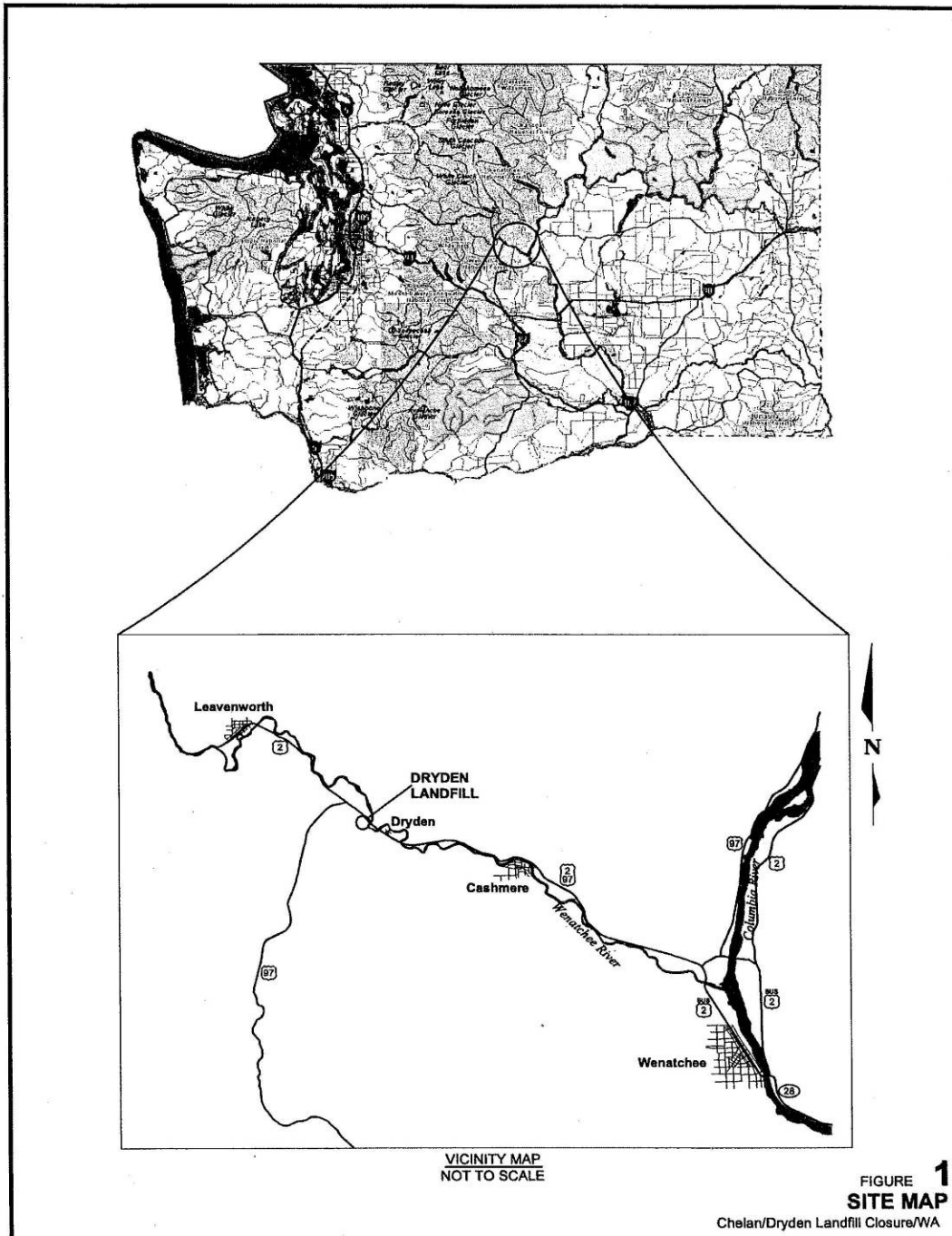
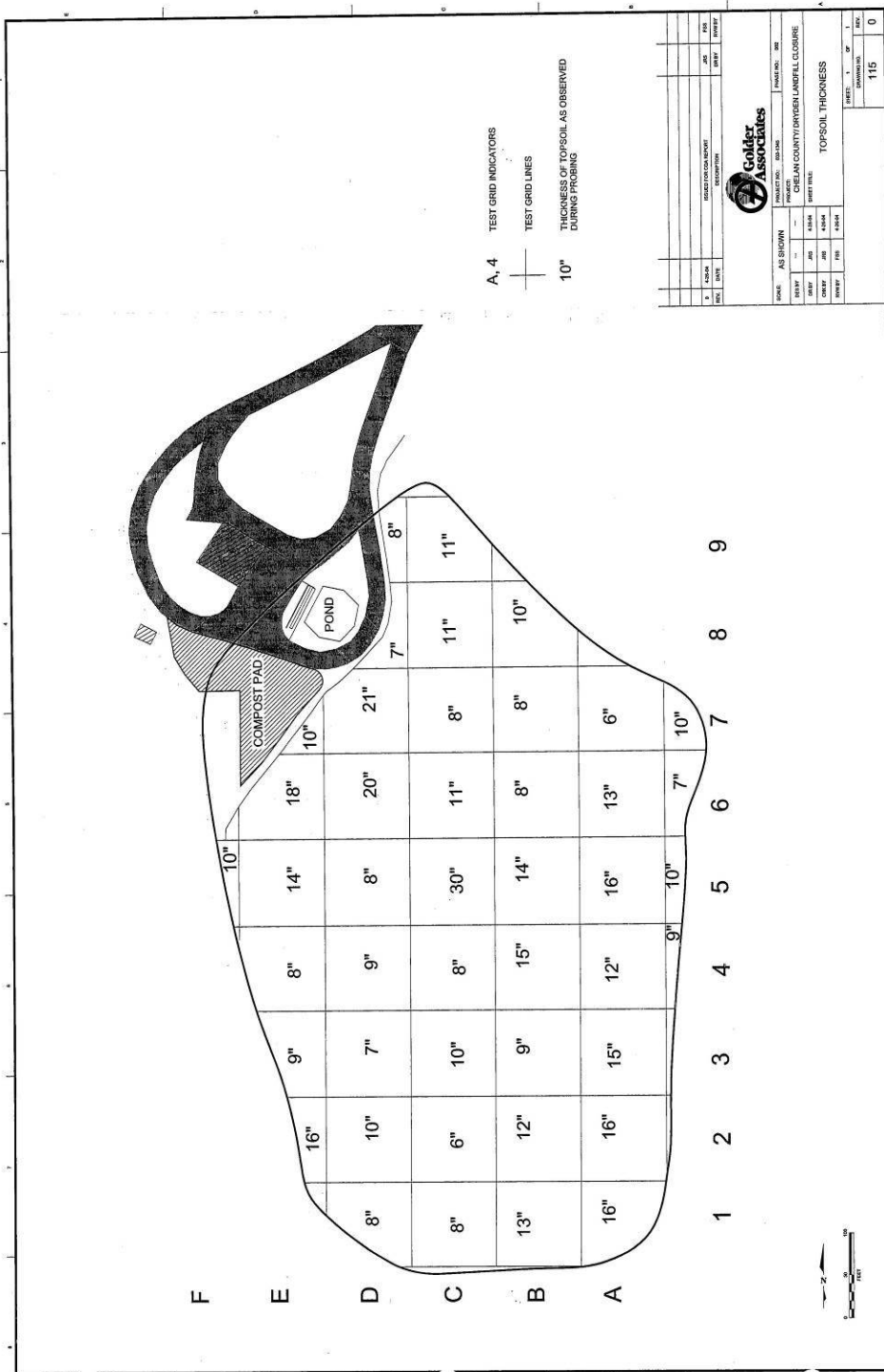


FIGURE 1
SITE MAP
Chelan/Dryden Landfill Closure/WA

K:\CAD\Projects\2003\0331345\002\0331345002\F02.dwg 04/26/2004, 14:53 Layout: Layout1

Golder Associates

6.2 Site Plan



6.3 Environmental Covenant



RESTRICTIVE COVENANT FOR THE DRYDEN LANDFILL CHELAN COUNTY, WASHINGTON

This Declaration of Restrictive Covenant is made pursuant to RCW 70.105D.030 (1) (f) and (g) and WAC 173-340-440 by Chelan County, its successors and assigns, and the State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology").

An independent remedial action (hereafter "Remedial Action") occurred at the property that is the subject of this Restrictive Covenant. The Remedial Action conducted at the property is described in the following document: CHELAN COUNTY'S NOTICE OF CLOSURE AND DEVELOPMENT RESTRICTIONS FOR DRYDEN LANDFILL. This document is on file at Ecology's Central Regional Office.

This Restrictive Covenant is required because a conditional point of compliance has been established for Landfills.

The undersigned, Chelan County, is the fee owner of real property, hereafter "Property", in the County of Chelan, State of Washington, that is subject to this Restrictive Covenant. The Property is legally described in attachment of this restrictive covenant and made a part hereof by reference.

Chelan County makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

Section 1:

The property shall remain as a closed landfill and be maintained by Chelan County throughout post closure. Any activity on the Property that may result in the release or exposure to the environment of the contaminated materials within the landfill cap that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited. Some examples of activities that are prohibited in the capped areas include: drilling, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, piercing the surface with a rod, spike or similar item, without prior written permission from Department of Ecology.

Section 2:

Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.



Section 3:

The Owner of the property must give thirty (30) day written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

Section 4:

The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Property.

Section 5:

The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 6:

The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, and to inspect records that are related to Remedial Action.

Section 7:

The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Restrictive Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

DATED at Wenatchee, Washington this 25 day of May, 2004.



BOARD OF COUNTY COMMISSIONERS

Keith W. Goehner
KEITH W. GOEHNER, Chairman

Ron Walter
RON WALTER, Commissioner

Buell Hawkins
BUELL HAWKINS, Commissioner

ATTEST: JANET K. MERZ
Janet K. Merz
Clerk of the Board

6.4 Photo log

Photo 1: Landfill Cap – from the south



Photo 2: Landfill Cap – from the north



Photo 3: Stormwater Collection Pond - from the south



Photo 4: Former Leachate Seep Area – from the north

