Metro Report

Our landfill legacy

Metro-area landfills closed since 1960 and their impact on the region's urban and natural environment

March 2004

Above – The undulating surface of a hotel parking lot in north Portland is evidence of an unstable landfill beneath the pavement.

Left – Oaks Bottom Wildlife Refuge shows signs of possible seepage from a 1970's landfill.

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Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 24 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.

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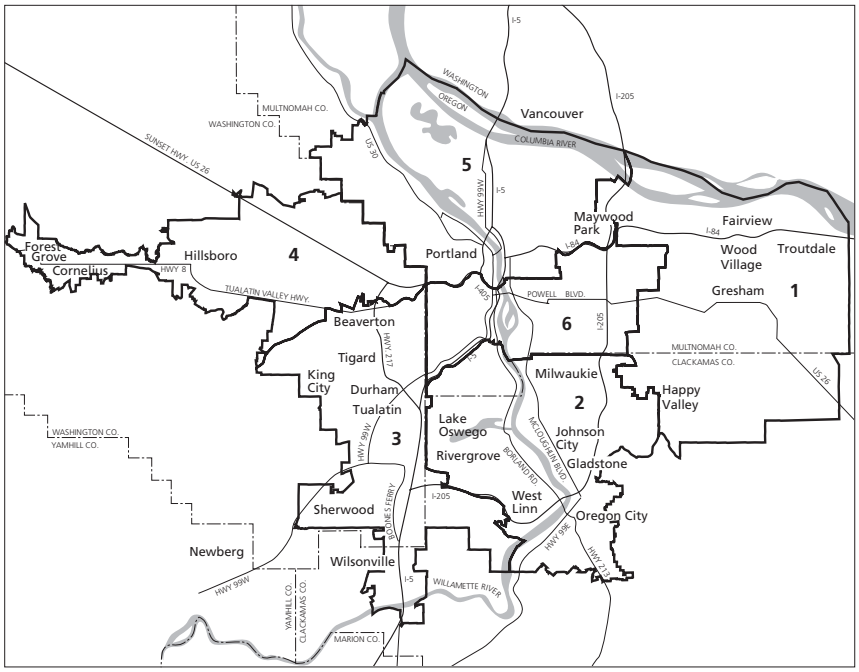

Council districts

Our landfill legacy

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March 2004

Prepared by Engineering
and Environmental Services
Solid Waste and Recycling
Department

Metro
600 NE Grand Ave.
Portland, OR 97232
(503) 797-1527
www.metro-region.org

Our Landfill Legacy:

Portland Metropolitan Area Landfills Closed Since 1960 and their Impact on our Urban and Natural Environment

This document compiles information about all known landfill sites in the Portland region closed since 1960. Research was based on published reports, the Oregon Department of Environmental Quality (DEQ) and Clackamas County file reviews, archives from Metro and the City of Portland, and personal communications. Very little information existed for some sites. Information found was sometimes conflicting or there was no second source available to verify the details discovered. Therefore, descriptions about some sites may be incomplete or inaccurate. ***Metro would welcome additional information from anyone familiar with any of these sites (or additional sites meeting the criteria described), so it can be included in future updates to be published.***

Introduction

The nature of the waste generated and disposed of in the Portland area has changed greatly over the years. Significant amounts of paper, metal, glass and plastic began to appear in a waste stream formerly dominated by food and ash. Regulated solid waste landfills, recycling, and reuse began to displace unrestricted disposal practices such as open dumping and burning.

A solid waste landfill is a discrete area of land or an excavation where solid waste is buried. Such concentrations of waste may pose long-term risks to health, safety, and the environment, including but not limited to the following:

- Landfill gas from decomposing organic waste contains methane, which under certain conditions may present a fire or explosion hazard, and non-methane organic compounds which may pose additional health risks;

- Leachate, the liquid leached by water from buried solid waste, may pose risks to groundwater and surface water;

- Some of the buried material (e.g., asbestos) poses health risks if excavated;

- The structural integrity of buildings and infrastructure (e.g., sewers that have been built on former landfill sites) may be affected by differential settlement caused by decomposing wastes;

- Underground fires sometimes occur in decomposing waste, causing the ground to subside, and potentially releasing air pollutants.

Many of these potential problems are exacerbated in older landfills where lack of regulation often resulted in inadequate site selection, design, and operations (e.g., poor compaction of the waste, little or no cover material, and insufficient sloping for stormwater drainage).

Metro's Solid Waste and Recycling Department mapped and collected basic information on those landfills in or near the Metro region that have closed since 1960. The purpose of this project is to provide information that may be useful in protecting public health, safety, and the environment, and may also be useful to the land use planning process.

Portland area solid waste history

Early history. Health concerns drove many of the early solid waste management changes, followed in later years by the need for environmental protections. Until the 20th century, most of the waste consisted of food waste and ashes. Commodities were generally sold in bulk, and food wastes were generally fed to domestic animals, composted in garden plots, or cast into the streets. This resulted in an 1880 ordinance by the Portland City Council creating criminal sanctions for placing debris in the streets. In 1884, the City Council mandated that all garbage should be transported beyond the City limits and covered to prevent disease. This ordinance gave rise to the refuse collection industry in Portland. [26b]

From 1895 to 1923, garbage crematories were in common use. After World War I, growing consumer prosperity and urbanization and technical advancements began to alter the composition of the region's waste. Commercially processed foods and other goods were marketed in tin cans and glass, making the material in the solid waste stream more difficult to handle and leading to a 7-fold increase of solid waste between 1910 and 1923. Although burning of municipal solid waste continued through 1970, use of crematories diminished significantly in 1923 when the City responded by filling ravines and other low areas with garbage. [3b, 26b]

Open burning and open dumps. Many of the sites investigated in this report practiced open burning or were open dumps, and scavenging was common. In addition to open burning causing air pollution, it was considered a major potential agent for communicable diseases (such as polio). The open dump resulted in increased vector growth (as compared to the burning dump), and filled the available space more quickly. [37]

Sanitary landfills, regional policies, and permitting. By the late 1960s, there were environmental concerns about the impacts of even well-managed landfills on groundwater, methane gas migration to surrounding areas, and a lack of large-scale reclamation of reusable materials or energy recovery. As a result, the practice of sanitary landfilling ("the disposal of solid wastes by compacting and covering each operating day" [53]) began around 1970. By covering each day's deposition of wastes, the rodents, vermin, and insects were significantly reduced. [3b, 26b]

A 1969 study by the Oregon State Board of Health indicated that 3 unauthorized disposal sites were in operation for every authorized site within the state [53]. In 1970, the Metropolitan Service District (now Metro) was created by the Legislature and took on the solid waste planning responsibility for the region. Metro was responsible for developing regional policies to deal with the disposal of solid wastes. The 1971 Oregon Legislature required that solid waste disposal sites get a "permit" from the Department of Environmental Quality (DEQ). [3b, 26b]

As a result of the permit requirement, many disposal sites closed. There seemed to be a trend toward a smaller number of larger landfills. A 1981 forecast anticipated that by the end of 1982, operating landfills within the Portland metropolitan region would be limited to KFD and St. Johns Landfill (with some minor use at Grabhorn and Woodburn landfills) [26a]. Today the operating landfills taking Portland area waste include: Columbia Ridge (about 140 miles east of Portland), Hillsboro, Riverbend Landfill (near McMinnville), and Grabhorn (in the Tigard area). This represents a large decrease from the nearly 30 disposal sites in existence at the writing of the 1971 Columbia Region Association of Governments (CRAG) report.

Landfill sites. Many old landfill sites have been former gravel pits, ravines, or lakes – existing holes in the ground. In the past, filling them (no matter what material used) was considered land reclamation. In the 1971 CRAG report, a discussion about the pros and cons of using quarries and gravel pits for sanitary landfills expressed concerns about their potential groundwater impacts (especially given their frequent location in highly developed areas), but did not mention any concerns about gas migration [21b]. Despite growing environmental concerns, many such sites were considered during the landfill siting process throughout the 1980s.

Methane. Methane, carbon dioxide, and other landfill gases are generated in landfills through the decomposition of organic wastes. Methane is an odorless flammable gas which is potentially explosive in certain concentrations in air, and also poses a substantial hazard to human health in large concentrations. Confined spaces like basements, crawl spaces, culverts, utility vaults, manholes, and other structures are susceptible to methane buildup. Landfill gas has been known to migrate into nearby homes, resulting in the evacuation of residents. In addition to potential risks to site workers and residents of neighboring properties, some closed landfill sites are now being redeveloped.

In mid-2002, the Oregon DEQ adopted a rule regarding investigations and cleanup actions associated with methane generated at historic solid waste landfills. The rule adds methane generated from old solid waste landfills to the state's list of hazardous substances, subject to the state's environmental cleanup law and implementing regulations. Adding methane to the list of hazardous substances allows DEQ to regulate sites which operated before permitting was required and permitted sites which are financially unable to meet the permit requirements (orphan sites). [33b]

Summary. In summary, a great number of landfilling operations were undertaken during the period between the mid 1920's and early 1970's, with few environmental restrictions. Even after DEQ permitting was required, many landfills polluted the surrounding areas. Since the majority of open dumps and old sanitary landfills did not have liners or proper drainage systems to divert the leachate -- and the organic strength of landfill leachate can be more than 20 to 100 times the strength of raw sewage -- these former sites can be potent polluters of soil and groundwater [27]. Landfills described as non-putrescible (meaning they did not allow food waste) often still accepted other organic materials which would generate methane. For example, construction and demolition debris sites generally accepted wood and paper. Landfills are the largest anthropogenic source of methane, with methane generation lasting from 10 to 60 years [27]. Pollutants can affect the soils, ground and surface waters, and air in and around the landfill site for many years after the closure.

Future concerns (inert clean fill sites). Some sites, supposedly taking only inert clean fill materials (requiring no permitting), may be contaminated with organics (such as wood or yard debris) or sheetrock. The organics are methane-producing and the sheetrock can produce hydrogen sulfide, given wet anaerobic conditions (such as in a filled site). Current examples included in this study are Cobb's Quarry (Site #204) and Durham Pit (Site #209). Unless already a known problem, inert clean fill sites are not addressed in this study.

Closed landfill criteria and investigation

Metro conducted this study to identify and map certain closed landfills. After determining if a site met the basic definition of a landfill ("facility for disposal of solid waste involving the placement of

solid waste on or beneath the land surface" [OAR 340-093-0030 (152)]), the following criteria were evaluated for each site to help determine if it should be mapped.

- ***Closed since 1960***. Landfills closed after 1960 probably present more risk than earlier ones (where open burning was common). In the earlier open-burning landfills the organics were burned out, resulting in less risk of gas migration. As open burning was being phased out in favor of burying the organics in more recent landfills, the risk of gas production and migration increased. In the case of non-burning landfills, any garbage buried before 1960 would be producing far less gas by now. Furthermore the more historical the site, the more difficult the task of finding information about it.
- ***Within 10 miles of the Metro boundary or within the boundary***. If a landfill is within 10 miles of the Metro boundary, it may have accepted some waste from the Portland metropolitan area. This is the reason that some sites in the state of Washington have been included on the map.
- ***Not located on the waste generator's property***. We chose not to include sites located on the waste generator's property because historically Metro's primary responsibility was for municipal solid waste, not industrial or farm waste buried on the generator's own land. Additionally, it would be very difficult to find information on these waste disposal sites. The lack of inclusion in this study is in not a statement about their level of risk.
- ***Authorized by a state agency, local land-use authority, or illegal***. The initial search was limited to sites (either authorized or illegal) operated by persons selling disposal services to others. The map does not include small disposal sites caused by furtive dumping by individuals because the risk is lower than from larger sites.
- ***Waste may have been methane-producing***. Sites where only known waste was clean dirt, rock, and concrete were not included.

This study also tried to identify **whether the landfill was publicly or privately owned during the period it was operating**, and to include that information on the attached map. If a site changed from private to public ownership during the period of operation (for example, Oaks Bottom), it was mapped as being public.

In 1971 CRAG, Metro's predecessor, published a document listing and describing the then-operating landfills. Another helpful resource was the 1974 COR-MET report. These and many other documents such as DEQ's files and those of other public agencies, have been invaluable in researching closed sites. The majority of published documents found appeared to be from the late 1960s through the mid 1970s. A list of sources is included at the end of this document.

This study brings together all this known information in one place. The information about each site and from each source is quite varied. There are unknown, confused, and conflicting pieces of information in some cases. Some sites went by a number of names or changed ownership (often used as the site name). Other owners had many sites, all referred to by the name of the owner (or operator) in the literature. In this case it was difficult to determine which location was being referred to. When the site was referred to by a person's name, sometimes it wasn't clear whether they were the owner or operator. The location and extent of buried waste is not always obvious, and in some cases a site (or its extent) is discovered only when the area is being excavated for a future use or a nearby area is environmentally impacted. Acreage listed in reports sometimes indicates the total size of a piece of property, but may not reflect what portion was actually filled before closure. Although the description for each site generally used the original language from the older reports, over time

some of the definitions may have changed. Such inconsistencies were addressed by citing references for all the information presented in the report.

Metro site naming: Naming the site was required when the site was referred to by more than one name, when an operator or owner had multiple sites referenced by the same name, and when there was no known name for the site. Every effort was made to choose names that would be most helpful in uniquely identifying sites for the reader.

Name(s): "Name(s)" included all names found in references for the particular site.

Mapping. Sites were mapped when enough information was found to locate them. Mappable site locations ranged from as distant as within 0.5 miles to as close as by tax lot numbers. Other sites which could not be located as close as within 0.5 miles were listed but not mapped.

Site Number. Site code numbers were grouped by counties. This was done to make it easier to find them on the map. For example: Multnomah County (2-digit numbers), Clackamas County (one hundreds), Washington County (two hundreds), Clark County (three hundreds), Marion County (four hundreds), Yamhill County (five hundreds), and Columbia County (six hundreds). There were a few sites which, although they met our criteria, could not be located to be mapped. These sites were given a number, and listed on the map (with the general location in parentheses, if possible).

Owner: Our focus has been on the historical information, so this refers to the owner during the period of operation. Although the site locations remain the same over time, the owners can change.

Non-numbered, non-mapped sites: With these sites, it is not clear whether or not they meet our criteria. Therefore they are listed at the end of the document, although they are not placed on the map or given a number.

Numbers in brackets: Designate references supporting the information presented.

Listed: Means listed on a State of Oregon list of sites to be cleaned up, Environmental Cleanup Site Information (ECSI) database (see http://www.deq/state.or.us/wmc/ECSI/ecsiquery.htm),

Question mark: Information unknown or of questionable accuracy, or unverified, or inference based on professional judgement.

Multiple question marks: Highly questionable data, based on professional judgement.

Acknowledgements: A number of persons contributed useful information to this study. These include Don Alexander, Merle Irvine, Chuck Kemper, Dennis O'Neil, Rick Winterhalter, and Tim Spencer. Ernie Schmidt, formerly with DEQ, made an especially significant contribution of historical documentation.

Sites

Multnomah Co.
1. Hidden Valley
2. St. Johns
3. Hayden Island
4. West Delta Park
5. Vancouver Ave. (Plews)
6. Hunt St (Plews)
7. Cully-Columbia
8. Columbia & Union Ave. (Land Recl.)
9. Killingsworth Fast Disposal (KFD)
10. Lavelle and Yett
11. Slavin Rd.
12. Oaks Bottom
13. Vance Pit
14. Troutdale (Obrist)
15. Waybo Pit
16. Hawk (near Scappoose)
17. Willamette
18. Mock's Bottom
*19. Sauvie Island
20. Hayden Island (near Farr Rd.)
21. Alderwood Dr.
22. Skidmore St.
23. Sandy River (Obrist)

Clackamas Co.
101. Johnson Creek
102. King Rd.
103. Burright (Happy Valley Trailer Ct.)
104. J&W
105. Sunshine Valley Rd.
106. Sandy
107. Old Rossman
108. Rossman
109. Bloom
110. Spady
111. Old Canby
112. Millar Sand & Gravel (Canby)
113. Crawford Dump
114. Troh (near Happy Valley)
115. Tire Disposal
116. Althauser (near Boring)
117. Fredrickson & Sayre

Washington Co.
*201. Forest Grove Landfill (near Forest Grove)
202. Shadybrook
203. Althouse
204. Cobb's Quarry
205. Frank
206. Barstad Sand Pit
207. Edwards Business Industry Park
*208. Bur. of Reclamation Irrig. Proj.(near Forest Grove)
209. Durham Pit

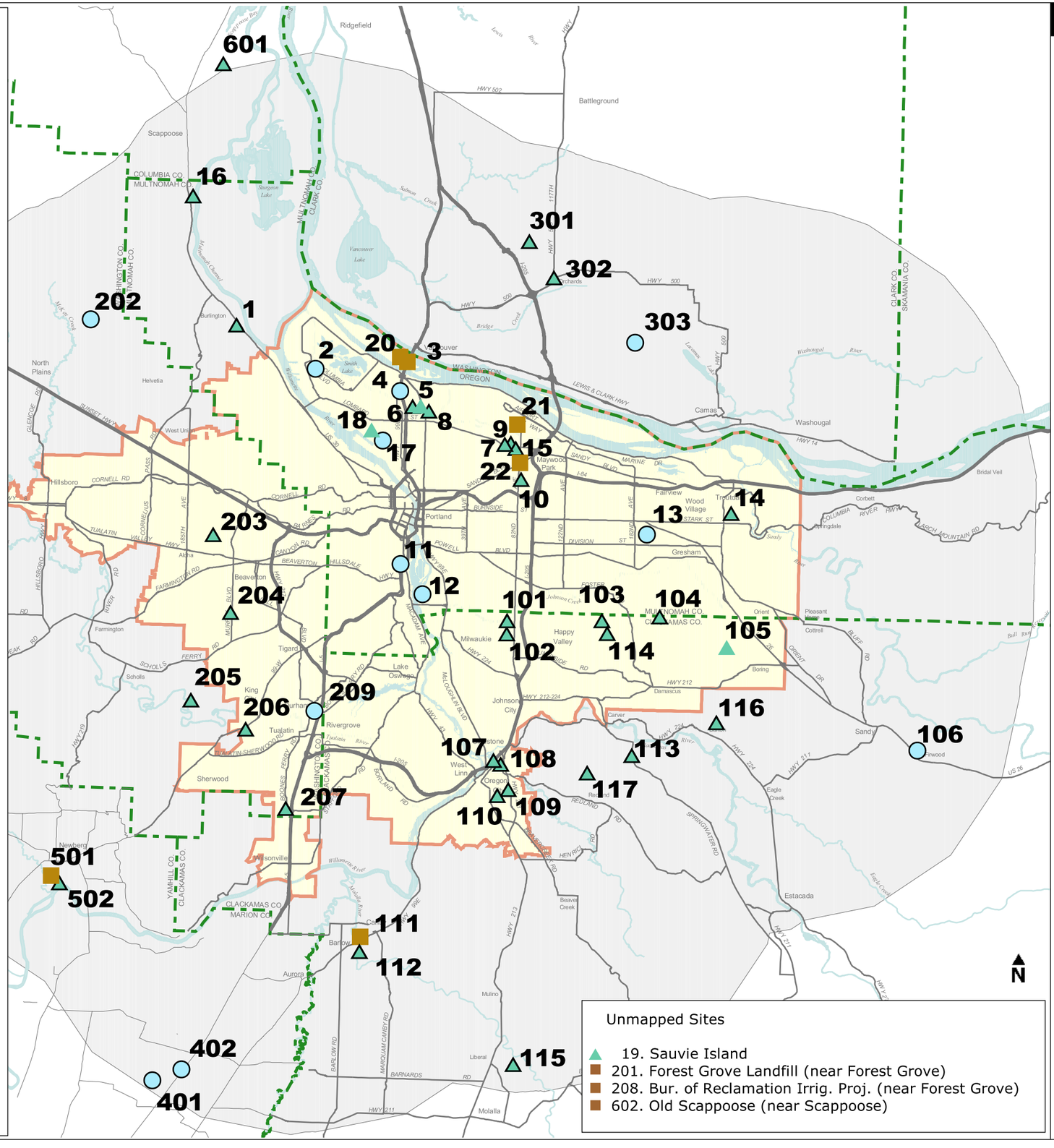
Clark Co. (WA)
301. Leichner Bros.
302. Clark Co. (Land Reclamation)
303. English Pit

Marion Co.
401. Woodburn 73
402. Woodburn

Yamhill Co.
501. Newberg (old)
502. Newberg

Columbia Co.
601. Santosh
*602. Old Scappoose (near Scappoose)

*Unmapped site (general location in parentheses)



R L I S

REGIONAL LAND INFORMATION SYSTEM

Closed Landfills (since 1960)

Ownership
- Private
- Private?
- Public
- Public?
- Unknown

- Metro Boundary
- Metro Boundary + 10 miles

Locations are approximate, based on the best available information as of March 2004

0 2 4 6 8 10 Miles

1"= 5.0 miles

METRO

600 NE Grand Ave.
Portland, OR 97232-2736
503 797-1742 FAX 503 797-1909
Email: drc@metro.dst.or.us

Plot date: June 28, 2004; J:\kerr\04053\map_04053.apr

1. Hidden Valley Landfill

Name(s):	Hidden Valley [1,4] Hawk's (Plews) [21] Plews (Hawk's) [10b]
Location: (Multnomah Co.)	Hwy 30, 1 mi. north of Sauvie Island Bridge approach [4] South side of St. Helen's Rd., ¼ mile west of Sauvie Island bridge approach [21b, 10d] 2N,1W,29,TL 072 [4,10d]
Size:	most of 73 Acres[10e]
Period of Operation:	Began 1969 [4] Closed 1977[10d]
Ownership: (during filling)	Private 1969-1970: Possibly Elmer Hawk?, documentation doesn't indicate his role 1970-1977: Land Reclamation, Inc. (Plew brothers) [4]
Operator:	Same as owner [20]
Types of Waste:	Rubbish, demolition construction wastes, street sweepings, brush and stumps [21b]
Quantity:	19,000 tons/year (1974) [4] 93,600 tons/year? (1971), 312,000 CY/year? (1971) [21b] ???? (See comments below)
Permits:	Permit #114 (DEQ) [4] County Permit #51114
Listed:	Not at this time

Comments: This privately owned and operated landfill consisted of 3 steeply sloping canyons that joined together in a common drainage basin [4]. The land surrounding the site was described in 1980 as mainly forest, with the Burlington Northern Railroad and U.S. Highway 30 several hundred feet to the north, an active quarry operation about 400 feet to the east, and a marina along the Multnomah Channel [10e]. Initial operation was generally poor with washout of landfilled waste and underground fires occurring [4]. Consequently the site was closed down in 1977 by DEQ [10d].

In 1980, the site was being reconsidered (and was rejected) during the search for a regional landfill. The site was vacant at that time. [10d] The 1980 study noted the following concerns when re-considering use of the site. The former fill areas were already to a depth of as much as 50 feet in some places, with no natural barrier between these fill depths and U.S. Highway 30 below. Thus there is a strong potential for gas seepage and earth slides onto the highway. Also extensive surface water drainage from the surrounding hills could flow onto the completed fill areas and percolate into the fill. [10e]

It appears that the 93,600 tons/year quantity cited in the CRAG study may actually be for the Hawk's Burning site (see Site #16). This amount is shown for the Hawk's Burning site in a 1968 letter (before Hidden Valley was in operation) listing solid waste tonnages in the region [24]. And also Elmer Hawk was involved in both the burning site and the Hidden Valley site, so it seems likely the two got confused.

2. St. Johns Landfill

Name(s):	St. Johns [4] City of Portland [21b] Portland [21b] Swift Blvd. [2a]
Location: (Multnomah Co.)	9363 N. Columbia Blvd. (formerly 9360 N. Swift Blvd.) [21b, 28] 2N,1W,36,TL19,30 [4]
Size:	236 Acres [28]
Period of Operation:	Began 1932 [4] Closed 1991 [28]
Ownership: (during filling)	Public 1932-1990: City of Portland 1990-present: Metro [4]
Operator:	1932-1975: City of Portland 1975-1980: Plews 1980-1991: Metro
Types of Waste:	Municipal waste, ash (from adjacent incinerator which operated until 1970 [3b]), and industrial waste (including 5,000 drums of Rhone-Poulenc's pesticide manufacturing waste) [28]
Quantity:	302,000 tons/yr, 1,820,000 CY/yr (1971) [21b], 859,000 CY/yr (1980) [46] 12-14 million tons total [2a]
Permits:	Permit #116 (DEQ) [4]
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#164) [6] Confirmed Release List and Inventory List (added 1995) [28]

Comments: The landfill is located in the St. Johns/Rivergate Industrial district of Portland. Prior to development the area was an extensive interconnected network of lakes, marshes, wetlands, and sloughs that was bordered on the west by the Willamette River and on the northeast by the Columbia River [30a]. The landfill site is part of the Smith and Bybee Lakes Management area on the North Portland Peninsula [28]. It is surrounded by water (Columbia Slough to the south and west, Smith Lake to the east, and the North Slough arm of the Columbia Slough and Bybee Lake to the north).

When landfilling began by the City of Portland in the 1930's, the site was a lake that -- over the years – was infilled with garbage all the way to the edge of its surrounding dike [29]. By the early 1960s, the lake that had occupied the site had been completely filled with refuse [30a]. By the late 1970s, the initial 183-acre landfill site had reached capacity, and in the early 1980s a 55-acre expansion area, with an engineered perimeter dike and a leachate collection system, was opened on the east end of the landfill [30a].

Reportedly, early operations received almost any type of waste, including large stumps, oil sludges, and white goods, in addition to incinerator ash (from the associated City of Portland incinerator across Columbia Blvd.) and household and commercial wastes. Residential development replaced much of the agricultural land near the landfill by the mid- to late-1940s. By the early 1970s the surrounding land use had transitioned from agricultural/residential to commercial/

industrial. This suggests a similar transition in the character of the waste stream to one predominated by commercial/
industrial waste. [30b] The landfill was essentially an open dump until 1969, when continual compaction and daily covering of the waste with earth began [39].

Although the majority of waste in the landfill is domestic solid waste, the landfill received industrial waste that included approximately 5,000 drums of pesticide manufacturing waste from the nearby Rhone-Poulenc facility between 1958 and 1962. This waste included chemical residues that may have contained the herbicides 2, 4-D, MCPA, and 2, 4, 5-T. Dioxins and furans are common byproducts of these compounds and are also by products of incineration. [28]

The landfill has no bottom liner except for the dense, low permeability, silt lake sediments. Approximately 75 percent of the total landfill area has no leachate collection system. A composite cover (compacted clay/silt, plastic membrane, drain sand, and topsoil, and vegetation) was placed over the entire landfill by Metro in the 1990s to prevent leachate generation from rain infiltration and thus reduce impacts to surface water and groundwater. A gas collection system was also installed to contain and control landfill gas, which is either piped to Ash Grove Cement Company for use as an energy source or flared on site. [28]

Groundwater quality in the vicinity of the landfills has been monitored since the 1970s, currently with semi-annual sampling of a network of 30 monitoring wells. Additional wells within the landfill monitor the leachate and landfill gas. Water samples from groundwater monitoring wells surrounding the site and within the landfill area are analyzed for general chemical properties and for hazardous contaminates such as lead, mercury, volatile organic compounds (VOCs), PCBs, and pesticides. [28]

DEQ reports that despite engineering controls around the landfill perimeter some signs of leachate seepage can still be observed, and is concerned that leachate-contaminated shallow groundwater may be entering the sloughs or lakes. Contaminated sediment in the Columbia Slough is from many upstream sources, which may include landfill leachate seepage. Groundwater samples from some monitoring wells surrounding the landfill contain high concentrations of non-hazardous landfill contaminants and low concentrations of hazardous substances. The highest concentrations of all contaminants are found in the shallowest wells. Groundwater concentrations in general have been declining over the years. [6]

In 1995 DEQ placed the site on the Confirmed Release List and Inventory List, two formal lists of contaminated sites [28]. A closure permit with consent order, issued by DEQ in October 2003, spells out the details of how Metro will conduct a Remedial Investigation including a risk assessment and a Feasibility Study to address the issues of environmental contamination at the site [6]. Metro maintains and monitors the site, and has spent about $36.5 million on environmental improvements as of 2003 [2a].

3. Hayden Island

Name(s):	Hayden Island [6]
Location: (Multnomah Co.)	N. Hayden Island Dr. [6] 1305 N. Hayden Island Dr. (former Arco station) is eastern end of old landfill [16 (DEQ Site Assessment Program – Strategy Recommendation, 1994] 2N,1E,33 [6]
Size:	20 Acres? [6]
Period of Operation:	Began 1950? [6] Closed: 1970? [6], 1963 [45]
Ownership: (during filling)	Unknown "Plew Dump at Hayden Island" was referenced in 1968 meeting minutes [3a]. Same site?
Operator:	Unknown "Plew Dump at Hayden Island" was referenced in 1968 meeting minutes [3a]. Same site?
Types of Waste:	Domestic household garbage [16 (Heller Real Estate, 10/92)]
Quantity:	
Permits:	No permit [6]
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#1559), Confirmed Release List (6/96, detection of heavy metals well above background concentration) [6]

Comments: The unregulated landfill was located in a seasonal lake basin and probably operated between 1950 and 1970, after which it was covered by a 7 to 9-foot layer of clean fill [6]. A Multnomah County landfill survey map shows the dump closed on 3/8/63 [45]. Information about the old Hayden Island landfill site came to light as a result of the investigation at a former Arco station, which was located at the eastern edge of the landfill. The site's development now encompasses portions of the Jantzen Beach retail center, a hotel complex, and a trailer park. [16, DEQ Site Assessment Program - Strategy Recommendation]

Hayden Island Drive was originally constructed in the early 1970s, and was rebuilt in the mid 1980s owing to settlement failure [16 (Heller Real Estate, 1992)]. While working on Hayden Island Drive, Multnomah County Public Works encountered "garbage" beneath the road in the immediate area of what used to be the Red Lion Hotel, the U.S. Bank Building, and extending westerly to the east end of the mobile home park [16 (Heller Real Estate, 1992)]. Test pits were dug along the eastern border of the mobile home park, and what appeared to be household garbage was found at depths between 4 and 8 feet below grades in 4 of the 6 test pits [16 (Heller Real Estate, 1992)]. Metro staff visited a hotel parking lot, and noted the rather dramatic undulations due to differential settlement. (See pictures below, and on the report cover.)

4. West Delta Park

Name(s): West Delta Park [7]
West Delta Landfill [16 (1973 Solid Waste Disposal permit)]
Delta Park Landfill [42 (Staff Report, Clackamas Co. Solid Waste Division, 8?/72)]

Location: West Delta Park
(Multnomah Co.) 1N,1E,4 [16 (Solid Waste Disposal permit)]

Size:

Period of Operation: Began 1972? [42 (8?/72, see above)], 1973? [16 (1973 Solid Waste Disposal permit)]
1974? [51 (Proposal for the installation of landfill at West Delta Park, 1974)]
Closed: before 1988 [7]

Ownership: Public [16 (1973 Solid Waste Disposal permit)]
(during filling) City of Portland [16 (1973 Solid Waste Disposal permit)]

Operator: Private franchise [16 (1973 Solid Waste Disposal permit)]

Types of Waste: Permitted for: demolition and construction wastes, brush, appliances, furniture, paper products, glass, plastics, rock, soil, concrete rubble and similar non-putrescible materials from commercial vehicles [16 (1973 Solid Waste Disposal permit)]

Quantity:

Permits: Permit #231 (DEQ) [16 (1973 Solid Waste Disposal permit)]

Listed: Not at this time.

Comments: In 1974, the City requested (and obtained) permission to modify its permit to use a 25-ton compactor (rather than 50 tons) because it did not plan to build on the fill in the future. [16 (5/17/74 DEQ letter to City of Portland)]
Not much is known about this site.

The actual location is somewhat confusing, since the streets are different now, so neither the address or intersection referenced above still exists. (For mapping purposes, the site was located at the intersection of N. Denver & N. Victory by the GIS staffperson.)

Some old construction debris and concrete foundation blocks were found during construction of Hall E of the Expo Center, which is in the general area of this landfill site. It is believed that the material was dumped by the City in the late 1980's and early 1990's, and was brought from other sites. [52] The 1988 DEQ closure list shows the West Delta Park site closed by 1988[7], but it seems possible it is part of the same site. It is unknown whether the construction debris is connected to this landfill, or represents a separate fill area.

5. Vancouver Ave. (Plews)

Name(s): Vancouver Ave. (Plews) [Metro name for site]
Plews [20, 21b?]

Location: (Multnomah Co.) Adjacent to the Columbia Slough on the west side of Union Ave. [44]
Bordered by N. Schmeer (north), N. Vancouver (west), Columbia Slough (south), and west of Union Ave. (now Martin Luther King Jr. Blvd.) [45]

Size: Approximately 5 acres [size of tax lot from internet map]
Approximately 10 acres [45 (Multnomah County 1952 land use survey map)]

Period of Operation: Began
Closed: when Hunt St. site opened (1968?) [20]

Ownership: (during filling) Private? [21b?]

Operator: Private [20]
Plews [20]

Types of Waste: Demolition construction wastes, street sweepings, brush & stumps?? [21b??]

Quantity: 115,000 tons/year, 385,000 CY/year (at closure, before 1971)?? [21b??]

Permits: None.

Listed:

Comments: .The 1952 Multnomah County land use map shows the area described above as a "dump" [45]. The Plews operated a number of sites in the metropolitan area, and based on personal communication it is believed this was their original landfill site [20]. Although the 1971 CRAG report mentions a closed Plew site, it seems a bit unlikely this site is being referred to. It is confusing for the following reasons. Apparently because the landfill was already closed, it used an address on NE 13th Ave. (believed to be the Plews' office) in place of a landfill location.

The landfill in the CRAG report is supposedly 30 acres, whereas this land appears to be somewhere between 5 and 10 acres. And the final reason to question if this is the same site is that the 1970 photo-revised USGS map shows a building on the landfill site, which suggests the landfilling operation was not recent enough at the time of the CRAG report to have been included as a closed site (the caption for their landfill table is "Solid Waste Existing sites").

All information above from the CRAG report is heavily questionable, and is cited followed by multiple question marks.

6. Hunt St. (Plews)

Name(s):	Hunt St. (Plews) [Metro name for site]
Location: (Multnomah Co.)	701 NE Hunt St.. [20]
Size:	
Period of Operation:	Began: 1968? [4?] Closed: 1970? [4?] Operated 1971-1973 [6]
Ownership: (during filling)	Private [20]
Operator:	Private [20] John Knapp, then Plews [20]
Types of Waste:	Demolition construction wastes [20]
Quantity:	115,000 tons/year??, 385,000 CY/year (at closure, before 1971)?? [21b??]
Permits:	None.
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#1271) CERCLIS (7/1/79) Placed on Confirmed Release List and Inventory (3/13//03)

Comments: The location of this site was initially learned from personal communication [18,20], and it was believed to be the Plews' second landfilling operation [20]. After landfilling demolition and construction wastes on the site by John Knapp apparently ceased, it was operated for recycling/processing materials (first by Resource Recovery Biproducts and followed by Wastech, Inc. [20]). The landfilling was expanded eastward by the Plews, with the recycling operation on top of the area previously landfilled by John Knapp [20]. A 1952 Multnomah County Planning Department land use survey map identifies a "dump" in this area [45]. (Land use survey maps found at Multnomah County typically spanned periods of approximately 15 years, so it's unclear when the dumping occurred. The hand-written map has the word "Dump" in 3 places, and in one case appears to be followed by the word "fill". The dump area is in or next to a pond.)

The COR-MET study listed a Plew site in northeast Portland which accepted demolition waste from 1968 to 1970 [4]. It is unclear, however, where this site is located. The dates suggest Hunt St. may be the closed Plews' site referenced by CRAG in 1971. A 1968 letter references the "Plews Demolition Site" with the same weight and tonnage per year [24] as in the CRAG study. This of course would negate that the site operated from 1968 to 1970, as indicated in the COR-MET report (unless the weight and tonnage figures were inadvertently copied, rather than changed to reflect two different sites).

The landfill in the CRAG report is supposedly 30 acres [21b], whereas the Hunt St. site appears to be closer to 5 acres. So here again it is unclear what site is actually being referred to. (Or perhaps the 30 acres was a typo, since none of the known Plew sites have been that large.)

According to the DEQ ECSI database, the site was used from 1920-1965 for lumber and shingle production, and from 1971 to 1973 as a construction debris landfill [6]. There is no reference to the period from 1965 to 1971, and it is not clear when the site was first used for landfilling.

According to DEQ contamination (PCBs and petroleum products) may be a result of an old lube oil refinery sludge pond, which was filled as a construction debris landfill. Risk of release to the slough is considered high due to records indicating inadequate containment and closure of the landfill. The site was recently placed on the Confirmed Release List and Inventory by DEQ.

7. Cully-Columbia

Name(s): Cully-Columbia [21a, 21b]
Yett [4]

Location: on NE Cully, just south of Columbia Boulevard [21b]
(Multnomah Co.) south portion of triangular site on the east side of NE Cully [20]

Size: 6 Acres [21b]

Period of Operation: Began: 1970 [4,21b]
Closed: 1972? [4] [42 (Staff Report to Clackamas County Solid Waste Division, 8?/72)]

Ownership: Private [21b]
(during filling) Dave Yett [21a]

Operator: Private [21b]

Types of Waste: Rubbish, demolition construction wastes, street sweepings, brush and stumps, appliances

Quantity:

Permits:

Listed: Not at this time.

Comments: There was a Porter Yett site and a Dave Yett site in the same area. The site described above was the Dave Yett site (in the south part of the triangular area), which was supposed to be "non-putrescible" waste. The Porter Yett site, which only took clean fill and did not accept waste, was in the northern part of the traingular area. The entrance was in the middle between the two sites. [20] (The Porter Yett site has not been included in this study, since the clean fill materials are not methane producing**.)**

8. Columbia & Union Ave. (Land Reclamation)

Name(s): Columbia & Union Ave. (Land Reclamation) [Metro name for site]
Columbia & Union Ave. [10a]
Columbia Land Reclamation [16 (Solid waste disposal permit)]
Land Reclamation [16 (Solid waste disposal permit)]

Location: between Columbia Blvd. and Columbia Slough and approximately one block east of Union Ave.
(Multnomah Co.) [16 (8/29/73 letter from George Ward & Assoc.)]

Size:

Period of Operation: Began: 1974? [16 (Solid waste disposal permit)]
Closed: 1979 [17]

Ownership: Private [16 (Solid waste disposal permit)]
(during filling) Western International Investors and Developers [16 (Solid waste disposal permit)]

Operator: Private [16 (Solid waste disposal permit)]
Land Reclamation [16 (Solid waste disposal permit)]

Types of Waste: Demolition construction wastes, brush, appliances, furniture, paper products, glass, plastics, rock, soil, concrete rubble, and similar non-putrescible materials [16 (Solid waste disposal permit)]

Quantity:

Permits: Permit #239 (DEQ) [16 (1974 and 1976 Solid Waste Disposal permits)]

Listed: Not at this time.

Comments: On the Land Reclamation, Inc. permit, they state: "The principal objective of this demolition waste landfill application is to permit filling of [a] low and otherwise unusable piece of property to bring it up to the surrounding grade. Upon completion, the site would be developed into a "light" industrial park." [16 (DEQ permit, 10/25/76)] Land Reclamation is the Plews' business name.

9. Killingsworth Fast Disposal (KFD)

Name(s): Killingsworth Fast Disposal (KFD) [6]
Riedel Waste Systems, Inc. [6]
Nash Pit [7]

Location: NE Killingsworth St. and NE 75th Ave. (former Nash Pit gravel quarry) [9]
(Multnomah Co.) 1N, 2E, 17, Tax lots: 300 [6], Latitude: 45 deg. 33' 53", Longitude: 122 deg. 35' 55" [6]

Size: 24 Acres [6]

Period of Operation: Began: 1981 [26a]
Closed: 1990 [6]

Ownership: Private [6]
(during filling) Metropolitan Disposal Corp. (MDC) [20] [48 (8/25/80 letter from MDC to DEQ)], then Riedel Waste Systems, Inc. [6]

Operator: Private [6]
Metropolitan Disposal Corp. (MDC)? [20?], then Riedel Waste Systems, Inc. [6]

Types of Waste: Demolition debris [6], industrial waste [31], and non-putrescible domestic solid waste diverted from St. Johns Landfill with DEQ permission [6]

Quantity: 276,000 tons over two years (June 1983-May 1985) [48 (8/19/85, letter from Metropolitan Service District to Riedel)]
175,000 tons/year (1987-88) [39]

Permits: Permit #330 (DEQ) [7]

Listed: Oregon DEQ: Environmental Cleanup Site Information (#2251)
Orphan site (7/99) [6]

Comments: From the 1950s through 1980,the KFD site was operated as a sand and gravel mine, covering 26 acres and excavated to an average depth of about 60 feet. At the time the KFD landfill was constructed, it was state-of-the-art. Its base was shaped and sloped to a central collection point where a concrete pump station was installed. The bottom of the excavation was lined with a 6-inch layer of compacted soil amended with bentonite. A layer of sand and several perforated leachate collection pipes were installed over the soil liner and connected to the pump station. The near-vertical sidewalls were covered with a polypropylene liner. Geosynthetic liner panels (although unseamed) were intended to form a barrier to prevent liquid from escaping the pit. [31]

The landfill was franchised by Metro and permitted by DEQ in the early 1980s as a demolition waste disposal site [6]. It was developed by MDC, who may have operated it for awhile before it was taken over by Riedel Waste Systems [2,20].]. An August 1980 letter from MDC's corporate attorney to DEQ requests and approves an assignment of their permit to Riedel International, Inc. [16 [8/25/80 letter from Dale M. Harlan, attorney, to Bob Gilbert of DEQ)]. Development drawings by R.A. Wright were dated November 1980, with revisions through September 1981, so it doesn't appear MDC could have operated it for very long. The soil/bentonite liner is believed to underlie all the waste [20].

With DEQ permission, non-putrescible domestic solid waste from the St. Johns Landfill was diverted to KFD in the late 1980s, when St. Johns was approaching capacity. The final landfill cover (constructed of a 30-mil polyvinyl chloride (PVC) geomembrane, compacted soil, and grass) was

completed in 1991. A limited gas control system, consisting of 35 methane gas extraction wells, was completed in 1992. Riedel Waste Disposal Systems was subsequently dissolved, and its parent company declared bankruptcy in 1994. DEQ received $545,000 as part of the bankruptcy settlement in 1995. [6]

Methane gas generation is the major hazard at the site. DEQ used the bankruptcy settlement funds to conduct post-closure activities at the landfill, including operation and maintenance of the active gas collection system. However, due to underground fires and other problems, by 1998 most of the methane gas extraction wells were no longer functioning, and only passively vented methane gas. A new gas control system was necessary, as were repairs to the landfill cap and drainage system, but there were not enough funds in the settlement account to pay for this work. To address the problem, in June 1999 the Environmental Quality Commission adopted a temporary rule designating methane gas from abandoned landfills, under specified conditions, as a hazardous substance. DEQ designated KFD as an Orphan project in July 1999, and used funds from the Solid Waste Orphan Site Account to design and install a new methane gas control system, and implement upgrades to the landfill cover, site drainage, and site security. DEQ completed the design of the new landfill gas system in August 1999, and installed additional landfill gas extraction wells in September 1999. The rest of the upgrades were completed in early 2000. [6]

On-site monitoring is conducted monthly. If sustained elevated levels of gas are detected, monitoring is increased to as often as daily, and several off-site houses and mobile homes are also monitored. So far, no off-site monitoring points have detected dangerous levels of methane. As of November 2000, DEQ reported that methane levels continued to exceed federal and state compliance levels at a few of the 26 on-site monitoring points, and further adjustment of the new gas control system was continued in an effort to bring all monitoring into compliance. [32]

High density residential and industrial developments are located within ten feet of the landfill along its south and southwest boundaries, and a high use golf course is located within one hundred fifty feet to the north. Having been constructed in an old gravel pit, KFD intersects highly porous sand and gravel deposits to depths of about 60 to 80 feet. With the water table in the area about 100 feet below ground surface (substantially below the base and sidewalls of the landfill), methane mobility creates a high risk of offsite gas migration into neighboring residential and industrial areas [33] if the gas collection system does not operate.

In March 2002, the City of Portland purchased the site for the future Thomas Cully Community Park, and Metro began maintaining and monitoring it under contract with the City.

10. Lavelle & Yett

Name(s):	Lavelle & Yett [4] Lavelle Landfill [12] H.G. Lavelle [10a] Rose City Landfill [2a]
Location: (Multnomah Co.)	3000 NE 82nd Ave [4] 1S, 2E, 28, Tax lots: 34, 35, 38, 92 [4]
Size:	12 Acres? [4], 23 Acres? [12]
Period of Operation:	Began: 1972 [12] Closed: 1981 [12]
Ownership: (during filling)	Private [12] Rose City Sand & Gravel [12] Henningson Cold Storage [20]
Operator:	Private [6] Harold Lavelle & Dave Yett [4], Lavelle probably bought out Yett during the operation [20]
Types of Waste:	Demolition and construction wastes, and other non-putrescible materials [5]
Quantity:	147,200 tons/year, 25,000-35,000 CY/month (1974) [4] 749,000 CY/year (1980)
Permits:	Permit #211 (DEQ) [4,7], City of Portland Permit No.53-72 [4]
Listed:	Not at this time.

Comments: Pictures of the former site (note circled sections in photos) indicate the proximity of buildings to the landfill today. The first photo was taken facing west from Rocky Butte, and the second photo (taken facing north from NE Russell and NE 84th) shows the slope at the edge of the former landfill site. Surrounding land use is generally commercial and residential, with homes on the east and north edges of the former gravel pit which was landfilled [5].

The southeasterly portion of the site was never landfilled with refuse. Wash fines soil and overburden materials were placed in this area instead. [12] While refuse filling was occurring in 1974, gravel was still being mined on the south side [5]. And perhaps this is why the area was not filled with refuse.

A daily cover made from ground wood residue was used on the site to prevent papers from blowing and provide a neat appearance to the fill [5]. This material is organic and therefore methane-producing, rather than the soil material commonly used today for daily cover. The site was described in the 1974 COR-MET report as a "well operated site" [4].

11. Slavin Rd.

Name(s):	Slavin Rd. [6]
Location: (Multnomah Co.)	4800 SW Slavin Rd. near intersection with SW Seymour Rd. [16 (Environmental Cleanup Site Information, Site Summary Report, 1994)] Between I-5 on the east and Barbur on the west [51 (3/24/70 letter report from Public Affairs, City Planning Commission to Commissiioner of Public Works Lloyd E. Anderson)] 1 of Lots 1-18, Block 12; Tax Lot 11, Lots 1-18, Block 11, Terwilliger Homestead Edition. [16 (Environmental Cleanup Site Information, Site Summary Report, 1994)] Latitude: 45 deg. 29' 24", Longitude: 122 deg. 40' 35" [6]
Size:	5.5 Acres? [6], 8 Acres? [21b]. 20 Acres? [21a]
Period of Operation:	Began: 1950s? [16 (DEQ staff notes, 1/94)] (See comments below.) Closed: after 1971? (See notes below in comments section) Operated about 20 years [16 (Environmental Cleanup Site Information, Site Summary Report, 1994)]
Ownership: (during filling)	Public [21b] City of Portland [21b]
Operator:	Public [21b] City of Portland [16 (ECSI #1520, 4/96?)]
Types of Waste:	Construction debris [16,Environmental Cleanup Site Information, Site Summary Report, 1994] Street sweepings [20]
Quantity:	
Permits:	Permit #211 (DEQ) [4,7] , City of Portland Conditional Use Permit No.53-72 [4]
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#1520) Confirmed Release List (3/95, due to 5-6 foot layer of heavy hydrocarbon contaminated soil, assumed to be from the disposal of hot asphalt and perhaps used oils in the landfill) [6]

Comments: Although this site was used exclusively by the City of Portland for construction debris for about 20 years, there were no controls. [21b, 16 (DEQ staff notes, 1/94)] In addition to sheet rock, scrap metal, and hot asphalt, many other things might have been dumped there . The site was presumably only accepting "clean fill", so no DEQ permit was required. [16 (DEQ staff notes, 1/94)] A 1970 document from the City of Portland's Planning Commission described it as a "dump and fill area to dispose of what appears to be hard fill, mainly dirt and gravel" [51, see above]. The CRAG engineers who visited the site in 1971 described it as "a well-maintained site" [21a].

This site was operating in 1971 when the CRAG report was published [21b], and at that time a 5 year future capacity was estimated. According to a 1994 staff note in DEQ's files, contacts with the City of Portland indicated that no one there in 1994 was old enough to have actually worked on the site. Most likely it closed during the 1970s. DEQ notes indicate that the site was used for construction debris for about 20 years [16 (DEQ staff notes, 1/22/94)], suggesting a 1950s start date for the site. Yet another DEQ document describes the "years of operation" as: "about 20 years, prior to 1990" [16 (ECSI site summary report, 6/8/94], which may suggest a later period.

In the early 1990's borings showed a 5-6 foot layer of oil contamination in the shallow subsurface soil, and a sheen on the groundwater. In March of 1995 the site was added to the Confirmed Release list

The City had intended to make it into open space, but instead swapped it for more land on Rocky Butte. The Slavin Rd. landfill site transferred to a private owner in 1991.

12. Oaks Bottom

Name(s): Oaks Bottom [6]
Sellwood Park [21b]
Sellwood Dump [21a]
Oaks Park (Dump) [21a]

Location: (Multnomah Co.) Oaks Pioneer Park (off SE Grand Ave.), south end of Oaks Bottom, Sellwood area of Portland [16 (DEQ Site Assessment Program – Strategy Recommendation)]
1S,1E,23, TL 50, Latitude: 45 deg. 28' 14.8", Longitude: 122 deg. 39' 37" [6]

Size: 10 Acres [6]

Period of Operation: Began: 1967 [6], 1969 [4]
Closed: 1970 or 1971 [4,6,21a]
May have started in the late 1950s [6]
May have been active as far back as 1950 [16 (DEQ Site Assessment Program – Strategy Recommendation, 11/95)]

Ownership: (during filling) Private (before 1969)
Donald M. Drake Co. [16 (DEQ Site Assessment Program – Strategy Recommendation, 11/95)]
Public (1969-present)
City of Portland [16 (DEQ Site Assessment Program – Strategy Recommendation, 11/95)]

Operator: Private [21b]
Lavelle Construction Co. [16 (DEQ Site Assessment Program – Strategy Recommendation, 11/95)]

Types of Waste: Solid waste, demolition, and brush, rubbish, street sweepings [6, 21a, 21b]

Quantity: 37,000 tons/year (at closure) [21b], 47,600 CY/year (at closure) [21b]

Permits:

Listed: Oregon DEQ: Environmental Cleanup Site Information (#1006)

Comments: The site sits at the south end of Oaks Bottom [6] in an old lake bottom [21a], and is an urban wildlife refuge [6]. Black and Veatch, studying the site in 1968 and discussing why it was not suitable for sanitary landfilling, noted that it was close to residences [14]. The City of Portland originally acquired the Oaks Bottom property from the Donald M. Drake Company at the beginning of 1969 to block its development as an industrial park. The area was believed, at the time, to be one of the few remaining marshland areas in Portland, and local residents were strongly opposed to its development as industrial property [16 (DEQ Site Assessment Program – Strategy Recommendation, 11/95)].

DEQ documents make a number of references to the site possibly being in use as early as the 1950s [6,16 (DEQ Site Assessment Program – Strategy Recommendation, 11/95), although the documentation is inconclusive and the dates range widely. The site was operated by Harold Lavelle (Lavelle Construction Co.) between approximately 1967 and 1969 for the disposal of demolition and brush. Lavelle also operated the site under contract with the City of Portland. Incoming loads were reported to have been closely monitored for unacceptable materials (garbage, tires, car bodies, and dead animals), although wastes were also reportedly delivered at a rate of approximately 1 load per minute. [16 (DEQ Site Assessment Program – Strategy Recommendation, 11/95)] In response to underground fires (a common problem, especially in older landfills) Harold Lavelle (of Lavelle

Construction Co.) started compacting waste at this site with heavy equipment, and demonstrated that this retarded underground fires [20, 16 (DEQ memo, 11/16/87)].

Around the time the City acquired the property, there was a perception among some local residents that the wetland supported an even larger population of rats and opossums, and that leachate from the landfill had killed-off much of the natural wildlife. In response to concerns by nearby residents and the local Soil and Water Conservation District, DEQ sampled surface water from Oaks Bottom Pond along the northern edge of the former landfill in 1987. Samples were analyzed for common landfill leachate parameters. Laboratory data for Chemical Oxygen Demand (COD) and Total Organic Carbon (TOC) indicated "moderate levels of organic based compounds" which might have been at least partly attributable to the natural wetland environment. All other leachate parameters were present at very low levels. DEQ described the overall water quality as "reasonably good." [16 (DEQ Site Assessment Program – Strategy Recommendation)]

In August 1995, despite substantial algal bloom and elevated water temperatures in the Oaks Bottom Pond (the shallow lake adjacent on the northeast side of the former landfill), DEQ noted no visible indication of leachate seeps (precipitated metals, discoloration, turbidity, or slime growth) nor visible indications of serious environmental damage. There were several frogs, abundant minnows, and numerous large feeding carp along the Oaks Bottom Pond's south shoreline. ." [16 (DEQ Site Assessment Program – Strategy Recommendation)] Sampling by DEQ in 1996 indicated that any impact on the nearby wildlife sanctuary was insignificant, and concluded that "no further state action is required" [6].

During a recent Metro staff visit to the site in October 2002, however, discolored seepage was greatly in evidence at the bottom of the banks on the edge of the landfill. (See colored photo on front cover of this document.)

13. Vance Pit

Name(s):	Vance Pit [4,6,22] Multnomah Co. (Dump) [21a, 21b]
Location: (Multnomah Co.)	between SE Yamhill St. and SE Division St., on both sides of SE 190th Ave. [22], Gresham area [4] 1S,3E,5, , Latitude: 45 deg. 30' 16.26", Longitude: 122 deg. 28' 3.66" [6]
Size:	28 Acres [21b]
Period of Operation:	Began: 1960 [4, 22] Closed: 1971 [4]
Ownership: (during filling)	Public [21b, 53] Multnomah County [22]
Operator:	Public [21b, 53] Multnomah County [22]
Types of Waste:	Garbage, rubbish, demolition construction wastes, street sweepings, brush & stumps [21b]
Quantity:	27,400 tons/year (at closure) [21b], 233,000 CY/year (at closure) [21b]
Permits:	
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#1407)

Comments: The original fill site was where the Environmental Services building is now located. In 1969 (towards the end of the site's operation), it was reported that the area immediately adjacent to the landfill had become fairly densely populated and that cover material had not been placed as regularly as needed. The site was receiving as much as 1600 loads/day [22], or approximately one vehicle every 40 seconds [21a]. There were two operating pits. Individual dumping went into the north pit, and commercial dumping in the south pit. In 1969, it was reported to be operated as a sanitary landfill ("compacting and covering each operating day") [53]

In 1979 or 1980 [2a], most of the landfill material was removed from the original site (where the Environmental Services building is) across the road to the Vance Pit, which is next to the Gresham Sand & Gravel pit. Gravel pit operations have caused soil from a portion of a wall of the Vance Pit to slide. A worker at Gresham Sand & Gravel experienced burning and swelling after handling sediments removed from a sump area in the gravel pit near the wall of the Vance Pit. According to a report from the Mine Safety and Health Administration, the worker who experienced the burning and swelling of his hands reported that other workers at the site had complained of headaches and nausea when working around sump material. DEQ sampling from the sump area indicated that eight organics were identified at low levels, but their association with the landfill was unclear. Although DEQ recommended no further action, due to the low levels of contaminants identified, they have indicated there may be a need to address future releases from the landfill and any current or future threats to the area's groundwater. DEQ has also recommended that the area of exposed landfill from the slide be covered and erosion in this area prevented. [6]

14. Troutdale (Obrist)

Name(s):	Troutdale (Obrist) [Metro name for site] Obrist [4]
Location: (Multnomah Co.)	Troutdale Rd. [4] (now Sunrise Park) west of SE Troutdale Rd., at west end of SW 21st St., Troutdale [46] 1N,3E,36 [4], Tax lots 16, 52, 53(?) [46]
Size:	12 Acres [4]
Period of Operation:	Began: 1972 [4, 5] Closed: 1981 or earlier [42 (4/28/81 letter from DEQ to City of Troutdale)]
Ownership: (during filling)	Private [4] Don Obrist Dump Trucking, Inc. [4]
Operator:	Private [4] Don Obrist Dump Trucking, Inc. [4]
Types of Waste:	Demolition and construction wastes, land-clearing debris (delivered by licensed contractors and commercial haulers) [4]
Quantity:	5,500 tons/year (in 1974) [4] 112,000 CY/year (in 1980) [46]
Permits:	Permit #213 (DEQ) [4,7] , City of Troutdale resolution Resolution passed by Troutdale City Council
Listed:	Not at this time.

Comments: The landfill operated on a hillside gravel excavation owned by Don Obrist Dump Trucking, Inc. The 1974 COR-MET study notes the surrounding land use to be generally rural residential, and that final use of the site was intended to be a park for the City of Troutdale. During operations, no daily cover was used, and intermediate soil covering was done monthly. Operation of the site was on a part-time basis by employees of Don Obrist Dump Trucking, Inc.. There was no salvaging practiced at the site. [5]

In 1980 the City of Troutdale acquired the property, and closed the partially full landfill. The remaining disposal capacity was filled gradually with soil, rock, various inert wastes, shredded tires, and some loads of petroleum-contaminated soil. The City allowed their original closure permit to expire in 1995, and was sited with a compliance violation in 1998 [47]. In 1999 the groundwater monitoring data indicated that the landfill leachate had affected the upper-most aquifer beneath the site [47]. The former Troutdale Landfill is now Sunrise Park. A picture is shown to the right. The proximity of residences can be seen in the photograph.

15. Waybo Pit

Name(s): Waybo Pit [16 (5/80 application to DEQ)]
Waybo [21b]
Waybo's Demolition Site [24]
Easley [4]

Location: 7800 NE Killingsworth St. [21b]
(Multnomah Co.) South of NE Killingsworth St. and east of 75th Ave.) [16 (R.A. Engineering, Waybo Pit Development Plan, May 1980)]
7580 NE Killingsworth St. (between NE 74th and 78th, between NE Alberta and Killingsworth) [16 (Application to DEQ for a permit for a new or modified solid waste disposal facility, 5/16/1980)]
1N,2E,20, TL 2, 105 [16 (R.A. Wright Engineering, Waybo Pit Development Plan, May 1980)]]

Size: 5 Acres [21b]
15 Acres [16 (Metro, Regional Sanitary Landfill Report, 9/75)]
18 Acres [16 (Multnomah County land use permit, 12/64,16 (Metro, Disposal Siting Alternatives, 9/78)]
37 Acres [16 (Application to DEQ for a permit for a new or modified solid waste disposal facility, 5/16/1980)]

Period of Operation: Began: 1965 [4]
Closed: 1966 [4], some time between 1968 and 1971 [24,21b]
After 1969 [53]

Ownership: Private [21b,53]
(during filling) Waybo Incorporated [16 (Multnomah County land use permit, 12/64)]

Operator: Private [21b,53]
Waybo Incorporated [16 (Multnomah County land use permit, 12/64)]

Types of Waste: Demolition construction wastes [21b,53], street sweepings [21b]

Quantity: 81,900 tons/year (at closure), 273,000 CY/year (at closure) [21b]

Permits: Multnomah County land use permit #85056 [16 (Multnomah County land use permit, 12/64)]

Listed: Not at this time.

Comments: In December 1964, Waybo Incorporated received a land use permit from the Multnomah County Planning Commission for a "landfill operation only, no garbage" [16 (Multnomah County land use permit, 12/64)]. In January 1966, the Multnomah County Planning Commission revoked Waybo, Inc.'s permit, stating that rules and regulations were not being adhered to [16]. In May 1966 a staffperson from the State Board of Health's Vector Control Program visited the site, commenting in their follow-up memo to the County about two small visible plumes of steam from previous landfill operations and making some recommendations for operation, if the site opened again in the future [16]. Later in May 1966 the County sent a memo to Wayne Easley of Waybo, Inc. to indicate their permit could be re-instated following authorization by the County Sanitarian [16].

There is some confusion about the size and operational period of this site. Documents refer to what is assumed-to-be-this-site by a number of different names. Although the COR-MET study indicates that "Easley" operated from 1965 to 1966 [4], there are a number of other reports suggesting it may have been in operation until a later date. A 1968 memo mentioned "Waybo's Demolition site" (and

its estimated tonnage of 81,900 tons/year) [24]. The 1969 Oregon State Board of Health status report includes it as an existing demolition landfill [53]. The 1971 CRAG report referred to "Waybo" as a closed site, and used the same estimated tonnage figures as the 1968 memo [21b]. Thus it seems to be the same site.

In 1980, DEQ received an application for a solid waste disposal facility permit at Waybo Pit. It is assumed that the 37 acre site in their application referred to in the permit includes the adjacent Roselawn Pit. The permit application stated that the closest residence was 300 feet south of the site [16 (Application to DEQ for a new or modified solid waste disposal facility)]. No documentation was found that the landfill operated again after submitting this new permit application.

One theory for the great variation in acreage found is that the 5 acre landfill reported in the 1971 CRAG study [21b] reflected what had actually been filled (given the landfill was closed when the report was written), whereas the 15 or 18 acres in the other reports reflected the total available size. Or perhaps the size was changing due to on-going excavation work.

Between March 1988 and August 1989, DEQ extensively evaluated the feasibility of permitting the Waybo Pit for use as a limited purpose construction demolition debris landfill. At that time the Department's review indicated that the site is underlain by highly permeable gravel deposits in direct hydraulic communication with a highly productive groundwater aquifer system being developed for use as part of the Portland Water Bureau's backup water supply to the Bull Run watershed. In addition, the site was determined to be configured in such a way as to make construction of suitably engineered containment systems difficult, due to extremely steep sidewall slopes around the perimeter of the pit. The Department finally concluded that, regardless of the level and type of engineered containment systems proposed at this site for environmental protection, unfavorable natural conditions precluded use of the site for landfilling, because of the unacceptably high risk to groundwater resources posed by any leachate releases from the site to the underlying aquifer. [16 (DEQ, Interoffice memo, September 9, 1992)]

16. Hawk (near Scappoose)

Name(s): Hawk (near Scappoose) [Metro name for site]
Hawk's Disposal Area [22]
Hawk Fill [3a]
Hawk's Burning Site [24]

Location: (Multnomah Co.) West Multnomah County [4],
out St. Helen's Rd. [3a]
near Scappoose [22]

Size:

Period of Operation: Began: 1960 [4]
Closed: 1969 [4]

Ownership: (during filling) Private [53]
Elmer Hawk [20]

Operator: Private [53]
Assumed same as ownership?

Types of Waste: Demolition [4, 22,53]

Quantity: 93,600 tons/year (at closure), 312,000 CY/year (in 1968) [24]

Permits:

Listed: Not at this time.

Comments: Not much was found about this site. It was referred to as a burning site when found in reports [3a, 24]. It was the first of Elmer Hawk's sites (the second being Hidden Valley) [20].

17. Willamette

Name(s): Willamette [21b]
Willamette (City of Portland) [21a]
Mock's Bottom? [6]

Location: (Multnomah Co.) Willamette Blvd. and Jessup St. in north Portland [21b]

Size: 10 Acres [21b]

Period of Operation: Began: 1948 [51 (6/8/84 City of Portland letter from Dick Godfrey to Mike Lindberg)]
Closed: after 1984 [51 (6/18/84, see above)]

Ownership: (during filling) Public [21b]
City of Portland [21b]

Operator: Public [21b]
City of Portland [21b]

Types of Waste: Rubbish [21a], demolition construction wastes, street sweepings, and brush and stumps, [21a, 21b]
Street and sewer construction spoils materials consisting of dirt, sand, rock, concrete, asphalt, and Broken pipe generated by the City of Portland's Bureau of Maintenance [51 (City of Porttland Interoffice memo, from Bill Masten, Director of Maintenance to Mike Lindberg, Commissioner of Public Works, 9/12/84)]
Concrete pieces, soil, sod, street demolition wastes [6]

Quantity:

Permits:

Listed: Oregon DEQ: Environmental Cleanup Site Information (#1306)
CERCLIS (1/1/82)
(It's a bit unclear whether this listing refers to this site or Site 18)

Comments: This site was a hillside adjacent to residential and industrial areas with a differential in elevation of approximately 170 feet. Filling was done by terracing. A 1983 City of Portland letter refers to their site as the "Willamette Disposal Site in Mocks Bottom" [51,(12/16/83 City of Portland letter from Mike Lindberg to Mr. And Mrs. Patrick Miles)]. The DEQ ECSI database also refers to what is believed to be this site as "Mocks Bottom". The DEQ description is a "small landfill used by the City of Portland". [6] Although somewhat confusing, these references do not seem to be to Site 18 (which is believed to have been a privately owned and operated site).

The landfill was used exclusively by the City of Portland's Public Works Department as a demolition site. [21b] Although the 1971 CRAG report indicated the site accepted brush and stumps [21b] (potentially gas-generating),, in 1984 DEQ determined the site was exempt from permitting due to the type of materials being disposed [51, 6/18/84, (see above)] A 1984 study by Dames & Moore indicated "there are occasional scattered pieces of wood or timber, but the observed amount of this material appears to be very minor" [51 (Dames & Moore, "Consultation & Landfill Evaluation, Existing Landfill – West of N. Willamette Blvd., near North Ainsworth St., Portland, OR", 6/11/84)] It is unclear whether the earlier period of dumping included significant amounts of gas-producing fill material or not.

18. Mock's Bottom

Name(s): Mock's Bottom [22]

Location: (Multnomah Co.) Mock's Bottom [22]

Size:

Period of Operation: Began: before 1969 [22]
Closed: after 1969 [22]

Ownership: (during filling) Private? [22]

Operator: Private? [22]

Types of Waste: Demolition-construction waste [22]

Quantity:

Permits:

Listed: Not at this time.

Comments: Only one reference with very little information was found for this site. After naming four larger well-known demolition-construction waste sites operating in 1969, it went on to say, "There are other sites used for such disposal on a limited basis, such as on Sauvie's Island or at Mock's Bottom, or other private sites [22]." This suggests it was a private site.

References such as "Willamette Disposal Site in Mocks Bottom" [51,(12/16/83 City of Portland letter from Mike Lindberg to Mr. And Mrs. Patrick Miles)] and DEQ's "Mock's Bottom" [6] seem to be describing the Willamette site (Site #17) rather than this site, although it is very confusing.

19. Sauvie Island

Name(s): Sauvies Island [Metro naming convention]
Sauvie Island [22]

Location: (Multnomah Co.) Sauvies Island [22]

Size:

Period of Operation: Began: before 1969 [22]
Closed: after 1969 [22]

Ownership: (during filling) Private? [22]

Operator: Private? [22]

Types of Waste: Demolition-construction waste [22]

Quantity:

Permits:

Listed: Not at this time.

Comments: Only one reference with very little information was found for this site. After naming four larger well-known demolition-construction waste sites operating in 1969, it went on to say, "There are other sites used for such disposal on a limited basis, such as on Sauvies Island or at Mock's Bottom, or other private sites [22]." This suggests it was a private site.

20. Hayden Island (near Farr Rd.)

Name(s): Hayden Island (near Farr Rd.) [Metro naming convention]

Location: (Multnomah Co.) west end of trailer park near N. Farr Rd. & N.Hayden Island Dr. [45]
2N,1E,33 [45]

Size:

Period of Operation: Began: before land use map notation made some time in the 1960's through 1976 [45]
Closed: after land use map notation made some time in the 1960's through 1976 [45]

Ownership: (during filling) ?

Operator: ?

Types of Waste:

Quantity:

Permits:

Listed:

Comments: Not much is known about this site. Although the Multnomah County survey map shows this area as a discrete site (it is shown as a small circled area with an arrow pointed to it and the word "dump" next to the area) [45], it may or may not be part of Site 3 of this report. It seems possible they were contiguous. And possibly this was a later addition. Operational dates are also confusing, both for this site and Site 3. The land use maps were used in the field over many years and it is unclear when the survey identifying the landfill actually occurred. The 1976 date may or may not be meaningful (in general these maps covered the period of the 1960's and 1970's).

Based on the land use surveys it is believed that Site 3 closed in 1963 [45]. (The map showed the word dump with a line through it and the date 3/8/63.) However, DEQ suggests Site 3 probably operated until 1970 [6]. They indicate that an Arco service station opened on the site in 1971 [6], so perhaps DEQ just assumed the dump was operational until that date.

21. Alderwood Dr.

Name(s): Alderwood Dr. [Metro naming convention]

Location: north of current end of NE Alderwood Dr. at edge of the airport [45]
(Multnomah Co.) 1N,2E,21 [45]

Size:

Period of Operation: Began:
Closed: between 1960 and 1977 [45]

Ownership: ?
(during filling)

Operator: ?

Types of Waste:

Quantity:

Permits:

Listed:

Comments: The site was identified on a land use map by the notation "Trash Dump" and an arrow pointing to its location [45]. There was a line through the "Trash Dump" and the word "GONE" next to it. It's not necessarily obvious what the "trash dump" notation means, whether there was a trash pile which was subsequently removed or if material was landfilled at the site. The actual date of the notation is not known, although the land use surveys on this map occurred between 1960 and 1977. This suggests that the closure occurred after 1960 (thus meeting the time criteria of this study).

22. Skidmore St.

Name(s): Skidmore St. [Metro naming convention]

Location: (Multnomah Co.) NE Skidmore St. and NE 82nd Ave. [45]
1N,2E,21 [45]

Size:

Period of Operation: Began: before land use map notation made some time in the 1960's through 1973[45]
Closed: after land use map notation made some time in the 1960's through 1973 [45]

Ownership: (during filling) ?

Operator: ?

Types of Waste:

Quantity:

Permits:

Listed:

Comments: The site was identified on a land use map by the notation "Trash Dump" and an arrow pointing to its location [45]. It's not necessarily obvious what the "trash dump" notation means, whether there was a trash pile which was subsequently removed or if material was landfilled at the site. The actual date of the notation is not known, although the land use surveys on this map occurred from at least 1962 through 1973. This suggests that closure occurred after 1960 (thus meeting the time criteria of this study).

101. Johnson Creek

Name(s):	Johnson Creek [6] Lavelle Landfill [6] Johnson Creek Blvd. & Crosswhite St. [6] Mt. Scott Gravel Pit [6] Mt. Scott Sand & Gravel Co. [42 (3/9/71 letter from Clackamas County Public Works Dept. to Board of Commissioners)]
Location: (Clackamas Co.)	7600 SE Johnson Creek Blvd., Milwaukie [6], 7500 SE Johnson Creek Blvd. [21b] 1S,2E,21?, , Latitude: 45 deg. 27' 20", Longitude: 122 deg. 35' 9" [6] 1S,2E,29,Tax lots 70,71,72,77-1,78-2,79,80,95-1 [42 (2/12/71 letter from DEQ to Clackamas County Planning Dept.)] 1S,2E,29, Tax lots 2300,2400 [42 (3/15/71 letter from DEQ to Harold Lavelle)]
Size:	9 Acres [6, 21b]
Period of Operation:	Began: early 1950s? [6], 1971 [6, 21a] Closed: 1973 [6]
Ownership: (during filling)	Private [21b] Before 2/71: Floyd & Wesley Kirchem [42 (2/19/71 letter from LaVelle Construction Co. to Clackamas Co. Health Dept.)] After 2/71: Harold Lavelle [42 (2/19/71 proposed Solid Waste Land Disposal site)]
Operator:	Private [21b] Before 2/71: Floyd & Wesley Kirchem [42 (2/19/71 letter from LaVelle Construction Co. to Clackamas Co. Health Dept.)] After 2/71: Harold Lavelle [42 (2/19/71 proposed Solid Waste Land Disposal site)]
Types of Waste:	Rubbish, demolition construction wastes, tires, street sweepings, brush and stumps, appliances [21b] Demolition debris, wood waste, rock, concrete, asphalt, and brush [6] (see below)
Quantity:	
Permits:	Permitted 1971-1973, but permit number unknown. Franchised by Clackamas County (3/71) [42 (3/12/71 Clackamas County Board of Commissioners, Order No. 71-255)
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#1232) Added to Confirmed Release List and Inventory (5/94) [6]

Comments: Historically the site was an abandoned gravel quarry [6, 21b]. According to DEQ's Environmental Cleanup Site Information (ECSI) database the former landfill operated as an uncontrolled facility from the early 1950s until 1971 (when a DEQ permit was issued). In addition to the demolition debris, wood waste, rock, concrete, asphalt, and brush that the landfill was permitted to receive, the DEQ's ECSI database suggests that they may have received industrial wastes during the years before it was permitted. The site is also located in an area of regional TCE and PCE groundwater contamination. [6]

In 1971 the CRAG study refers to the site as a "new landfill" [21b]. And the 1974 COR-MET study says the site began operating in 1971 [4]. The DEQ ECSI database says the site may have started operating by the early 1950's [6]. According to Ernie Schmidt (formerly of DEQ) before permitting of the site in the 1970s it was a big hole with some concrete block and brush, and it was not an operating site since the early 1950s [20]. However in 1971 a letter from the Lavelle Construction

Co. to Clackamas County referred to purchasing the portion of land which was being filled with solid waste materials and which there had been placed a restraining order to cease filling operations [42 (2/9/71, see above)]. Therefore at least some solid waste landfilling appears to have occurred before it was permitted by DEQ.

In 1989 several constituents -- including benzene, lead, and TCE -- were detected in groundwater at concentrations above the MCL (maximum contaminant level allowed in drinking water). Groundwater sampling in the early and mid-1990s appears to have confirmed that the site is not contributing significant levels of contaminants to the environment. [6]

In 1990-1991, the site was developed as a recreational vehicle showroom. There is currently an approximate 39,000 square foot building and 2 to 3 acres of asphalt paved areas. Portions of the site are vegetated. A passive methane gas collection system was installed under the building. According to DEQ groundwater contamination and combustible gases venting from the building may pose explosion hazards or health risks. The potential for off-site gas migration should be evaluated. [6]

DEQ has recommended continued monitoring of the groundwater wells in the vicinity, as well as the interior methane-venting gas wells. DEQ has also suggested evaluating the potential for off-site gas migration.[6]

102. King Rd.

Name(s):	King Rd. [6] Lavelle Landfill [6]
Location: (Clackamas Co.)	7325 SE King, Milwaukie [6] 7601 SE King Rd. [42 (5/22/72 Disposal Site Franchise Application)] 7425 SE King Rd. [42 (12/9/75 letter, Harold Lavelle to Clackamas Co. Solid Waste Commission)] directly south of SE King Rd., some 2000 feet west of SE 82nd Ave. [42 (6/2/72 letter from Oregon Water Resources Dept. to DEQ)] 1S,2E,29, TL106-111,123-105,114-121, Latitude: 45 deg. 26' 53", Longitude: 122 deg. 35' 18" [6] 1S,2E,29DA, TL 14100, 14200; 1S,2E,29DB, TL 12100; 1S,2E,29DC, TL 100, 200, 300; 1S,2E,29DD, TL 1700, 1800, 1900, 2200 [42 (6/28/72 letter, Clackamas County to Harold LaVelle)]
Size:	31 Acres [4], 11 Acres [4, 6]
Period of Operation:	Began: 1973 [4, 6] Closed: 1979 [6]
Ownership: (during filling)	Private [4] Portland Road and Driveway Co. [4]
Operator:	Private [4] Harold Lavelle [42 (numerous references)] David Yett? [42 (5/22/72 Disposal Site Franchise application)]
Types of Waste:	Demolition wastes [4] Inert demolition materials, such as rock, concrete, brush, and wood waste [6] Potassium hydroxide (KOH), sodium hydroxide (NaOH), kolene, and alcohol wastes [6] (see below)
Quantity:	52,000 tons/year (1974) [4]
Permits:	Permit #113 (DEQ) [4] Franchising agreement with County pursuant to Solid Waste Collection and Disposal Ordinance [4]
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#905) [6]

Comments: The site was originally a gravel pit [6]. It was located in a residential and commercial area, with the nearest residence only about 100 feet from the site [4]. Beginning June 11, 1973 [42 (12/9/75, see above)], the pit was used as a landfill that was authorized to accept only inert demolition materials, such as rock, concrete, brush, and wood waste [6]. For the short period between January 18 and January 21, 1974 DEQ authorized the site to accept putrescible garbage from commercial haulers operating in Washington and Clackamas Counties because Rossman's Landfill was closed due to high water [42 (1/25/74 letter confirming prior phone conversation, DEQ to Lavelle Construction Co., Inc.)]. Limited salvaging of metal items was practiced by an independent salvager [4]. It was later determined that Precision Cast parts had disposed of potassium hydroxide (KOH), sodium hydroxide (NaOH), kolene, and alcohol wastes in the landfill [6].

The 31-acre gravel pit had a base elevation of about 35 feet below the surrounding land area, and was still being mined in the northeast and northwest sectors [4]. (It is not clear how much acreage was actually landfilled. The COR-MET study cites both 31 acres and 11 acres as the total disposal area. [4] This may be related to an 11-acre expansion approved in April of 1973 [42 (4/25/73 letter from Clackamas County to Harold Lavelle)]) Portions of the northeast section were mined below

the water table, resulting in depressions of standing water. The site was zoned for large-lot residential use and the completed landfill was anticipated to be used for a trailer court [4].

DEQ performed a methane gas survey at the site in November 1979. A passive gas collection system was in place, but it did not appear to be working effectively. Methane was detected up to 65% in pockets in the landfill, and up to 37% in the front yards of some private residences immediately to the south of the landfill. DEQ requested that an active gas collection system be installed, but it is not known whether it was done or not. [6]

The landfill was covered with 1 to 6 feet of fill and paved over, and a mobile home park now sits at least partially on top of the landfill. The gas collection system is still in place, but it is not known if the system is passive or active. Because methane gas releases have impacted adjacent residences and shallow groundwater may be contaminated with landfill leachates, DEQ recommends expanded groundwater sampling and a determination as to the current status of the gas collection system. [6]

103. Burright (Happy Valley Trailer Ct.)

Name(s): Burright (Happy Valley Trailer Ct.) [Metro name for site]
Oregon Recycling and Disposal [16 (7/28/76 letter from DEQ to Larry Burright)]
Happy Valley Homes [16 (7/28/76 letter from DEQ to Larry Burright)]

Location: 8750 SE 155th [21b]
(Clackamas Co.)

Size: 15 Acres [21b] [42 (CH2M Hill, "An Engineering Report on the Clackamas Copunty Solid Waste Landfill Study," 5/71)]

Period of: Began: 1964 [4],
before 1964 [42 (Clackamas County Interoffice correspondence from the County Planning Dept. to Health Dept., 7/27/70)]

Operation: Closed: 1972 [4]

Ownership: Private [4]
(during filling) Larry Burright [16 (7/28/76 letter from DEQ to Larry Burright)]]

Operator: Private [4]
Larry Burright [16 (7/28/76 letter from DEQ to Larry Burright)]

Types of Waste: Demolition construction wastes, industrial wastes, auto bodies [21b]
Garbage and demolition waste [42 (DEQ letter to Larry Burright, 9/13/72)]
Demolition products, stumps [42 (Clackamas Co. Planning Dept. letter to Larry Burright, 10//19/71)]

Quantity:

Permits:

Listed:

Comments: This site was not open to the public [21b]. The site was a level area directly adjacent a small trailer court in a sparsely settled residential area [42 (CH2M Hill, 5/71, see above)]. The area was zoned in 1964, although it appears that some form of a demolition dump was operating at this site prior to that date [42 (Clackamas County interoffice correspondence from the County Planning Dept. to the Health Dept., 7/27/70)]. In October 1971 the Clackamas County Health Department gave Larry Burright 30 days to phase out operations at the site [42 (Clackamas County health Dept. letter to Larry Burright, 10/19/71)].

In the mid-1970's tires from a tire processing business owned by Larry Burright were being illegally disposed of at this landfill. [16 (DEQ letter, 1/6/77)]

104. J&W

Name(s):	J&W [6] Wade and Jones Landfill [6] Butler Ridge [6] J&W Dump, J&W Demolition Operation [35]
Location:	Rodlin Road off SE 190th St. in rural Clackamas Co. [21b] from Hwy 26, turn right on 190th St., take Butler Rd. to Rodlin Rd. and follow to View Acres [21b] south side of Canfield Rd., just south of the Multnomah County line, Pleasant Valley area [42 (Clackamas Co. Board of Adjustment Meeting, 10/5/70)]
(Clackamas Co.)	1S,3E,28B, TL: 400, 500, 600, 700, 800, 900, 901, 1000, 1100, 1200 [35]
(Multnomah Co.)	1S,3E,21C, TL 1100, 1200 [35]
	Latitude: 45 deg. 27' 38", Longitude: 122 deg. 26' 52" [6]
Size:	43 Acres [6, 21a] 5 Acres [42 (CH2M Hill for Clackamas Co., "An Engineering Report on the Clackamas County Solid Waste Landfill Study", 5/71)]
Period of Operation:	Began: 1966 [42, Clackamas County "Summary", from 7/6/70 – 11/23/71, unknown publish date)] 1967 [4] Closed: 1971 [4]
Ownership: (during filling)	Private [21a,53] Daryl Jones, Joe Wade [21b, 35]
Operator:	Private [4,53] Deryl Jones, Joe Wade [35]
Types of Waste:	Rubbish, demolition, tires, brush, stumps, appliances [21b] Demolition debris, vegetation, appliances, car parts, paint cans, drums of waste, treated timbers [6] Mixed degradable [42 (CH2M Hill, 5/71, see above) Paper wastes, building demolition, yard prunings, stumps [42 (DEQ interoffice memo, 11/23/71)]
Quantity:	5,764 tons/year, 19,200 CY/year (1971) [21b]
Permits:	Clackamas County conditional use permit (1967-1970) [(42 (Clackamas County interoffice correspondence, 7/27/70)]
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#1153) [6] Added to Confirmed Release List and Inventory (3/03) [34]

Comments: Most of this site was in Clackamas County, but a small portion overlaps into Multnomah County. It is located in a hilly area, with several ravines having been used for disposal [6]. Salvage was conducted on the landfill site [21a]. The landfill was unlined [36]. It operated without a permit [36]. The Clackamas County Health Department closed it down following a fire that smoldered for about a year [36] before being extinguished by the Boring Fire Department [35]. According to EPA's report, the Clackamas County Board of Commissioners ordered the landfill to cease operations in 1971 because it was a health hazard and a nuisance, with hot spots and fires resulting from organic decomposition being noted as concerns [35]. According to a local resident, the closure came as a result of complaints from area farmers about rats from the landfill [16 (DEQ, Site Visit Report, 6/25/93)].

In 1988 the landfill was covered with a couple feet of dirt, according to the local resident interviewed by DEQ during their site visit [16 (DEQ, Site Visit Report, 6/25/93)]. The 1971 CH2M Hill report [42 (CH2M Hill, 5/71, see above)] indicates that only 5 acres was used, and 15 acres

remained. The 1971 CRAG report indicates the site is 40 acres, with 10-15 acres remaining, so it's not clear how large an area was filled [21b].

While the landfill was in operation, no records were kept of the kinds of materials accepted as fill. According to DEQ, there are reports of automobile parts, appliances, paint cans, drums of waste, treated timbers, yard waste, construction debris, batteries and a variety of other wastes buried at the site. There are even allegations that Reynolds Aluminum may have disposed of waste there. [36]

In the early 1990s, the area was subdivided for residential development. DEQ was concerned that pockets of potentially hazardous materials might be encountered when drilling wells, and that this may contaminate deeper sources of groundwater being used by local residents. In addition to the issues of soil and water contamination from past disposal practices, DEQ was also concerned about structural problems during development. [16 (DEQ, Interoffice memo, 7/14/92)]

DEQ began receiving complaints about the site in 1991, including observations of orange leachate draining from the area of the former landfill. In 1992 consultants for the Johnson Creek Corridor Committee (OTAK) reported that leachate from the landfill drains into Kelly Creek at times, which in turn runs into Johnson Creek [6], approximately 3 miles west of the site [35]. In 1993 DEQ sampled water and sediments from the creeks in and around the landfill, as well as in the domestic wells adjacent to the landfill. In 1993, there were additional reports of “brown sludge”, “brown-orange sludge”, and “odors of methane” coming from the landfill, as well as reports of dead fish [35]. EPA’s contractor conducted a site inspection in 1994-95, and sampled surface water and groundwater from nine domestic wells within a 0.5-mile radius of the site for a wide variety of compounds [6].

Sampling of the domestic wells in 1993 (DEQ) and 1994 (EPA) indicated that water in these wells is within health-based standards for drinking water. Some wells were found to have elevated levels of such metals as iron, copper, zinc, and manganese, but these metals are not considered health threats, and it is unclear if they originated from landfill leachate. [6]

No remedial action has occurred since the landfill was closed in 1972. According to DEQ, the soil cap will generally prevent human direct contact with landfill debris, as will the inaccessibility of the site to persons other than local residents. DEQ agrees with EPA’s contractor that the landfill has not caused contamination of concern in the unnamed creek that flows from the landfill, or in Kelley Creek. [6] The orange coloration of leachate and sediments originating from the landfill results from iron-related compounds and associated biological activity [DEQ, J&W Landfill – Questions and Answers, 9/93)]. Because local residents rely on domestic wells for their drinking water supply, DEQ recommends periodic sampling of domestic wells located downgradient of the landfill for metals and VOCs. [6] DEQ also has indicated concerns about drilling wells into the former landfill, since they could serve as conduits for contaminants to reach the aquifer below [16 (DEQ, J&W Landfill – Questions and Answers, 9/93)].

Since its closure, the.landfill has been subdivided into lots for residential development and several homes have been constructed on portions of and/or in the vicinity of the former landfill [36]. In 1995, based on the estimated landfill footprint, areas of disposal were owned by six parties -- five of which lived on the lots. The landfilled areas occur primarily on the north side of a 600-foot hill. A portion of the area is covered with trees or grass lawns. Several homes have been built on the hill. [35]

105. Sunshine Valley Road

Name(s): Sunshine Valley Road [6]

Location: 26099 SE Sunshine Valley Rd., Gresham [6]
(Clackamas Co.) 1S,3E,35, TL 1S/3E-35 01001, Latitude: 45 deg. 26' 32.4", Longitude: 122 deg. 23' 43.1" [6]

Size:

Period of Operation: Began:
Closed: 1960s? [6]

Ownership: Private?
(during filling)

Operator:

Types of Waste: See below

Quantity:

Permits:

Listed: Oregon DEQ: Environmental Cleanup Site Information (#1857) [6]

Comments: This unpermitted unsupervised site was located on rural residential property. The full aerial extent of the former dump is not known. It may have extended beneath Sunshine Valley Road and onto the property to the south (an extension of the shallow ravine). The landfill is assumed to have been unlined. Leachate is being released as uncontrolled seeps to an unnamed tributary to Badger Creek (about 0.5 miles away). [6]

There has only been one sampling event at the former site. In April 1996 DEQ tested the surface water leachate. DEQ tested for volatile and semi-volatile organics and toxic metals. No hazardous substances were detected, although excessive iron was found (9,500 ug/l, compared to the chronic toxicity level for fresh water organisms of 1,000 ug/l). [6]

A community drinking water well is located 2000 feet downstream (along the same shallow ravine) from the site (Edgemont Water Company, 316 feet deep, 250 users). The nearest domestic well is located about 50 yards away and is 160 feet deep, presumably up- or cross-gradient from the site. There are approximately 13 domestic wells within 1 mile of the site. A backup municipal supply well for the City of Boring (Walt Marx Gardens well) is located about 0.7 miles downgradient to the east of the site. Two surface water impoundments (farm ponds) are also located about 0.1 miles downstream from the confluence of the unnamed tributary (the leachate seeps into) and Badger Creek. DEQ reports that the ponds appear to be used for recreation and possible livestock watering. Badger Creek discharges to Johnson Creek, which has Coho salmon and Steelhead habitat. [6]

The Edgemont Water Company well log shows that there is cemented gravel at 35-64 feet below ground surface and hard lava rock at 64 to 70 feet below ground surface, and DEQ suggests that this may limit downward migration of contaminants [6].

Because the dump was located in an area with heavy agricultural use and near a former wood treatment facility, DEQ suggests potential contaminants (not yet tested for) might include pesticides, phenolic wood treatment compounds (PCP and orthophenylphenol), and burner ash from the burning of wood treatment wastes (dioxins, furans). Groundwater at the site has not been analyzed. Further investigation may also indentify additional users of groundwater for domestic purposes in the site vicinity.[6]

106. Sandy

Name(s):	Sandy [4, 21a, 21b]
Location:	east of Sandy, turn north on Fir Rd. from Hwy 26 [21b]
(Clackamas Co.)	½ mile east of Sandy off Hwy 26, maybe on Canyonville at the end of the road? [Recycling/Garbage info, Clackamas County]
	2S,5E,20, TL 800 [42 (5/28/71 Agreement between Clackamas County and Lavelle Construction Co.)
Size:	2 Acres in use (5/71) [42 (CH2M Hill for Clackamas Co., "An Engineering Report on the Clackamas County Solid Waste Landfill Study", 5/71)]
	5 acres in use (3/71) [21a]
Period of Operation:	Began: 1930 [4], 1954 [21b]
	Closed 1971 [4, 21b]
Ownership:	Public [21a, 21b, 53]
(during filling)	Clackamas County [21a, 21b]
Operator:	Public [21a, 21b,53]
	Clackamas County [21a, 21b]
	Lavelle Construction Co. (7/71 only) [42 (5/28/71 Agreement between Clackamas County and Lavelle Construction with handwritten notes)]
Types of Waste:	Rubbish, demolition construction wastes, tires, street sweepings, auto bodies, brush & stumps, Appliances [21b]
	Household waste [42 (CH2M Hill, see above)]
Quantity:	805 tons/year, 10,700 CY/year (1971) [21b]
Permits:	
Listed:	Not at this time.

Comments: This 1971 CRAG engineering department study reported that the site had been in use for 17 years [21a]. If so, then use of the site would have begun in 1954 with an unknown closure date. On the other hand, the 1974 Cormet study indicates that the site began operating in 1930 and closed in 1971 [4].

Although the County owned 21 acres, only 2 or 5 were in use in 1971. In February 1971 the County considered buying more land [42, 2/16/71 memo from Clackamas County Solid Waste Commission to Public Works Dept.)]. Although it's unclear whether or not the additional property was purchased, the landfill closure occurred soon afterwards.

The dump served Sandy and Government Camp on Wednesdays and Thursdays when the Brightwood dump was closed. The site was an open burning dump. It was on a hillside, situated in very heavy timber, and a fire hazard.[21a] The 5/71 CH2M Hill report described it as having an "unsightly appearance," and recommended closing it as soon as a sanitary landfill could be opened to replace it [42, see above].

107. Old Rossman

Name(s):	Old Rossman [6] Oregon City Landfill, Jack Parker Property, Klineline Sand & Gravel, British American Mortgage Corp., Dakota Minerals Property, KAF Inc., Portland Traction Railroad, Western Pacific Construction Materials, M&D Trucking (03-96-0158) [6]
Location: (Clackamas Co.)	Agness St., Oregon City 97045 1S,2E,29, TL: 1504, 1506, 1507, 1601, Latitude: 45 deg. 22' 25", Longitude: 122 deg. 35' 25" [6]
Size:	
Period of Operation:	Began: 1960 [6] Closed 1969 [6]
Ownership: (during filling)	Private [6] Jack Parker? [6]
Operator:	Private [6] Art Rossman [6]
Types of Waste:	Municipal solid waste [6]
Quantity:	
Permits:	
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#3126) [6]

Comments: The land where the unlined landfill operated had previously been in agricultural use. The site was originally a marshy floodplain near the confluence of the Willamette and Clackamas Rivers. Sand and gravel mining began in the early 1950s. The excavations created Clackamette Lake (now Clackamette Cove). [6]

The landfill operated from 1960 to 1969. In 1970, a sand and gravel mining company constructed an asphalt plant, a ready-mix cement plant, and a stationary rock crusher near or on top of the landfill. [6] At some time, a warehouse was built on stilts on the old site [20].

Numerous environmental investigations have occurred near this site to assess the nature and extent of possible hazardous substances present in the solid waste, soil, and groundwater. Groundwater sampling in 1987, 1989, and 1991 showed high levels of iron, manganese, and benzene. Iron and manganese levels exceeded secondary maximum contamination levels (MCLs), and benzene exceeded primary MCLs. [6]

Investigations identified hazardous constituents including metals, volatiles, semivolatiles, pesticides, and PCBs at low levels in groundwater sporadically throughout the footprint of the landfill. Levels of contaminants diminish in the downgradient direction (toward Clackamette Cove), and were not detected, or were at very low levels,in water samples from wells located outside the landfill footprint. The downgradient levels are essentially indistinguishable from concentration in upgradient wells with respect to typical landfill contaminants (i.e., iron and manganese), and are typical of shallow groundwater in the area. Furthermore, the entire site vicinity has been impacted by contaminants associated with the newer, larger Rossman Landfill located east of the site (see Site #108 in this document). In 2001 DEQ reported that monitoring at the newer Rossman landfill, under post-closure monitoring, had not identified any unacceptable impacts to Clackamette Cove. [6]

The amount of contamination caused by the landfill and other on-site activities is unclear. High levels of iron and manganese are often found in marshy areas. Because any groundwater contamination may impact Clackamette Lake and other areas open to the public, DEQ recommended further investigation to determine the potential need for groundwater remediation. [6]

108. Rossman

Name(s):	Rossman [4], Rossman's [6, 21b]
Location: (Clackamas Co.)	1101 17th St., Oregon City 97045 [4, 6] 1S,2E,29, TL: 902, Latitude: 45 deg. 21' 45", Longitude: 122 deg. 35' 39" [4, 6]
Size:	40 Acres [10d, 21b], 30 Acres [4] 8 Acres used in 1971 [42 (CH2M Hill for Clackamas Co., "An Engineering Report on the Clackamas County Solid Waste Landfill Study", 5/71)]
Period of Operation:	Began: 1969 [6] Closed 1983 [6]
Ownership: (during filling)	Private [5] Jack Parker [5]
Operator:	Private [5] Jack Parker [48 (3/24/80 DEQ staff report, "Rossman's Landfill Status Report on Environmental Concerns")] Rossman's Landfill Inc. [5]
Types of Waste:	Garbage, rubbish, demolition construction wastes, dead animals, tires, street sweepings, brush & stumps [21b]
Quantity:	130,000 tons/year (1971) to 300,000 (1982), 3 million tons total [40]
Permits:	Permit #115 (DEQ) [4] Franchising agreement with County pursuant to Solid Waste Collection and Disposal Ordinance [4]
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#674) [6]

Comments: The site was a flat, open area which was surrounded by dikes for exclusion of flood waters from Abernethy Creek. The dikes were not always high enough to prevent winter flooding, resulting in a cessation of operations. Land use surrounding the Rossman site consists of residential, light industrial, commercial, recreational, and freeway. [5]

During the 1970s, Rossman's Landfill received approximately 60% of the municipal waste generated in the Portland area. Although not permitted to receive hazardous waste, it was permitted to receive some industrial waste. Groundwater contamination from leachate was first noted in 1976. Odor problems began in early 1978. Groundwater studies in 1983 found that the City of Gladstone's backup water supply to be contaminated with iron and manganese above secondary MCLs. (Gladstone's backup water supply was drawn from a shallow aquifer downgradient from the landfill; the primary water supply is drawn from an unaffected deep aquifer). Additional contaminants have been identified in the shallow aquifer directly beneath the landfill, but these contaminants have not migrated off-site. [6]

Gladstone shut down its backup water collector in 1986. A closure permit was issued for the landfill in July 1990. As part of the closure activities, a remedial investigation/feasibility study (RI/FS) has been performed, the landfill has been regraded, and leachate is being pumped and treated. DEQ suggests that other sources may be responsible for the observed contamination of the shallow aquifer, including Old Rossman's Landfill (see Site #107 in this document). [6]

Twenty-three monitoring wells have been installed in the area. Groundwater is monitored semi-annually, and surface water in Clackamette Lake and Abernathy Creek are also periodically monitored. [6]. The site currently has a large retail store (Home Depot) built on top of it.

109. Bloom

Name(s): Bloom [4]
Oregon City Dump [21a]
Oregon City [21b]

Location: (Clackamas Co.) 332 Morton Rd. [Oregon City Garbage Co.]

Size: 5 acres [Oregon City Garbage Co. personnel], 15 Acres [21b]
5 acres used and 5 acres remaining [42 (CH2M Hill for Clackamas Co., "An Engineering Report on the Clackamas Co. Solid Waste Landfill study", 5/71)]

Period of Operation: Began: 1940 [4], 1916 [21a]
Closed 1972 [4]

Ownership: (during filling) Private [21b]
Richard Bloom [Oregon City Garbage Co.]

Operator: Private [21b]
Richard Bloom [Oregon City Garbage Co.]

Types of Waste: Rubbish, demolition construction wastes, street sweepings, sewage sludge, brush & stumps, appliances [21b], Mixed waste [4]

Quantity: 3,760 tons/year, 50,000 CY/year (1971) [21b]

Permits:

Listed: Not at this time.

Comments: Information collected on this site is somewhat confusing. All information makes some reference to Bloom, although the site is sometimes called "Oregon City." According to Oregon City Garbage Co., the Bloom site had been a burning dump. Although the site is certainly old enough that this is likely, the 1971 CRAG report describes it as a "landfill" [21b]. Also, the 1971 CRAG report describes the site as being within a residential area [21b], yet current aerial photos of 332 Morton Rd. show it to be surrounded by trees and off to the edge and outside the residential area. The 1971 CH2M Hill engineering report describes it as a "gully site in residential area within city limits [42 (CH2M Hill, see above)].

The 1971 CRAG engineering department report refers to the site as having operated for 55 years (making the start date 1916) [21a]. The COR-MET study indicates waste disposal at the site began in 1940 [4].

Oregon City Garbage Co. indicated the landfilled site was 5 acres, with approximately 2 acres remaining after part of the site became a right-of-way and the freeway was constructed [Oregon City Garbage Co.]. Although the CRAG report refers to the site as being 15 acres [4], it does not provide the number of remaining acres (in 1971). In other words, it possibly does not reflect the actual acreage which was filled. The 1971 CH2M Hill engineering report says that the area used was 5 acres, with 5 acres remaining [42, (CH2M Hill, see above)]

The location description in the 1971 CRAG study was "12th St. off Division, just before hospital, Oregon City" [21b] or "on 12th St. off Division just north of Willamette Falls Hospital within the City limits of Oregon City" [21b]. Perhaps part of 12th Street was renamed Morton? Perhaps someone meant south when they said north?

110. Spady

Name(s): Oak Grove (Spady) [Metro name for site]
Oak Grove [4]
Spady's Hog Ranch [42 (11/16/71 letter from Oak Grove Disposal to Neal Thompson of Clackamas County)]

Location: 17855 S. Alder Rd.?, Oregon City [2b]
(Clackamas Co.)

Size:

Period of Operation: Began: 1953 [4]
Closed 1971 [4]

Ownership: Private [2b]
(during filling) Spady family

Operator: Private [2b]
Spady family

Types of Waste: Household waste [Metro staff involved in Open Spaces property acquisition negotiations]
Mixed waste [4]

Quantity:

Permits:

Listed: Not at this time.

Comments: This site was used intermittently as a back-up site when the Rossman Landfill was flooded out during some winters [4]. It's not clear whether it was used at other times or not. The Spady family owned Oak Grove Disposal Co.

111. Old Canby

Name(s): Old Canby [6]
Rinkes property [6]

Location: 3rd Ave., Canby, Oregon City 97013 [6]
(Clackamas Co.) 4S,1E,5, TL: 405, Latitude: 45 deg. 15' 29", Longitude: 122 deg. 42' 31" [6]

Size: 13.91 Acres?

Period of Operation: Began: 1920s [6]
Closed: 1960s [6]

Ownership: Unknown
(during filling)

Operator: Unknown

Types of Waste: municipal waste, transformers, batteries

Quantity:

Permits:

Listed: Oregon DEQ: Environmental Cleanup Site Information (#1041) [6]

Comments: According to DEQ it is not clear how much of the 13.91 acre property was filled with waste or the nature of the disposed material. The property once supported a gravel pit and the municipal landfill for the City of Canby., both of which were closed or abandoned by the 1960s. The landfill was unlined and uncapped, and soils in the area are primarily sand and gravel, making the possibility of groundwater contamination from leachate high. However, according to DEQ there is conflicting information as to whether there are any hazardous materials in the landfill. [6]

Excavations in the landfill in 1989 encountered only non-hazardous municipal waste. Soils and groundwater were found to be lightly contaminated with petroleum hydrocarbons. In 1992, an owner of an adjacent property contacted DEQ claiming that the landfill had hundreds of transformers and batteries. [6]

The site is located in a mixed-use area, with single family residences to the east, manufacturing facilities to the north and south, and retail businesses to the south. The City of Canby obtains its municipal water supply from intakes on the Molalla River downstream of the site. However, according to the 1989 site assessment, groundwater on the property flows to the south, away from the intakes. [6]

DEQ recommended further groundwater investigation and more complete characterization for the potential of groundwater contamination. In 1999, the City of Canby proposed a regional or state park for the site. [6]

112. Millar Sand & Gravel

Name(s): Millar Sand & Gravel [4, 21a, 21b]

Location: (Clackamas Co.)
½ mile south of Canby on 99E [21b]
at Barlow, OR [42 (5/3/71 Clackamas Co. memo from Dept. of Public Works to Solid Waste Commission)]
On the banks of the Molalla River southwest of Canby [42 (2/22/71 Clackamas County memo from County Planning Dept. to Neal Thompson of the Solid Waste Division)]
South of Molalla River and east of Hwy 99E near Canby [42 (5/5/71 letter from DEQ to Clackamas Co. Dept. of Public Works)]
4S,1E,5, TL 400 [42 (5/3/71, see above)]

Size: 2 acres (of 30 acres) used in 1971 [21b]

Period of Operation:
Began: 1953 [4]
Closed: 1972 [4]

Ownership: (during filling)
Private
Millar Sand & Gravel Co. (and/or Highway Concrete Products Co., Inc.) [42 (5/3/71, see above)]

Operator: Private

Types of Waste:
Rubbish, demolition construction wastes, tires, street sweepings, brush and stumps, appliances [21b]
Mixed waste [4]
Mixed degradable [42 (CH2M Hill for Clackamas Co., "An Engineering Report on the Clackamas County Solid Waste Landfill Study", 5/71)]
Demolition and construction wastes, discarded home and industrial appliances, precompacted vehicle bodies, auto parts, rubbish, and tires [42 (5/3/71, see above)]

Quantity:

Permits: Franchised by Clackamas Co. [42 (4/17/72, appears to be minutes from a meeting between Clackamas County and DEQ)]

Listed: Not at this time.

Comments: According to CRAG the total land owned was 100 acres, with 30 acres used for landfilling [21b]. In 1971, however, only 2 acres had been filled [21b, 42 (CH2M Hill, 5/71, see above)]. The site had a rock mining and crushing operation, which was still being mined. The property was adjacent to the Molalla River, with a portion of the land within the flood plain [21b].

In 1971 DEQ noted that Millar Sand & Gravel had conducted a limited landfill operation for approximately 18 years [42 (5/5/71, see above)], suggesting a 1953 start date and agreeing with the COR-MET report [4]. The 5/5/71 DEQ letter also says, "Only non-putrescible demolition and commercial wastes have been accepted." This seems to be in agreement with some other sources (see above). However, the 1971 CH2M Hill report describes the material accepted as "mixed degradable" [42 (5/71, see above)] and the 1974 COR-MET study indicates the site accepted mixed waste [4].

In 1970 the site was cited for open burning [42 (12/10/70 letter from Columbia-Willamette Air Pollution Authority to Millar Sand & Gravel)]. The site was closed in 1972 by DEQ, following an incident of tires in the disposal area being washed downstream during high waters [42 (6/14/72 letter from DEQ to George Ward & Assoc.)]

113. Crawford Dump

Name(s): Crawford Dump [42 (11/24/70 Clackamas Co. file notes of public complaint)]

Location: (Clackamas Co.) 16006 S. Springwater Rd., Oregon City, [42 (11/12/70 letter from Clackamas Co. Planning Department to Raymond Crawford)]
Logan area, 4 miles from the Carver Bridge near Big Skye Ranch [[42 (11/17/70 Clackamas Co. file notes of public complaint)]

Size:

Period of Operation: Began: 1970 or before? [42]
Closed: 1970? [42]

Ownership: (during filling) Private [42]

Operator: Private [42]

Types of Waste: Fill materials such as sheetrock [42 (11/12/70 letter, see above)]
Wet garbage, household garbage, car seats, tires, paper, cans [42 (11/12/70 letter, see above)]

Quantity:

Permits:

Listed:

Comments: Not much is known about this site. A December 1, 1970 letter from Clackamas County states that: existing garbage and debris at the site should be disposed and covered, no further fill of any non-earthen materials shall occur until the site is cleared in writing, and that efforts should be made to control any further indiscriminate dumping [42 (12/1/70, letter from Clackamas Co. to Raymond Crawford)].

114. Troh (near Happy Valley)

Name(s): Troh [4]
Troh's Nest [42 (7/27/70 Clackamas County interoffice correspondence from County Planning Dept. to Neal Thompson of County Health Dept.)]
Obrist & Chaney [42 (8/12/71 Clackamas County office notes)]

Location: (Clackamas Co.) 9700 SE 162nd [42 (8/10/71 "Proposed Solid Waste Landfill site")]
near Happy Valley [4]
east side of 1S,2E,25D,TL00401 [42 (7/1/71 "Proposed Sold Waste Landfill site")]
1S,3E,30C, TL01800 [42 (8/10/71, "Proposed Solid Waste Landfill site")]

Size: 2 Acres [42 (CH2M Hill for Clackamas County, "An Engineering Report on the Clackamas County Solid Waste Landfill Study", 5/71)]

Period of Operation: Began: 1966 {42 (7/1/71, "Proposed Solid Waste Landfill site")], 1968 [4]
Closed: 1971 [4]

Ownership: (during filling) Private
1966-?: Hank Troh [42 (7/1/71 "Proposed Solid Waste Landfill site")
L.A. Slaback [42 (7/20/70 and 7/24/70 handwritten office notes)]
Pat Chaney [42 (7/1/71 "Proposed Solid Waste Landfill site")]
Automation Enterprises {42 (9/3/71 hand-written office notes)

Operator: Private
L.A. Slaback [42 (2/19/71 letter from Clackamas County to Mr. And Mrs. L.A. Slaback)]
Loren Obrist [42 (7/20/70 and 7/24/70 office notes)]

Types of Waste: Demolition [4]

Quantity:

Permits:

Listed: Not at this time.

Comments: Not much is known about this site. It was a hillside location in a sparsely settled rural area adjacent to a small private hilltop airfield. There were 2 acres in use in 1971 and 2 more acres available at that time for future use, according to the 5/71 CH2M Hill study [42 (CH2M Hill, see above)].

Between 7/1/71 and 8/10/71 there were 3 applications for a solid waste land disposal generally at this site. The first two were for 4.92 acres, and the third was for 20 acres. (They called out different nearby tax lots.) It is assumed that the previous landfilling had occurred in the smaller area, since that is closer to the size of the disposal area called out by CH2M Hill [42 (CH2M Hill, see above)]. (The GIS mapping for this project was made to the smaller tax lot at 1S,2E,25D,TL00401.) The 1974 COR-MET study says the site was closed in 1971 [4], so it seems unlikely that the site was ever approved to continue operation.

115. Tire Disposal

Name(s): Tire Disposal [21b]

Location: (Clackamas Co.) 1 mile east of Liberal, on Wiles Rd. [21b]
213 to Liberal Store, left on Wiles Rd. approximately 1 mile [21a]

Size: 2 acres used (of 55 acres) in 1971 [21b]

Period of Operation: Began: 1971 [21a, 21b] [42 (2/22/71 memo from Clackamas County Planning Dept. to Neal Thompson of the Solid Waste Division)]
Closed: after 1971 [21a, 21b]

Ownership: (during filling) Private [21b]

Operator: Private [21b]

Types of Waste: Tires [21a, 21b]

Quantity:

Permits:

Listed: Not at this time.

Comments: A portion of this site appears to be on the Molalla River flood plain [21a]. The site accepted tires by contract, and was not open to public use [21b]. It was a level site in a rural agriculatural area behind a private ranch home [42 (CH2M Hill for Clackamas County, "An Engineering Report on the Clackamas County Solid Waste Landfill Study, 5/71)] In February of 1971 a memo indicated Mr. George Ward had just submitted limited site disposal plans [42, 2/22/71 memo, see above)], so it probably started operating in 1971 right before the permitting requirements went into place [20]. It was never permitted [20]. It was in the gravel of an active floodplain of the river, and was a "fiasco" [20].

116. Althauser (near Boring)

Name(s): Althauser (near Boring) [Metro naming convention]
Glen L. Althauser [42 (Clackamas County Disposal Site Permit Application, 9/21/70)]
Yew Wood Enterprises [42 (Clackamas County Disposal Site Permit Application, 9/21/70)]

Location: (Clackamas Co.) north side of Yew Drive, at its terminus, Barton area [42 (Clackamas County Planning Commission, Notice of Public Hearing, 11/23/70)]
2S, 3E, 14, SW 1/4 of NW 1/4 [42(9/21/70, see above)]
Tax Lots 300, 1100 [42 (10/19/70, Clackamas County inter office correspondence)]

Size:

Period of Operation: Began: before 1970 [42 (11/23/70, see above)]
Closed: after 1970? [42 (11/23/70), see above)]

Ownership: (during filling) Private [42 (9/21/70 and 11/23/70, see above)]
Glenn Althauser/Yew Wood Enterprises [42 (9/21/70 and 11/23/70, see above)]

Operator: Private [42 (9/21/70 and 11/23/70, see above)]
Glenn Althauser/Yew Wood Enterprises [42 (9/21/70 and 11/23/70, see above)]

Types of Waste: Tires [42 (10/19/70, see above)]

Quantity:

Permits: No record of any found

Listed:

Comments: A Clackamas County letter reports approximately 200,000 tires were dumped on the site at the top of a deep wooded gully. The tires were not disposed of in any way, and there was no approved Conditional Use permit from the County. [42 (10/19/70, see above)] A certified letter from the County stated that the tires must be moved down into the lower portion of the canyon and covered with dirt [42 (10/13/70 letter from Clackamas County Solid Waste Commission to Glenn Althauser)]. A Notice of Public hearing was set 11/23/70 following Althauser's request for a conditional use permit "to continue present business of tire disposal" [42 (11/23/70, see above)]. A County document included a recommendation that the disposal of the illegally dumped tires would provide the applicant the opportunity of proving his disposal site and methods by actually performing in the very manner requested by the permit he was seeking. The document went on to say that if further (illegal) hauling occurred during the clean-up period, the permit should be denied. [42 (undated document, believed to be enclosure with 10/19/70 letter, see above)] It is unknown whether the conditional permit was granted or not, but this information seems to suggest that at least the tires already dumped were probably buried on site.

117. Fredrickson & Sayre

Name(s): Fredrickson & Sayre [Metro naming convention]

Location: (Clackamas Co.) Redland area [42 (9/9/70 letter from Clackamas County Board of Commissioners to County Sanitarian John Borden)]
2S, 2E, 25 [42 (8/17/70 neighborhood petition to Clackamas County)]

Size:

Period of Operation: Began: 1966? [42 (hand-written note, no date)]
Closed: 1970? [42 (hand-written note, no date)]

Ownership: (during filling) Private [42 (9/9/70, see above)]
Sayre [42 (9/9/70, see above)]

Operator: Private [42 (8/17/70, see above)]
Phillip Frederickson [42 (8/17/70, see above)]

Types of Waste: Tires [42 (8/17/70 and 9/9/70, see above)]

Quantity:

Permits: No record of any found

Listed:

Comments: Approximately 6000 tires were being stored on Sayre's property. It was called storage until such time as the tires could be shredded by a machine yet to be obtained or developed [42 (8/17/70, see above). The 9/9/70 Clackamas County letter is requesting that Fredrickson and Sayre apply for a sanitary landfill site, so they can compress the tires, bundle them, and subsequently bury them under a quantity of earth [42 (9/9/70, see above). It is not known if they applied for the permit or if the tires were actually buried at this site or not.

201. Forest Grove Landfill (near Forest Grove)

Name(s): Forest Grove Disposal Service (near Forest Grove) [Metro name for site]
Forest Grove Disposal Service [7]

Location: near Forest Grove [7]
(Washington Co.)

Size:

Period of Operation: Began: before 1988 [7]
Closed: some time between 1971 and 1988 [7]

Ownership: Unknown
(during filling)

Operator: Unknown

Types of Waste:

Quantity:

Permits:

Listed: Not at this time.

Comments: It is not known where this landfill was. A phone call to Waste Management staffperson Steve Wolf, who works at the Forest Grove Transfer station, resulted in his asking what other folks working there remembered. There had been some question about whether the landfill had been under the transfer station, but they said it had not. (Before the transfer station, there had been an old saw mill and gas station located there. Also Chuck Kemper, who had been involved in helping develop the transfer station, had no knowledge of waste having been found there [19]) The Waste Management staff believed that there may have even been two old landfills, and at least one old landfill was on or near Porter Rd. [54]

A phone call to the Forest Grove City Manager's office did not result in confirmation, as the staffperson there (who also asked around the office) had no memory of any landfills in the area, and commented that there was no obvious evidence of one along Porter Rd. [55]

202. Shadybrook

Name(s):	Shadybrook [4, 6, 21a, 21b, 22] Washington County Landfill [6]
Location: (Washington Co.)	on hill along Truitt Rd. 9 miles NE of Hillsboro, 3.7 miles north of North Plains [6, Valley Times (10/30/69)] 2N,2W,29, TL: 500, Latitude: 45 deg. 38' 3", Longitude: 122 deg. 57' 31" [6]
Size:	20 Acres [21a]
Period of Operation:	Began: 1953 [4,6], 1955 [22, 6], 1957 [21a], 1962 [16 (Valley Times, 10/30/69)] Closed: 1971 [4]
Ownership: (during filling)	Public [6, 22, 53] Washington County [6, 22]
Operator:	Public [21b, 22, 53] Washington County [22]
Types of Waste:	Garbage, rubbish, demolition construction wastes, dead animals, street sweepings [21b]
Quantity:	12,000 tons/year, 500 CY/year (1971) [21b]
Permits:	
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#795) [6] Proposal for Confirmed Release List and Inventory recommended (9/24/03)

Comments: This landfill started operating in the 1950s or early 1960s, although it's not clear which year. Although CRAG described it as a "landfill" in 1971 [21b], they also mentioned that it had previously been an old burn dump [21a]. CRAG also mentions that the county owned 60 acres at that location, but could only use 20 of them [21a].

The landfill was unlined, and the landfill surface undulates dramatically. The site has had several fires due to spontaneous combustion, the top layers are collapsing, and there have been odor problems. There have been leachate problems dating back to when the landfill was operating. [6] In 1968, Washington County apparently trucked water to downstream users to replace water previously obtained from the polluted stream [16 (Valley Times, 10/30/69)].

A Christmas tree farm borders the site along its western boundary. The areas to the immediate north, east, and south are forested. Individual residences are located nearby to the northwest and west, and more distantly to the south and southwest. An undeveloped county park is located to the northeast. The Washington County Sheriff's office used the northeast portion of the site as a target shooting range from 1971 to 1988. (Spent lead bullets are present in surface and shallow subsurface soils in this part of the site and may contribute to groundwater contamination). [6] Throughout the 1970s and 1980s following closure, DEQ received numerous complaints from the site's neighbors about fires or discolored leachate seepage.

In 1996 DEQ's Environmental Cleanup Site Information (ECSI) database reported "orange" leachate discharges to Jesus Creek through active seeps in a ravine near the landfill, and from the landfill itself. Although analysis has found that local groundwater and surface water (Jesus Creek) are still contaminated with leachate from the landfill, any potential hazardous constituents have not been characterized. Jesus Creek and area groundwater are used for domestic purposes, including irrigation and cattle watering. [6]

203. Althouse

Name(s): Althouse [16 (DEQ Letter of Authorization, #107, 6/12/78)]

Location: 1S,1W,8, TL: 11-14 of Beaver Acres [16 (DEQ Letter of Authorization, 6/12/78)]
(Washington Co.)

Size:

Period of Operation: Began: 1978 [16 (DEQ, 6/12/78, see above)]
Closed: 1978 [16 (DEQ, 6/12/78, see above)]

Ownership: Private [16 (DEQ, 6/12/78, see above)]
(during filling) Herbert Althouse? [16 (DEQ, 6/12/78, see above)]

Operator: Private [16 (DEQ, 6/12/78, see above)]
Don Leahy [16 (DEQ, 6/12/78, see above)]

Types of Waste: Land clearing debris (primarily old tree stumps) [16 (DEQ, 6/12/78, see above)]

Quantity:

Permits: DEQ Letter of Authorization :No.107

Listed: Not at this time.

Comments: The property was zoned commercially.

204. Cobb's Quarry

Name(s): Cobb's Quarry [16 (DEQ Fact Sheet, 2/18/01)]
Sexton Mountain Landfill [6]
Beacon Hill Landfill [6]

Location: (Washington Co.) west of SW Murray Blvd., north of SW Beard Rd., south of SW Sexton Mountain Drive (Beaverton) [16 (GeoDesign, Inc., Environmental Investigations Summary Report, former Cobb's Quarry site, March 2001)]
1S,1W,29, TL: 200, 309, Latitude: 45 deg. 27' 20.6", Longitude: 122 deg. 49' 33.4" [6]

Size: 38 acres [6]

Period of Operation: Began: 1970s [16 (DEQ, Fact Sheet: Investigation of Environmental Contamination at Cobb's Quarry Landfill in Beaverton, 2/8/01)]
Closed: early 1990s[16 (DEQ, Fact Sheet: Investigation of Environmental Contamination at Cobb's Quarry Landfill in Beaverton, 2/8/01)]

Ownership: (during filling) Private [2a]

Operator: Private [16 (GeoDesign, Inc, Environmental Investigations Summary Report, former Cobb's Quarry]

Types of Waste: Used household appliances, lead-acid storage batteries, "tons" of yard debris, waste oil, garbage (from reports by local residents)). [16 (DEQ Site Assessment Program – Strategy Recommendation, 1/12/01)]

Quantity:

Permits:

Listed: Oregon DEQ: Environmental Cleanup Site Information (#2766- Haggen & Sexton Crest) [6]
Added to Confirmed Release List and Inventory (11/02) [6]
Oregon DEQ, Environmental Cleanup Site Information (#3330-Sexton Place) [6]
Oregon DEQ, Environmental Cleanup Site Information (#3498-Haggen) [6]
Added to Confirmed Release List and Inventory (11/02) [6]

Comments: The site is the location of a former basalt rock quarry that operated between about 1947 and 1984. By about 1990 it had been backfilled with an estimated 400,000 cubic yards of clean fill, apparent construction debris, and other materials (see list above). Aerial photos suggest that excavation activities extended below the local water table in some portions of the quarry. Rock was excavated to depths of up to 110 feet below ground surface (bgs). [16 (DEQ Site Assessment Program – Strategy Recommendation, 1/12/01)]

Although a solid waste disposal facility permit is not required for disposal of clean fill, construction and demolition wastes, biodegradable materials, and hazardous substances (such as those reportedly found at this site) are not considered "clean fill" [16 (DEQ Site Assessment Program – Strategy Recommendation, 1/12/01)]. Although this landfill was never permitted by the DEQ to accept solid waste, it is apparent from the methane gas testing results that the landfill operator illegally accepted substantial amounts of biodegradable solid waste. [16 (DEQ 12/14/00 letter to John Osterberg, Development Services Division, City of Beaverton)]

The site is generally surrounded by residences. Most homes are located along the southern half of the site's western boundary, within 140-165 feet of the northern half of the site's western boundary, and along the western half of the site's northern boundary were constructed in 1995 to 1997. Most

residences and multi-residential housing south of SW Beard Rd. and east of SW Murray Blvd. are only a few years older. [16 (DEQ 12/14/00 letter to John Osterberg, Development Services Division, City of Beaverton)]

In the spring of 2000 residents to the west and northwest of the site began expressing concerns that planned developments at the site might adversely affect their properties by exacerbating existing site contamination. DEQ found dangerous methane concentrations (levels above the lower explosive limit) in several subsurface probes located on and adjacent to the landfill, including areas earmarked for residential development. [16 (DEQ 12/14/00 letter to John Osterberg, Development Services Division, City of Beaverton)]

DEQ is recommending further investigation to determine the nature and extent of environmental contamination at the Sexton Crest property (located west of SW Murray Boulevard and south of SW Sexton Mountain Dr.). Methane gas migration through soil/basalt rock or future utility corridors is the main pathway of concern at the site. If not properly controlled or vented during site development, methane could accumulate in a confined space or migrate off-site through man-made corridors; and therefore, represents an explosion risk to site construction workers and future occupational workers or residents. Other pathways of exposure have been identified, but are not a concern due to low or non-detectable concentrations of hazardous substances. These pathways include direct contact or incidental ingestion of soil, inhalation of vapors, and contact with or consumption of groundwater. Surface water seeps from perched groundwater have been observed on and adjacent to the site. A wetland is located at the downgradient (southern) end of the former landfill. Domestic drinking water wells are in the vicinity, including City of Beaverton supplemental municipal supply wells located 0.6 miles from the site. [6]

The site is currently divided up into 3 parcels: Sexton Place, Haggen, and Sexton Crest. Sexton Place consists of approximately 6.7 acres located directly northwest of the intersection between SW Beard Rd. and SW Murray Boulevard. Haggen consists of approximately 10.7 acres adjacent and north of the Sexton Place site. Sexton Crest is approximately 20 acres located in the northern half of the former quarry, directly north of the Haggen site.

A methane temporary rule was filed 2/21/02, giving DEQ authority to regulate methane at Cobb's Quarry [6]. Although site contaminants could represent a significant threat to potential future site residents, DEQ reported that potential threats to local drinking water quality or direct residential contact with landfill leachate may be more significant [16 (DEQ Site Assessment Program – Strategy Recommendation, 1/12/01)].

205. Frank

Name(s):	Frank [4] Frank's [6, 7, 21b]
Location: (Washington Co.)	4 miles southwest of Tigard on SW Beef Bend Rd., Sherwood [4, 6] 2S,1W,18, Latitude: 45 deg. 24' 9", Longitude: 122 deg. 51' 6" [6]
Size:	5 acres [6, 16 (Ecology & Environment, Site Inspection Report for Franks Sanitary Landfill, 11/88)], 5 acres used in 1971 [21b], 15 acres used in 1974 [4]
Period of Operation:	Began: 1951 [4], 1955 (open burning) [6] Closed: 1977
Ownership: (during filling)	Private [4, 53] John Lasich (until 1967) [16 (Washington County correspondence, 4/19/77)] Herb Frank (1967 – 1977) [4]
Operator:	Private [6, 53] Ed Roshak [4] ? John Lasich (until 1967) [16 (Washington County correspondence, 4/19/77)] Herb Frank (1967 – 1977) [4], (1962-1977) [5]
Types of Waste:	Garbage, rubbish, demolition construction wastes, street sweepings, auto bodies, brush & stumps, appliances [6]
Quantity:	2,520 tons/year (1971) [21b], 27,000 tons/year (1974) [4] 16,600 CY/year (1971) [21b], 50,000 CY/year [6]
Permits:	Permit #117 (DEQ) [4] Franchising agreement with county pursuant to Solid Waste Disposal Ordinance No.83 [4]
Listed:	Oregon DEQ: Environmental Cleanup Site Information (#954)

Comments: The site is situated on a hillside which slopes down to a flood plain of the Tualatin River. A number of small springs pass through the property, emptying into the Tualatin River. [5] The former landfill is adjacent to the Tualatin River, and occupies a portion of a 52 acre tract of land [21b]. In 1974, COR-MET indicates that 15 acres had already been used [4]. Other reports (both earlier and later) suggest that only 5 acres were landfilled [6, 21b, 16 (Ecology & Environment, Site Inspection Report for Franks Sanitary Landfill, 11/88)].

The site was operated as an open burning dump until the 1960s [5, 6]. During this time, the site was owned and operated by John Lasich with Herb Frank as the sole user of the site (Frank's Sanitary Service and his subcontracted drop box service [5]). In 1967, the Health Department required then-owner John Lasich to cease burning solid waste and placed restrictions on the disposal of solid waste. Shortly after this Herb Frank purchased the site from the Lasich estate and began operating the site. Each year more restrictions and conditions were placed on the landfill operation by the Washington County Department of Public Health, Oregon State Health Division and the Department of Environmental Quality. In 1972, DEQ issued a temporary permit to Herb Frank. This permit was renewed yearly until 1977 [16 (Washington County inter-department correspondence, 4/19/77)].

In 1974 concerns from a geology & soils engineering firm, regarding leachate contamination in the Tualatin River, prompted DEQ to collect samples. Their results indicated that the landfill had no significant effect on the river. [16 (DEQ, 9/18/74 letter to Rittenhouse-Zeman and Associates)]

In 1984 DEQ reviewed its files and interviewed the former landfill operator. He said he had no knowledge of any hazardous waste having been collected or disposed of at the landfill during the 1950s, 1960s, and 1970s [16 (DEQ letter to EPA, 5/25/84)]. A site inspection was performed under EPA Superfund in 1988. No evidence of hazardous substance dumping was uncovered. [6]

In 1988, Ecology & Environment described the land surrounding the site as largely undeveloped, although numerous residences border the few roads that traverse the area. The residences are situated on parcels of land which are generally several acres in size. [16 (Site Inspection Report for Frank's Sanitary Landfill, Ecology & Environment, 11/88)]

In 1974 Cormet suggested that the completed fill would be either left for open space or possibly returned to agricultural use, given a significant enough depth of final cover material [5]

206. Barstad Sand Pit

Name(s): Barstad Sand Pit [6]
Tigard Recreational Park [6]

Location: 18400 SW Pacific Hwy, Tualatin [6]
(Washington Co.) 2S,1W,21, Latitude: 45 deg. 22' 59.5", Longitude: 122 deg. 48' 32.7" [6]

Size: 30 acres [6]

Period of Operation: Began: 1978 [6]
Closed: 1985 [6]

Ownership: Private [6]
(during filling)

Operator: Private [6]
Tigard Recreational Park/Barstad Sand Co. [6]

Types of Waste: industrial wastes from Western Foundry (including slag, baghouse dust, and air scrubber sludge) [6]

Quantity:

Permits:

Listed: Oregon DEQ: Environmental Cleanup Site Information (#1815)

Comments: The site is a former borrow pit with sandy soils and a groundwater table at 1 to 5 feet below ground surface. The site accepted industrial wastes from Western Foundry for disposal. Western Foundry's wastes contained slightly radioactive zirconium casting sands, along with arsenic, cadmium, chromium, and lead. Field analysis indicated that radiation at the Sand Pit was only slightly above background levels, and presented no significant health concerns. Analysis of metals in Western Foundry's waste streams indicated that the metals were usually not leachable. However, one sampling indicated leachable lead at a concentration above RCRA standards, suggesting that wastes may have been variable in character, depending upon the type of scrap being melted by the foundry. Foundry wastes accepted at the site included baghouse dust, slag, and air scrubber sludge. [6]

In 1985, DEQ ordered the Barstad Sand Company's composting operation to stop accepting wastes from Western Foundry, and to cover existing wastes with a cap of clean soil. There is no record to indicate a follow-up inspection to assure that wastes were adequately covered. [6]

There are a significant number of domestic wells near the site, so groundwater contamination is a concern. Any surface runoff from the site would likely discharge to an unnamed stream to the south, which feeds Rock Creek, and then discharges to the Tualatin River. According to DEQ any dissolved metals or suspended metal particles reaching the Tualatin River could bioaccumulate in trout, steelhead, or coho salmon, and possibly affect anyone consuming fish from the stream. A Pollution Complaint in DEQ files indicates contaminant runoff to surface water at a neighboring site. [6]

DEQ is concerned about the shallow groundwater table and the site's porous soils, as well as whether the wastes were properly covered in 1985, and recommends an expanded preliminary assessment (including sampling) be conducted at this site to evaluate potential contaminant migration. [6]

207. Edwards Business Industry Park

Name(s): Edwards Business Industry Park [16 (DEQ, Letter of Authorization #84, 6/30/76)]

Location: 3S,1W.2 (south one-half) [16 (DEQ, Letter of Authorization #84, 6/30/76)]
(Washington Co.)

Size:

Period of Began: 1976 [16 (DEQ, Letter of Authorization #84, 6/30/76)]

Operation: Closed: 1977 [[16 (DEQ, Letter of Authorization #84, 6/30/76)]

Ownership: Private
(during filling)

Operator: Private

Types of Waste: Land clearing brush and debris (resulting from construction of Edwards Business Industrial Park) [16 (DEQ, Letter of Authorization #84, 6/30/76)]

Quantity:

Permits: DEQ Letter of Authorization No.84

Listed: Not at this time.

Comments: Not much is known about this site.

208. Bureau of Reclamation Irrigation Project (near Forest Grove)

Name(s): Bureau of Reclamation Irrigation Project (near Forest Grove) [16 (DEQ, Letter of Authorization #87, 8/24/76)]

Location: (Washington Co.) near Forest Grove [16 (DEQ, Letter of Authorization #87, 8/24/76)]

Size:

Period of Operation: Began: 1976 [16 (DEQ, Letter of Authorization #87, 8/24/76)]

Closed: 1977 [16 (DEQ, Letter of Authorization #87, 8/24/76)]

Ownership: (during filling) ?

Operator: ?
Bureau of Reclamation project, authorization to Tobey's Excavators [16 (DEQ, Letter of Authorization #87, 8/24/76)]

Types of Waste: Tree stumps and miscellaneous land clearing debris
[16 (DEQ, Letter of Authorization #87, 8/24/76)]

Quantity:

Permits: DEQ Letter of Authorization No.87

Listed: Not at this time.

Comments: This site was used to bury stumps and organic debris generated during clearing and grubbing for a pipeline right-of-way at the construction site for a Bureau of Reclamation irrigation project near Forest Grove, Oregon.

209. Durham Pit

Name(s): Durham Pit [10d] [6, refers to north portion]
Durham Reclamation Pit [16 (DEQ letter to Ken Leahy Construction, Inc. (operators), 9/21/92)]
Durham Quarry (south portion) [6]
Bridgeport Fill (another name for "Durham Quarry") [6]

Location: (Washington Co.) Partly in the cities of Tualatin and Tigard, near city of Durham, and close to I-5 and Washington/ Clackamas county line [48 (CH2M Hill Northwest for Metropolitan Service District, "Phase I: Siting Issues – Potential Sanitary Landfills, Feasibility Report for Durham Pits", 10/25/79)]

eastern half of 2S,1W [48 (CH2M Hill Northwest for Metropolitan Service District, "Phase I: Siting Issues – Potential Sanitary Landfills, Feasibility Report for Durham Pits", 10/25/79)]

Size: 27 Acres [50a, 50b]

Period of Operation: Began: 1982 or before [16 (Letter from Washington County to DEQ, 9/28/92)]
Closed Still operating in the 1990s [50b]

Ownership: (during filling) Public [16 (Letter from Washington County to DEQ, 9/28/92)]
Washington County [16 (Letter from Washington County to DEQ, 9/28/92)]

Operator: Private [16 (Letter from Washington County to DEQ, 8/20/92)]
Before 1985: ?
1985-1989: Saleen Construction [16 (Letter from Washington County to DEQ, 8/20/92)]
1989-1992?: Ken Leahy [16 (Letter from Washington County to DEQ, 8/20/92)]
Others?

Types of Waste: Inert clean fill [16, 8/20/92, see above] contaminated with construction debris [50a]

Quantity:

Permits:

Listed: Oregon DEQ: Environmental Cleanup Site Information (#3791-former Durham Quarry)
Proposed for Confirmed Release List and Inventory (9/03)
Oregon DEQ: Environmental Cleanup Site Information (#3870-Durham Pit Landfill-north)

Comments: The site was operated as a gravel pit by the Washington County Public Works Department [48 (CH2M Hill Northwest for Metropolitan Service District, "Phase I: Siting Issues – Potential Sanitary Landfills, Feasibility Report for Durham Pits", 10/25/79)]. Washington County's intent was to fill the area as quickly as possible with clean, inert fill [16 (letter from Washington County to DEQ, 8/20/92)].

In 1982 DEQ issued a notice of noncompliance for the disposal of storm debris (materials requiring a permit) at the site, after which the material was removed to an approved permitted site [16 (DEQ letter to Washington County, 9/21/92)]. Washington County indicated that the storm debris had been placed on the site only as an interim measure [16 (Washington County letter to DEQ, 9/28/92)]. In 1992 a notice of noncompliance documented violations observed during staff visits. These included prohibited materials (such as plastics, metal, tires, and wood) being disposed and buried at the site. [16 (DEQ letter to Ken Leahy Construction Inc., 9/21/92)] Washington County responded that they were unaware of such activity, and that when the contracted operator discovered recurrences of noncompliant materials being brought in the offending hauler is turned away. They

also indicated that they had a wood recycling operation in place, and wood products were not being buried [16 (letter from Washington County to DEQ, 9/28/92)].

It is unclear how much non-inert material was buried at this landfill, however, recently as part of selling the site to be developed for an upscale shopping mall and office park, environmental consultants found oil contamination and dense concentrations of methane [50a, 50b]. DEQ is concerned about the very high methane levels, and the potential for methane-related problems at the site and surrounding properties [50b].

DEQ's ECSI database now lists two clean-up sites from the Durham Pits area. The north portion has already been re-developed, and most of the site is currently covered with buildings.

301. Leichner Bros.

Name(s): Leichner Bros. [13]
Vancouver Sanitary Service [21a]

Location: 9215 NE 94th Ave., Vancouver, WA [21a]
(Clark Co.)

Size: 70 acres [2a]

Period of Began: 1941 [21b]

Operation: Closed: 1991 [2a]

Ownership: Private [21b]
(during filling)

Operator: Private [21b]
Vancouver Sanitary Service [21b]

Types of Waste: Garbage, rubbish, demolition construction wastes, dead animals, street sweepings, appliances [21b]

Quantity:

Permits:

Listed:

Comments: This site was located on part of a 130-acre parcel of flat land. The soil is composed of sandy loam and gravel. In 1971, the CRAG study described it as having the highest degree of compaction of any of the sites in their service area – and thus little or no settlement of the covered fill. [21a, 21b] They were the first in the northwest, and the earliest overall, to use a refuse shredder to extend the life of the landfill [20].

The landfill was closed in stages, with 35 acres closed in 1989, 15-20 acres closed in 1991, and the remainder in the summer of 1992. They stopped receiving waste at the end of 1991. [2a]

302. Clark Co. (Land Reclamation, Inc.)

Name(s): Clark Co. (Land Reclamation, Inc.) [Metro name for site]
Plews [21a, 21b]

Location: (Clark Co.) 117th Ave & 4th Plain Blvd., in the Orchards area of Clark County, WA [21a]

Size: 9 1/2 acres [21b]

Period of Operation: Began: before 1970 [10b]
Closed: after 1971 [21b]

Ownership: (during filling) Private [21b]

Operator: Private [21b]
Land Reclamation, Inc. (division of Plew's Enterprises)

Types of Waste: Rubbish, demolition construction wastes, street sweepings, appliances [21b]

Quantity:

Permits:

Listed:

Comments: The landfill was formerly the site of a rock pit. Two acres (of the 9½ acres available) had been filled in 1971. [21b]

303. English Pit

Name(s): English Pit [43]
English Sanitary Landfill [10b]

Location: NE 192nd, southeast of Orchards, WA [21b]
(Clark Co.)

Size: 5 acres [21b]

Period of Operation: Began: before 1970 [10b]
Closed: after 1971 [21b]

Ownership: Public [21b]
(during filling) Clark Co. [21b]

Operator: Public [21b]
Clark Co. [21b]

Types of Waste: Garbage, rubbish, demolition construction wastes, dead animals, street sweepings, brush & stumps, appliances [21b]

Quantity:

Permits:

Listed:

Comments: The site was an old gravel pit. About 1 acre (of the 5 acres available) had been filled in 1971. [21b]

401. Woodburn 73

Name(s): Woodburn 73 [15]
Woodburn (old) [Metro's distinction between Site 401 and Site 402]

Location: 8648 Crosby Road (3 miles northwest of Woodburn, Oregon) [4, 15]
(Marion Co.)

Size: 11 acres [15]

Period of Operation: Began: 1950s [15]
Closed: 1973 [15]

Ownership: Public [15]
(during filling) Marion Co. [15]

Operator: Private [4]
Dick Brentano [4]

Types of Waste: Mixed refuse [4]

Quantity: 1000 tons/year? [4]
125 tons/day? [4]

Permits: Permit #142 (DEQ)? [7] (may be for other Woodburn site #402, see comments below)
Conditional permit from DEQ [4]

Listed:

Comments: Operations at the site began with open burning in the 1950s. In 1967 waste handling operations at the site switched from open burning to trench filling. Waste disposal ceased in 1973, when the Woodburn Landfill (see Site #402) began operation. [15] On DEQ's 1988 published list of closed landfills, a landfill called "Woodburn" is recorded as Permit #142. The County is not aware of any other closed landfills (other than this one and Site #402) in Marion County, suggesting this permit number is for this landfill. The Cormet study states (in 1974) that this site had a conditional permit from DEQ [4]. Is this because it was operating right before full permitting was required? Could the permit number be reflecting this? Or does the permit number belong to the newer Woodburn (Site #402)? Ernie Schmidt, formerly of DEQ, suggests this may be the case [20].

Closure of the landfill occurred before the state-mandated solid waste program was implemented. Consequently, a post closure groundwater quality monitoring program for the site was never developed or required. In 1999, however, a groundwater monitoring network was installed and sampling was implemented following concerns voiced by area residents during public comment of the Record Decision for the Woodburn Landfill. Thus far no contaminants of concern have been detected above state or federal groundwater standards. [15]

402. Woodburn

Name(s): Woodburn [15]
North Marion County Disposal Facility [15]

Location: 17827 Whitney Lane NE, Woodburn, Oregon [15]
(Marion Co.)

Size:

Period of Operation: Began: 1973 [15]
Closed (for municipal solid waste): 1986 [15]
Demolition debris area operated until 1998

Ownership: Public [15]
(during filling) Marion Co. [15]

Operator: Pubic [15]
Marion County [15]

Types of Waste: Municipal solid waste [15]

Quantity:

Permits: #142 (DEQ)? [20], #240 (DEQ)? [15]

Listed:

Comments: The closed Woodburn Landfill is part of the North Marion County Disposal facility, which also includes a transfer station, recycling center, ash monofill cells, leachate lagoon, leachate treatment system. treatment system, landfill gas flare system, and petroleum contamination soil treatment facility. The landfill accepted municipal solid waste from 1973 to 1986. In 1986, when the Waste to Energy Facility began operations, municipal solid waste was no longer accepted and a soil cover was applied. However, the County continued to operate a portion of the landfill as a demolition debris landfill until 1998, at which time it was closed and capped with a prescriptive cover. The landfill gas flare was also installed in 1998. [15]

Ernie Schmidt, formerly of DEQ, suggests the site history is complicated, but recalls that DEQ permit #142 may have been for this landfill [20]. Although Don Alexander of Marion Co. says that as far as he knows, the site has always operated under one still-existing DEQ permit that has evolved over the years (and continues to regulate current operations) [15].

The site was developed in quadrants. Waste was disposed of in trenches, with construction demolition added on top of the old trenches in the southern portions [20].

501. Newberg (old)

Name(s): Newberg (old) [6]

Location: S Blaine St., Newberg, Oregon [6]
(Yamhill Co.) 3S,2W,19, Latitude: 45 deg. 17' 20.04", Longitude: 122 deg. 58' 43.32" [6]

Size:

Period of Operation: Began:
Closed: 1965? (when other Newberg landfill began [4])

Ownership: Unknown
(during filling)

Operator:

Types of Waste: See below

Quantity:

Permits:

Listed: Oregon DEQ: Environmental Cleanup Site Information (#1640)

Comments: A complaint filed in March 1994 led to the discovery of this old dump, which is encroaching on an unnamed tributary of Chelalem Creek in Newberg. The dump was located at Chehalem Park and Recreation District (CPR) Ewing Young Park. CPR recently acquired the property from Smurfit Newsprint. Along the streambank there were large exposures of glass shards, metal containers, appliances, etc. Ash was also present, which suggests evidence of past burning. [6]

502. Newberg

Name(s): Newberg [7,16 (1985 Solid Waste Disposal Site Closure Permit)]

Location: River Rd. (south of Newberg) [4]
(Yamhill Co.) 3S,2W,30 [4]

Size: 5 acres (used of 42 total in 1974) [4]

Period of Operation: Began: 1965 [4]
Closed: 1985 [16 (Solid Waste Disposal Site Closure Permit, 11/85)]

Ownership: Private [4, 53]
(during filling) Joe Schneider [4]

Operator: Private [4, 53]
Angus McPhee [4]

Types of Waste: Mixed refuse [4]

Quantity: 11,000 tons/year (1974) [4]

Permits: Permit #97 (DEQ) [7]
County franchise [4]

Listed:

Comments: The 1974 Cormet study described surrounding land use at the site as industrial and agricultural with access to the site passing through residential areas of Newberg. At that time, although the final site usage had not been determined, the Newberg Parks and Recreation District desired to acquire the site for development as a park. [4] By closure in 1985, the site was owned and operated by Yamhill County [16 (Solid Waste Disposal Site Closure Permit, 11//20/85)].

Some salvaging of white goods was practiced, with salvaged materials removed to Portland when quantities were adequate [4].

601. Santosh

Name(s): Santosh [4, 6, 7]

Location: (Columbia Co.) northeast of Scappoose on West Lane Rd., north of Scappoose airport on Cascade gravel plant [4]
4N,1W,31, TL: 3141-16-1, 3241-11-1 [5], Latitude: 45 deg. 48' 18", Longitude: 122 deg. 49' 25 [6]

Size: 8 acres [6], 20 acres (of 60 acres total) [16 (DEQ interoffice memo, 2/14/86)]

Period of Operation: Began: 1968 [6], 1969 [4]
Closed: 1983 [6]

Ownership: (during filling) Private [4]
Santosh Properties (1974) [4]
Cascade Aggregates, Inc. (with Western Pacific Construction Materials which is a division of Riedel International, Inc., negotiating purchase) (1986) [16 (DEQ, interoffice memo, 2/1/86)]
ROST, Inc. (1991) [16 (DEQ letter from ROST, Inc., 9/9/91)]

Operator: Public (through 1972) [21b], Columbia County Association of Governments [21b],
Private (after 1972) [4], Phil Holsheimer, Santosh Properties, Inc. (1974) [4, 16 (DEQ General Information, Solid WasteDisposal Site)]

Types of Waste: Municipal solid waste, large amounts of clarifier pulp sludge from the Boise Cascade-St. Helens Paper Mill [16 (DEQ interoffice memo, 2/1/86)]
Garbage, rubbish, demolition construction wastes, tires, street sweepings, brush & stumps, Appliances [21b]

Quantity: 28,200 tons/year [4]

Permits: Permit #195 (DEQ) [4, 7]
Franchising agreement pursuant to Solid Waste Collection and Disposal ordinance [4]

Listed: Oregon DEQ: Environmental Cleanup Site Information (#1383)

Comments: This site was established by Columbia County in 1968. It was the major municipal solid waste disposal site for the county. The site is bounded on the west and much of the north by Scappoose Creek and on the east by Multnomah Channel. Scappoose Creek and Multnomah Channel are downgradient from the site. [16 (General Information, Solid Waste Disposal site)]. There are several residences located approximately a quarter to one-half mile southwesterly of the site along the county road. [5] An attempt was made to separate the salvageable and recyclable items to one area of the dump with salvaging practiced and controlled [5].

The site was first opened in 1969 by a local farmer, under the direction of the Columbia County Organization of Governments, but the operation was poor with no attempt made at orderly cover and compaction. In 1972, Phillip Holscheimer, former director of the Columbia County Organization of Governments, assumed direct responsibility for the operation. This had followed a series of unsuccessful attempts to improve it as supervisor of dump operations for the Columbia County Organization of Governments by leasing property from Santosh Properties. [5]

During the winter of 1972-1973 approximately 2 to 3 feet of water accumulated inside the refuse retention dike. This accumulated water made it impossible to compact the refuse properly on the face of the fill, and much of the refuse was simply pushed over the face without compaction. There was also a significant odor problem from disposal of the refuse into the water. COR-MET further noted that the use of dewatered paper sludge is an unacceptable method of covering the refuse. [5]

In 1974 the existing dike was topped by flood water. Floating garbage was contained by a log boom. As a result of the flood, the dike elevation was raised to an elevation of 25 feet MSL (as recommended by the Corps of Engineers and consultants, as the 100-year flood level is 22.6 feet MSL). In 1980 DEQ placed the site on the open dump inventory for surface water and groundwater contamination [16 (General Information, Solid Waste Disposal site)].

A 4/29/75 DEQ form indicated that the planned use of the completed site would be either agricultural or industrial [16 (General Information, Solid Waste Disposal site)].

In 1993, DEQ took a sediment sample and a water sample in an area of standing water alongside the landfill. No areas of obvious leachate were observed at the time. The samples were analyzed for total and dissolved metals (TCLP), volatile and semi-volatile organics and herbicides. No contaminants were identified, except arsenic, which may be a result of background conditions. However, the landfill is located in an environmentally sensitive area, that includes wetlands with extensive wildlife habitat. Surface waters are located in the immediate vicinity of the landfill. Both the Sauvie Island Game Management Area and the Ridgefield National Wildlife Refuge are located less than one mile from the site. [6]

DEQ recommended the placement of monitoring wells, additional capping of the landfill, and an evaluation of the need for a gas venting system [6].

602. Old Scappoose

Name(s): Old Scappoose [Metro naming convention]

Location: near Scappoose [20]
(Columbia Co.)

Size:

Period of Operation: Began:
Closed: before 1968? [20]

Ownership: Unknown
(during filling)

Operator:

Types of Waste:

Quantity:

Permits:

Listed:

Comments: Not much is known about this site. It was vaguely remembered by Ernie Schmidt, formerly of DEQ, as a predecessor to the Santosh landfill [20]. He believes it is different than the Hawk site (which is south of Scappoose in north Multnomah County and was in operation before Santosh as well) [20]. It seems reasonable to assume that it was operating into the mid- or late 1960's when the Santosh landfill opened up.

Non-numbered, Non-mapped sites

Union Avenue Recycling

This site shows up as a closed landfill on the 1988 DEQ list, but there is no further information about it. It is unclear when or where or if it operated, and what materials it took. It has not been identified as a site because it also may be redundant to another already included site. By listing it here, hopefully the Union Avenue Recycling site won't "fall through the cracks".

Glossary:

These definitions are in current use, and may not always match the historical meanings.

Clean fill: Material consisting of soil, rock, concrete, brick, building block, tile or asphalt paving, which do not contain contaminants which could adversely impact the waters of the State or public health. This term does not include putrescible wastes, construction and demolition wastes and industrial solid wastes. [State of Oregon, Division 93 Solid Waste: general provisions]

Confirmed release list: Oregon DEQ's list of facilities for which the Director has confirmed a release of a hazardous substance [33b]. A release is considered to be "confirmed" when the Department documents a release of a hazardous substance that may pose a significant threat to human health or the environment. [33b

Construction and demolition waste (building industry waste): Solid waste resulting from the construction, repair, or demolition of buildings, roads and other structures, and debris from the clearing of land, but not including clean fill when separated from other construction and demolition wastes and used as fill materials or otherwise land disposed. Such waste typically consists of materials including concrete, bricks, bituminous concrete, asphalt paving, untreated or chemically treated wood, glass, masonry, roofing, siding, plaster; and soils, rock, stumps, boulders, brush, and other similar material. This term does not include industrial solid waste and municipal solid waste generated in residential or commercial activities associated with construction and demolition activities (OAR 340-93-030) [38]

Demolition landfill: Only land-clearing debris and other construction and demolition type materials may be brought to these facilities. Purtrescibles and special wastes are not acceptable. [38]]

ECSI: DEQ's Environmental Cleanup Site Information database.

Garbage: A general term for all products and materials discarded. [38]

Gravel Pit: An excavation in an alluvial area from which sand or gravel has been or is being mined. [State of Oregon, Division 93 Solid Waste: general provisions]

Groundwater: Any water, except capillary moisture, beneath the land surface or beneath the bed of any stream, lake, reservoir or other body of surface water within the boundaries of the state, whatever may be the geological formation or structure in which such water stands, flows, percolates, or otherwise moves. [33b]

Industrial Solid Waste: Solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under ORS Chapters 465 and 466 or under Subtitle C of the federal Resource Conservation and Recovery Act. Such waste may include, but is not limited to, waste resulting from the following processes: Electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay and concrete products; textile manufacturing; transportation equipment; water treatment; and timber products manufacturing. This term does not include construction/demolition waste; municipal solid waste from manufacturing or industrial facilities such as office or "lunch room"

waste; or packaging material for products delivered to the generator. [State of Oregon, Division 93 Solid Waste: general provisions]

Inert: Containing only constituents that are biologically and chemically inactive and that, when exposed to biodegradation and/or leaching, will not adversely impact the waters of the state or public health. [State of Oregon, Division 93 Solid Waste: general provisions]

Inventory: Oregon DEQ list of facilities for which the Director has confirmed a release of a hazardous substance and, based on a preliminary assessment or equivalent information, has determined that additional investigation, removal, remedial action, or long-term engineering or institutional controls related to removal or remedial action are required to assure protection of the present and future public health, safety and welfare, and the environment [33b].

Landfill: A facility for the disposal of solid waste involving the placement of solid waste on or beneath the land surface. [State of Oregon, Division 93 Solid Waste: general provisions]

Leachate: Liquid that has come into direct contact with solid waste and contains dissolved, miscible and/or suspended contaminants as a result of such contact. [State of Oregon, Division 93 Solid Waste: general provisions]

Mixed Waste: Solid waste containing a variety of recyclable and non-recyclable material [38].

Monofill: A landfill or landfill cell into which only one type of waste may be placed. [State of Oregon, Division 93 Solid Waste: general provisions]

Municipal Solid Waste Landfill: A discrete area of land or an excavation that receives domestic solid waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under §257.2 of 40 CFR, Part 257. It may also receive other types of wastes such as nonhazardous sludge, hazardous waste from conditionally exempt small quantify generators, construction and demolition waste and industrial solid waste. [State of Oregon, Division 93 Solid Waste: general provisions]

Permit: A document issued by the Department, bearing the signature of the Director or his authorized representative which by its conditions may authorize the permittee to construct, install, modify, operate or close a disposal site in accordance with specified limitations. [State of Oregon, Division 93 Solid Waste: general provisions]

Putrescible Waste: Solid waste containing organic material that can be rapidly decomposed by microorganisms, and which may give rise to foul smelling, offensive products during such decomposition or which is capable of attracting or providing food for birds and potential disease vectors such as rodents and flies. [State of Oregon, Division 93 Solid Waste: general provisions]

Salvage: The controlled removal of reusable, recyclable or otherwise recoverable materials from solid wastes at a solid waste disposal site. [State of Oregon, Division 93 Solid Waste: general provisions]

Sanitary landfill: The CRAG 1971 report notes that "to be classified as a sanitary landfill operation the refuse is first deposited on the ground by the collector truck. Then the material is compacted by the operation of a bulldozer or heavy equipment running over the waste material. The compacted

waste material must be covered at the end of each day with a minimum of six inches of well compacted earth. By using the daily cover, the rodents, vermin, and insects are kept to a minimum. When the various daily lifts of waste material have reached the finished elevation, a two-foot final cover of well compacted earth is placed. [21b]

Scavenging: Gathering of things that others have thrown away.

Sludge: Any solid or semi-solid waste and associated supernatant generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant or air pollution control facility or any other such waste having similar characteristics and effects. . [State of Oregon, Division 93 Solid Waste: general provisions]

Street sweeping debris: Since 1989, the City of Portland has processed their street sweepings. After screening the material, the larger rocks are run through a rock crusher. Although the plastic, paper and vegetation are landfilled, the residual is processed through a portable hot plant (an asphalt plant equipped with a conveyor) to remove all impurities, which results in a clean marketable landfill material. Quarter minus gravel is used and reused for road traction during the icy winter season. And autumn leaves are composted and sold. There is frequent testing of the leaves and backfill material for lead, asbestos, and other toxic materials, with results well below EPA levels (as long as there is frequent sweeping). [American Sweeper Magazine, 1994]

Risk: The probability that a hazardous substance, when released into the environment, will cause advers effects in exposed humans or ecological receptors [33b].

Solid Waste: All putrescible and nonputrescible wastes, including but not limited to garbage, rubbish, refuse, ashes, waste paper, and cardboard, sewage sludge, septic tank and cesspool pumpings or other sludge, commercial, industrial, demolition and construction materials, discarded or abandoned vehicles or parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-solid wastes, dead animals, infectious waste, and other wastes. Solid waste does not include hazardous waste (as defined by ORS 466.005) and materials used for fertilizer or for other productive purposes or which are salvageable. (OAR 340-90-010, ORS 459.005, Metro Code 5.01.101) [38]

Surface water: Lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, wetlands, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon, and all other bodies, natural or artificial, inland or coastal, fresh or salt, public or private (except private waters which do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. [33b]

Vector: Any insect, rodent or other animal capable of transmitting, directly or indirectly, infectious diseases to humans or from one person or animal to another. [State of Oregon, Division 93 Solid Waste: general provisions]

Wood waste: Chemically untreated wood pieces or particles generated from processes commonly used in the timber products industry. Such materials include but are not limited to sawdust, chips, shavings, stumps, bark, hog-fuel and log sort yard waste, but do not include wood pieces or particles containing or treated with chemical additives, glue resin or chemical preservatives. [State of Oregon, Division 93 Solid Waste: general provisions]

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