

ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED  
FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)

Form 1600-1

Rev. 6-2010

Department of Natural Resources (DNR)

Region or Bureau

**South Central Region**

Type List Designation

**NR 150.03(8)(e)5a**

NOTE TO REVIEWERS: This document is a DNR environmental analysis that evaluates probable environmental effects and decides on the need for an EIS. The attached analysis includes a description of the proposal and the affected environment. The DNR has reviewed the attachments and, upon certification, accepts responsibility for their scope and content to fulfill requirements in s. NR 150.22, Wis. Adm. Code. Your comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before 4:30 p.m., December 4, 2013.

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**(608) 275-3292**

Applicant: **Dane County**

Address: **7102 U.S. Highway 12 and 18, Madison, WI 53718**

Title of Proposal: **EASTERN EXPANSION FEASIBILITY REPORT, DANE COUNTY #2 (RODEFELD) LANDFILL, MADISON, WISCONSIN**

Location: County: **Dane** City/Town/Village: **Madison, WI**

Township Range Section(s): **NE1/4 of Section 25, Township 7 North, Range 10 East, City of Madison, Dane County Wisconsin**

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## PROJECT SUMMARY

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### Overview of Proposal

The Dane County Landfill Facility is proposing to construct and operate an expansion of its existing municipal solid waste disposal facility. This expansion would extend the timeline that the facility could accept waste. The proposed expansion would have a capacity of 3,867,400 cubic yards. Under s. NR 150.03(8)(e)5a, a proposal to expand a solid waste landfill with an additional capacity of more than 500,000 cubic yards is a Type II action requiring an Environmental Analysis and Decision on the Need for an Environmental Impact Statement.

The proposed landfill expansion is located in the NE¼ of Section 25, Township 7 North, Range 10 East, City of Madison, Dane County, Wisconsin on land presently owned by Dane County and the City of Madison. The address for the expansion is 7102 U.S. Highway 12 and 18, Madison, 53718, Dane County, Wisconsin. The entrance gate for the facility is currently at the address above approximately 1 mile east of the Interstate 90 and U.S. Highway 12 and 18 interchange. Waste would continue to be delivered to the landfill through the existing site entrance.

The existing Dane County Landfill Property consists of 169 acres. An additional approximately 24 acres would need to be purchased from the City of Madison to accommodate the proposed expansion. The property owned by the City of Madison is located on the southern, eastern and northern boundaries of the Dane County owned property (see Plan Sheet 3 and Figure 1-2). Currently, Dane County has a preliminary agreement with the City of Madison to purchase approximately 24 acres necessary for development of the Eastern Expansion upon issuance of a feasibility determination. Dane County expects that they would obtain ownership or have a proof of purchase contract prior to or coincident with a WDNR plan of operation approval. The current landfill approved limits of waste occupy approximately 76 acres, and the

proposed expansion footprint would occupy an additional area of approximately 28.6 acres immediately to the east of and contiguous with the existing landfill. This would result in a total approved waste fill area of 104.6 acres.

The proposed expansion would consist of a 3,867,400 cubic yard horizontal and vertical addition located immediately east of and contiguous with the previously approved landfill. The proposed horizontal expansion, including waste fill area, roads, berms, and drainage features, would cover approximately 40 acres outside the existing limits of waste fill area. The horizontal refuse fill limits (footprint) would occupy approximately 28.6 acres, landfill support activities and infrastructure, including perimeter berms, ditches, and sedimentation/infiltration basins would occupy approximately 11 acres, while the overlay fill limits onto the existing landfill would occupy approximately 17 acres. The proposed Eastern Expansion volume of 3,867,400 cubic yards would be added to the previously approved Dane County Landfill volume of 7,071,400 cubic yards. This would result in a total approved waste volume of 10,938,800 cubic yards under license # 3018.

The proposed landfill would continue to serve as a county disposal facility accepting residential, commercial and industrial non-hazardous waste from Dane County. The proposed design generally conforms to current federal and state standards. This includes a geomembrane and clay liner and final cover; a partial groundwater collection layer (gradient control system or layer) beneath the liner to prevent groundwater from encountering waste; a leachate collection system which would remove leachate from the bottom of the facility and make it available for recirculation or treatment; surface water drainage controls; a landfill gas collection and combustion system; and a monitoring network including groundwater monitoring wells and gas migration probes.

The Department conducted an Initial Site Inspection (ISI) for the proposed project on June 15, 2012. An ISI is done at the request of the applicant to identify any conflicts with the locational or performance criteria listed in NR 504 Wis. Adm. Code. Dane County submitted an Initial Site Report (ISR) to the Department that was received on November 9, 2012. An ISR provides information so the Department can render a preliminary opinion about the proposed site's suitability for a municipal solid waste disposal facility. In the reply to Dane County, dated January 18, 2013, the Department expressed that the site has limited potential for development as a municipal solid waste disposal facility. The reply also stated that the potential of the site for development was limited by the need to obtain exemptions to locational standards associated with private water supply wells or abandoning private wells within 1,200 feet of the expansion; groundwater table separation from the base of the facility; and separation or screening from State Highway 12 and 18, Hope Park to the north, and the Yahara Hills Golf Course to the south. The potential of the site for development was also contingent on resolving several other issues. Issues included concerns about negative impacts on wetlands in the vicinity from discharge of underdrain water, concerns about potential groundwater recharge or discharge to the wetlands induced by the underdrain or other construction or operation activities, concerns about storm water diversions from one wetland to another, and that Dane County does not currently own some of the property required to build the proposed expansion as currently designed and maintain the code required setbacks to property boundaries.

The proposed expansion meets all the setbacks listed in NR 504.04(3) Wis. Adm. Code with the exceptions listed above. Those setbacks are; 300 feet to any navigable river or stream, within a floodplain, within an area where the design or operation of the landfill would pose a significant bird hazard to aircraft, within 200 feet of a fault that has had displacement in Holocene time, within seismic impact zones, and within unstable areas.

The analysis contained in the Feasibility Report addressed the issue of water elevations in the northern wetland (Wetland #1) and the southern wetland (Wetland #4) and concluded that the water level in the northern wetland is controlled by a drainage ditch and that the potential impacts of the gradient control system and the rerouting of a 20 acre portion of the storm water from the northern wetland to the southern wetland would have minimal impacts to the water level in the northern wetland. The southern wetland appears to be a surface water wetland and its water level is controlled by a culvert that runs under U.S. Highway 12 and 18. No significant impacts are predicted for the northern wetland. The feasibility report also predicted no significant impacts to the southern wetland.

There are 6 wells within 1,200 feet of the proposed expansion area. According to Feasibility Addendum 1, Dane County will only seek variances and exemptions for 2 wells. All other wells would be abandoned and 2 (Hope Lutheran Church, PW-46 and Julie Acker, PW-43) of the abandoned wells would be replaced at locations greater than 1,200 feet from the proposed landfill limits of waste. Dane County intends to enter into a well agreement with both the Hope Lutheran Church and Julie Acker that would allow abandonment and replacement of those wells. The Hope Lutheran Church property is large enough to accommodate replacement wells for both the Church and Julie Acker that would meet the 1,200 setback requirement. In addition the County owns land greater than 1,200 feet from the landfill in the vicinity of both the Hope Lutheran Church property and the Acker property that would be suitable for replacement wells. The Cross Roads Tavern

well (PW-37) which is owned by Dane County may be replaced at some point in the future if Dane County develops that property, but replacement of this well is not proposed at this time. Dane County has a preliminary land purchase agreement with the City of Madison to acquire the property necessary to meet the requirements of s. NR 504.09(2)(f), Wis. Adm. Code, which requires a 100-foot setback from the limits of waste to the adjacent property line and a 50-foot setback between the landfill berm and the adjacent property line.

Groundwater elevation measurements collected in 2008 showed that the code required 10-foot separation distance between the seasonal high water table and the bottom of the landfill liner may not be met. In order to prevent the groundwater from saturating the liner, Dane County proposes to install a gradient control system below the liner to route groundwater away. The proposed system consists of two perforated pipes each laid in their own gravel lined trench with a 12-inch thick sand drainage blanket extending out 25 feet on both sides, along the length of each trench. This pipe and trench system will be constructed under each of the two leachate collection lines in the area of the proposed expansion. The subbase grades will be designed to mirror the base grades above, creating a slope to the pipes so that groundwater can gravity drain through the sand or aggregate drainage blanket to the collection pipes. This design is similar to others that have been approved and are effective at other landfills.

On October 26, 2012, the Department concurred with an alternative geotechnical investigation program proposed by Dane County's consultant, TRC, Inc. The Department received the Feasibility Report for the project on May 20, 2013. Dane County provided additional feasibility information in Feasibility Addendum 1, dated August 30, 2013 and received on September 3, 2013 and in Feasibility Addendum 2, dated October 21, 2013 and received on October 22, 2013.

The cost of the proposed expansion would be borne by the applicant, Dane County, and would be recovered through landfill tipping fees.

**Availability of Feasibility Report and Site Maps and Plan Sheets:** The proposed project is more completely described in Dane County's Feasibility Report. Copies of the Feasibility Report and associated plan sheets are available for review on the internet at <http://dnr.wi.gov/topic/Waste/Comment.html> and at the following locations; the Madison Public Library, Pinney Branch, 204 Cottage Grove Rd, Madison, WI, 53716; Madison Public Library, Central Library, 126 South Hamilton Street, Madison, WI, 53703; Monona Public Library, 1000 Nichols Road Monona, WI, 53716; E.D. Locke Public Library, 5920 Milwaukee Street, McFarland, WI, 53558; the Dane County Landfill, 7102 U.S. Highway 12 and 18, Madison, WI, 53718; and the DNR Fitchburg Service Center, 3911 Fish Hatchery Road, Fitchburg, Wisconsin (please call Adam Hogan at 608-275-3292 for an appointment if you wish to view the report at the DNR service center).

### **Purpose and Need**

The existing Dane County Landfill is near its capacity. Based on current filling rates, the existing Dane County Landfill is expected to reach its capacity in 2014. A Needs Analysis provided in Section 15 of the Feasibility Report indicates that the approved and planned landfill capacity for the service area may be depleted by the year 2017. A needs analysis for the service area takes into account the waste generation volume in the service area and the capacity of all waste disposal sites serving the area. The Eastern Expansion would add approximately 3,867,400 cubic yards of landfill capacity for the disposal of waste from residential, commercial, and industrial sources in the Dane County service area. Waste disposal capacity is needed in the area to provide cost effective waste disposal for Dane County business and residential waste generators. The proposed County Expansion would provide a solution for the future waste disposal needs of the service area.

### **Documents**

- November 9, 1982 *Dane County Landfill Feasibility Report*, prepared by Residuals Management Technology, Inc. (RMT).
- April 13, 1983 *Environmental Assessment on the need for an environmental impact statement for the Dane County Landfill, City of Madison/ Rodefald Site*, issued by DNR. This assessment was amended by DNR on June 23, 1983.
- July 18, 1983 *Feasibility Determination for the Proposed Dane County Rodefald Landfill*, issued by DNR.
- February 15, 1984 *Plan of Operation, Dane County City of Madison/Rodefald Site*, prepared by Residuals Management Technology, Inc. (RMT).

- August 14, 1984 *Plan of Operation Approval Dane County Landfill*, issued by DNR.
- October 16, 1992 *Feasibility Report Dane County Landfill Expansion – Rodefeld #2*, prepared by SEC Donohue Inc.
- March 1, 1993 memo from Dave Siebert to Jim Bauer concerning wetland and water regulation and zoning issues for the proposed Dane County Farm Credit Services clay borrow site located in the NE1/4 of the NW1/4, and NW1/4 of the NE1/4 of Section 2, T8N, R9E, Town of Westport, Dane County and water regulation and zoning issues at the Dane County Rodefeld proposed Western Expansion.
- June 24, 1993 *Environmental Analysis and Decision on the Need for an Environmental Impact Statement for the Dane County Landfill No. 2 (Rodefeld)*, issued by DNR.
- August 17, 1993 *Feasibility Determination for the Proposed Dane County Rodefeld Landfill Expansion*, issued by DNR.
- November 24, 1993 *Dane County Landfill Expansion Rodefeld Site No. 2, Plan of Operation*, prepared by Rust Environmental & Infrastructure.
- March 14, 1994 *Plan of Operation Approval for the Proposed Dane County Rodefeld No. 2 Landfill Expansion*, issued by DNR.
- May 23, 2012 Initial Site Inspection Request prepared by Dane County and received by DNR on May 30, 2012.
- June 6, 2012 email from Emma Pelton, DNR Endangered Resources Specialist stating that there is no suitable habitat at this site for the Giant Yellow Hyssop (threatened in Wisconsin), the Prairie False-dandelion (special concern in Wisconsin), and the Slim-stem Small Reed Grass (special concern in Wisconsin).
- June 12, 2012 email from Dan Hunt, DNR Water Management Specialist, indicating that 2 ponds at the Yahara Hills Golf Course are navigable ponds.
- June 15, 2012 Initial Site Inspection done at the Rodefeld Landfill.
- June 27, 2012 email from Mike Mossman, DNR Forest Community Ecologist stating that there is no suitable habitat for the Prairie Vole at this site.
- July 5, 2012 Initial Site Inspection response letter sent by DNR to Dane County.
- October 12, 2012 *Alternative Geotechnical Investigation Program Dane County Landfill No. 2 (Rodefeld) – Eastern Expansion Madison, Wisconsin* received by the Department on October 15, 2013.
- October 25, 2012 *Alternative Geotechnical Investigation Program – Addendum No. 1 Dane County Landfill No. 2 (Rodefeld) – Eastern Expansion Madison, Wisconsin* received via email on October 25, 2012.
- November 9, 2012 *Initial Site Report, Dane County Landfill No. 2 (Rodefeld) – Eastern Expansion Madison, Wisconsin* received by the Department on November 9, 2012.
- November 16, 2012 email from Mark Dudzik, DNR Archeologist, stating that archeological issues for the site are cleared based on his review of a report dated September 29, 2012, titled, *An Archeological Survey of a Proposed Expansion Area for the Rodefeld Landfill in Madison, Dane County, Wisconsin* by Philip H. Salkin of Archeological Consulting and Services, Inc. that was included in the Initial Site Report (appendix E) referenced above.
- December 21, 2012 *Response to WDNR Request for Additional Information to the Initial Site Report Dane County Landfill No. 2 (Rodefeld) – Eastern Expansion Madison, Wisconsin* received by the Department on December 26, 2012.

- A March 6, 2013 email from Wendy Peich, DNR Water Management Specialist, discussing the need for a Chapter 30 permit for the northeastern sedimentation basin.
- May 16, 2013 *Eastern Expansion Feasibility Report, Dane County No. 2 (Rodefeld) Landfill, Madison, Wisconsin*, prepared by TRC, Inc., received by the Department on May 20, 2013. The *Feasibility Report* included a *Practicable Alternatives Analysis*, located in appendix C. Feasibility Report Appendix B contains previous correspondence on the proposed project, including the following items referred to elsewhere in this Environmental Analysis:
  - July 5, 2012 letter from the Department to Dane County, documenting the results of the Department's June 15, 2012 Initial Site Inspection (ISI) for the proposed expansion.
  - October 26, 2012 letter from the Department to Dane County, concurring with Dane County's proposal for an Alternative Geotechnical program under ch. NR 512, Wis. Adm. Code.
  - January 18, 2013 letter from the Department to Dane County, responding to Dane County's Initial Site Report.
- May 28, 2013 memorandum, from Kurt Welke, DNR Fisheries Biologist, describing impacts to aquatic flora and fauna.
- May 31, 2013 email from Alice Halpin, Agricultural Impacts Statements Specialist at the Department of Agriculture Trade and Consumer Protection, stating that an Agricultural Impact Statement would not be prepared.
- June 6, 2013 email from Nancy Frost, DNR Wildlife Biologist, with an attached memo reviewing the potential wildlife impacts of the project.
- June 6, 2013 memorandum sent via email from Amy Schmidt, DNR Wastewater Engineer, assessing the capability of the Madison Metropolitan Sewerage District Wastewater Treatment Plant to treat leachate from the proposed expansion.
- June 7, 2013 email from Kelly Kearns, DNR Invasive Plant Coordinator, stating that as long as wetland regulations are being adhered to, there would be no additional concern for the Knotweed Dodder or the Rope Dodder.
- June 7, 2013 email from Steve Holaday, DNR Forester, summarizing his site visit and assessment of forestry resources that would be affected by the project.
- June 9, 2013 memo from Wendy Peich, DNR Water Management Specialist, discussing surface water and wetland issues related to the project.
- June 17, 2013 memorandum from Mary E. Vollbrecht, Chief, DNR Groundwater Section, containing a list of monitoring wells that the Groundwater Section would concur with allowing exemptions for.
- June 27, 2013 email from Wendy Peich, DNR Water Management Specialist, regarding DNR jurisdiction as it pertained to the potential groundwater discharge to the northern wetland.
- July 3, 2013 memorandum from Randell Clark, DNR Hydrogeologist, Groundwater Section, containing comments regarding the water supply wells within 1,200 feet of the proposed expansion and a discussion of the comparable protection that would allow the wells to be granted a variance to the required setback distance.
- July 8, 2013 email from Tim Ryan, DNR Natural Resources Wastewater Basin Supervisor, advising the Waste and Materials Management Program that a wastewater permit would not be necessary to discharge uncontaminated groundwater to the northern wetland at the site.
- July 8, 2013 email from Eric Rortvedt, DNR Water Resources Engineer, regarding storm water requirements for the proposed landfill expansion.

- July 10, 2013 email from Cami Peterson, DNR Water Regulations and Zoning Specialist, explaining DNR regulatory authority for an uncontaminated groundwater discharge to a wetland.
- July 15, 2013 letter from the Department to Dane County, identifying Feasibility Report incompleteness items and additional information needed for a feasibility determination.
- July 15, 2013 email from Jennifer Hamill, P.E., DNR Air Management Engineer, with an attached EA summary regarding air pollution control and potential air impacts for the proposed Eastern Expansion of the Dane County Landfill.
- August 13, 2013 email from Kurt Welke, DNR Fisheries Biologist, describing aquatic fauna species expected to be present in downstream tributaries
- August 22, 2013 memorandum from Mary E. Vollbrecht, Chief, DNR Groundwater Section, concerning monitoring well P-306A and concurrence with allowing an exemption for chloride at that well.
- August 28, 2013 Proposed Farm Credit Services Clay Borrow Site Initial Site Inspection request for the Farm Credit Services Clay Borrow Site submitted by Dane County.
  - March 1, 1993 memo from Dave Siebert to Jim Bauer describing an Initial Site Inspection (ISI) conducted on January 14, 1993 concerning wetland and water regulation and zoning issues for the proposed Dane County Farm Credit Services clay borrow site located in the NE1/4 of the NW1/4, and NW1/4 of the NE1/4 of Section 2, T8N, R9E, Town of Westport, Dane County.
  - August 29, 2013 email from Melissa Tumbleson, DNR Conservation Biologist, concerning Henslow's Sparrow habitat at the proposed Dane County Farm Credit Services Clay Borrow Site.
  - September 3, 2013 email from Mark Dudzik, DNR Archeologist, clearing the proposed Dane County Farm Credit Services Clay Borrow Site for concerns about archeological and historical issues.
  - September 5, 2013 email from Wendy Peich concerning wetland and water way issues at the proposed Dane County Farm Credit Services Clay Borrow Site.
  - September 12, 2013 email from Wendy Peich concerning wetland, water way, and storm water issues at the proposed Dane County Farm Credit Services Clay Borrow Site.
  - October 1, 2013 letter from the Department to Dane County, documenting the results of the Department's September 11, 2013 Initial Site Inspection (ISI) for the proposed Dane County Farm Credit Services Clay Borrow Site.
- Feasibility Report Addendum 1, prepared by TRC, Inc., dated August 30, 2013, and received by the Department on September 3, 2013.
- Feasibility Report Addendum 2, prepared by TRC, Inc., dated October 21, 2013 and received by the Department on October 22, 2013.
- The DNR Waste and Materials Management files for the Dane County Landfill, License # 3018.

### **Authorities and Approvals**

**State and Federal Authorities and Approvals:** Under s. 289.23 to 289.31, Wis. Stats., and chs. NR 500-538, Wis. Adm. Code, Dane County must obtain approval from the Department to construct and operate the proposed landfill expansion. Approval from the Department includes a determination that the landfill is feasible; written approval of a plan of operation; written approval of the construction of the landfill; a storm water permit; and a chapter 30 permit for the northern sedimentation pond that is located less than 500 feet from a navigable waterway. Once these approvals are secured, Dane County must obtain a waste disposal operating license from the Department. In addition to the above approvals, Dane County must obtain a construction permit from the Department's Air Management Program, prior to breaking ground on the new site. This permit would incorporate federal Landfill New Source Performance Standards

(NSPSs).

The Department must comply with the requirements of ch. NR 150, the Wisconsin Environmental Policy Act, in evaluating the proposal prior to issuing any permit. Because this proposed facility would have a capacity exceeding 500,000 cubic yards, the Department must prepare an Environmental Analysis and determine whether an Environmental Impact Statement is needed.

Dane County has requested a number of code exemptions in connection with this landfill expansion application. Exemptions to groundwater quality standards in ch. NR 140, Wis. Adm. Code are requested for manganese at monitoring wells M-301A, M-302A, M-302B, and M-303A. Exemptions to groundwater quality standards in ch. NR 140, Wis. Adm. Code are requested for nitrate plus nitrite (as nitrogen) at monitoring wells M-302A and M-302B. The exemptions are requested because baseline groundwater sampling collected from these monitoring wells showed some elevated concentrations of manganese and nitrate plus nitrite (as nitrogen), that are not believed to be from the landfill or landfill related operations. Manganese is naturally occurring and nitrate plus nitrite (as nitrogen) is typically associated with agricultural land use. Chloride has been reported above the NR 140 preventative action limit (PAL) or enforcement standard (ES) at the following wells associated with the existing landfill: M-14A and WT-207A are above the ES, and M-14B, M-17B, and WT-204A are above the PAL for chloride. Well M-17B is located upgradient of the site, indicating chloride is likely to be emanating from off-site sources (i.e., road salt used on roadways adjacent to the landfill). The Department will review well sample results and site conditions to determine whether exemptions can be granted for the wells and parameters listed above.

Dane County would also need exemptions to s. NR 504.04(3)(f), Wis. Adm. Code, relating to minimum setbacks from landfills to water supply wells. There are 6 private wells within 1,200 feet of the proposed limits of waste filling for the Eastern Expansion. One of the wells serves a tavern (Cross Roads Tavern, PW-37), one of the wells serves a church (Hope Lutheran Church, PW-46), one well (PW-50) is a community well that serves 4 residential properties (Rodefeld, 3666 County Highway AB; Mathews, 3646 County Highway AB; Pitcher, 3624 County Highway AB; Moore, 3620 County Highway AB), one well serves a public park (Hope Park, PW-48), and the 2 remaining wells serve residences (Niebuhr at 3124 Luds Lane, PW-51 and Acker at 3725 County Highway AB, PW-43). There are no additional wells within 1,200 feet of the contiguous existing landfill. Dane County intends to pursue exemptions and variances for only 2 of the 6 water supply wells (community well, PW-50 and Niebuhr well, PW-51), abandon and replace 2 of the water supply wells (Hope Lutheran Well, PW-46 and Acker Well, PW-43) at locations greater than 1,200 feet from the limits of fill, and abandon 2 water supply wells (Hope Park, PW-48 and Cross Roads Tavern, PW-37) without replacing them. The Cross Roads Tavern well may be replaced in the future if Dane County develops the Cross Roads Tavern site. The Department will evaluate the locations of these wells relative to groundwater flow, evaluate well construction features, and review geological and hydrogeological conditions to determine whether these exemptions can be granted. Without exemptions, Dane County would have to propose a new footprint to maintain the 1,200-foot separation or abandon wells to obtain approval for the Eastern Expansion. The limits of waste for the expansion area would not be within 1000 feet of any navigable pond or within 300 feet of any navigable stream or river. Two navigable ponds are located within 1,000 feet of the existing landfill footprint. NR 504.04(3) (a) Wis. Adm. Code requires a 1,000-foot setback between a navigable pond and the limits of filling of a landfill. NR 504.04(2) Wis. Adm. Code allows for exemptions to the setback distances stated in NR 504.04(3) Wis. Adm. Code. A small unnamed pond (Pond – B) is situated approximately 900 feet to the south of the existing landfill and approximately 1,900 feet southwest of the proposed Eastern Expansion vertical limits of waste boundary. A second small unnamed pond (Pond – A) is situated approximately 800 feet to the south of the existing landfill and approximately 3,000 feet southwest from the proposed Eastern Expansion vertical limits of waste boundary. Exemptions were previously granted for these two ponds. The Department is not aware of any adverse effects on the ponds listed above caused by the existing landfill. Dane County has requested exemptions for the location of the ponds in the feasibility report. The Department will consider the exemption requests as part of the feasibility determination.

In addition, in order to construct the horizontal expansion as designed, Dane County would need an exemption from section NR 504.06(2)(b), Wis. Adm. Code, which requires a vertical separation of at least 10 feet between the seasonal high water table and the bottom of the clay component of the liner. As stated above, Dane County proposes to install a groundwater gradient control layer underneath the landfill liner.

Dane County has also requested exemptions for the hydrogeological and geological subsurface investigation. These exemptions are requested due to data gathering and reporting issues from historical geotechnical investigations and from difficulty obtaining representative samples during the drilling and sampling of the subsurface in the most recent geotechnical investigation. These exemptions are likely to be granted based on the large volume of information generated during previous landfill feasibility studies at the site.

**Local Authorities and Approvals:** State statutes provide for local participation in the process of siting a new or expanded landfill. In accordance with the siting statute (ss. 289.21-289.36, Stats.) and the procedures administered by the Wisconsin Waste Facility Siting Board, Dane County formally notified Dane County, the City of Madison, the Town of Cottage Grove, and the Waste Facility Siting Board on August 1, 2012; and the Town of Blooming Grove on August 2, 2012 of its intent to site a landfill expansion, described the rights of the municipalities to enter into negotiation/arbitration, and requested that the municipalities specify all local approvals that would be necessary. The Town of Cottage Grove and the City of Madison both adopted the required siting resolutions and filed them with the State Waste Facility Siting Board, entitling them to participate in local negotiations regarding the proposed landfill expansion.

On August 7, 2012, the Town of Blooming Grove replied to Dane County stating that there were no applicable permits or approvals required for the project.

On August 14, 2012, the Town of Cottage Grove replied to Dane County stating that there were no local approvals required for the project.

On August 15, 2012, the City of Madison replied to Dane County by providing a list of potentially necessary permits and approvals. A subsequent September 25, 2012 letter from Dane County to Assistant City Attorney Doran Viste states that the approvals referenced in the August 15, 2012 letter would be conveyed through the local host agreement between Dane County and the City of Madison.

The various local approvals, including rezoning and conditional use permits, are topics to be discussed with representatives of the participating municipalities in the context of the local negotiation/arbitration process. Typically the final agreement waives local approvals as provided in s. 289.33(5), Stats. The host agreement once signed will typically convey all the local approvals instead of separate local approvals being issued. Local approvals not covered by the host agreement would still be needed from the governing jurisdiction, and if not granted, could result in Dane County having to modify or abandon the proposed expansion.

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## **AFFECTED ENVIRONMENT**

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### **Facility History**

The existing facility consists of 169 total acres. The approved design capacity of the existing approved landfill consists of an approximately 76 acre footprint developed in eight phases and having a design capacity of approximately 7,071,400 cubic yards. The original landfill footprint, which was approved by the WDNR in August 1984, began operations in January 1985 and consists of a 50.5 acre footprint with a design capacity of 3,800,000 cubic yards. A Western Expansion consisting of a 25.5 acre horizontal footprint and vertical overlay was developed with a design capacity of 3,271,400 cubic yards and was approved by the WDNR in March 1994. The proposed landfill expansion would provide an estimated additional 15 years of capacity for waste disposal. This Environmental Analysis focuses on the proposed Eastern Expansion. Prior to the site being used for landfilling it was used as a wood burning site for Dane County.

Based upon a review of historical monitoring well and private water supply well results, the existing facility does not appear to be impacting groundwater. The existing facility did have a fugitive gas problem at gas probe 11 which has since been remedied by adding gas wells and adding a dual extraction system to gas wells at the site.

### **Existing Landfill Design**

The original landfill footprint began operations in January 1985 and consisted of phases 1 through 4 that were constructed in sequential order from phase 1 near the center of the existing site to phase 4 on the eastern edge of the site. This portion of the landfill was constructed with a 5-foot thick compacted clay liner. The Western Expansion consisted of phases 6 through 8 as a horizontal expansion and phase 5 as a phase overlaying the top of the landfill. The Western Expansion is currently open and accepting waste at the upper elevations of the landfill in phases 6 and 7. The landfill is almost full to its approved capacity. Western Expansion cells 6, 7, and 8 are lined with a composite liner consisting of 4 feet of compacted clay and a plastic geomembrane. The entire existing landfill also includes a leachate collection system and gas extraction system, as well as surface water conveyances and a partial composite cover over phases 1 through 4.

### **Other facilities on the property**

The property also contains: a composting operation; a tire storage area; an asphalt shingle storage area; a household hazardous waste collection facility; an electronics collection facility; a shop building; a roll off box storage area; a recyclables and construction and demolition recycling transfer operation (associated with the household hazardous waste facility); and offices, roads, soil stockpiles and other landfill support facilities.

### **Topography, Geology, and Soils**

The proposed Eastern Expansion is located in an area of flat to gently rolling terrain. Within the property boundaries, the natural land surface elevation varies from approximately 870 feet M.S.L. in the northern portion to approximately 900 feet M.S.L. in the southern portion near State Highway 12 and 18. Overall, natural on-site relief is approximately 30 feet. The predominant topographic surface feature within sight of the proposed landfill is the existing landfill, which is directly west of the proposed Eastern Expansion, and rises to an elevation of approximately 999.6 feet M.S.L., about 120 feet above predevelopment grades, or about 110 feet above the land surface elevation at the intersection of State Highway 12 and 18 and County Highway AB.

The proposed Eastern Expansion is located in an area underlain by a thick sequence of unconsolidated glacial drift of the Horicon Formation deposited over dolomite bedrock of Ordovician age. The Horicon Formation generally consists of brown sandy till, but also includes sand and gravel deposited by glacial meltwater and clay, silt and sand deposited in glacial lakes. This till was deposited by the Wisconsin Valley Lobe during the Wisconsin Stage of continental glaciations. Subsurface investigations performed in the area of the proposed Eastern Expansion encountered glacial sediments that extended down to at least 95 feet below the land surface. The sediments encountered in these investigations consist of silty clay (glacial lacustrine deposits), silty sand glacial till with scattered pebbles, cobbles, boulders (poorly sorted ice contact deposits), and sand and gravel (outwash and lacustrine sand deposits). Near-surface geologic materials at the site consist of glacial drift as well as finer-grained loess and coarser outwash materials. The drift and associated deposits range from 70 to 153 feet in thickness, measured from the current land surface, in the proposed expansion area. Below the glacial drift lies Ordovician age dolomite bedrock of the Galena-Platteville Formation. The dolomite varies from approximately 40 to 220 feet in thickness and is underlain by significant thicknesses of limestone, dolomite, and sandstone that are relied upon for most domestic and municipal water supplies in the region. Surficial soils in the vicinity of the site range from well drained silt-loam to poorly drained muck and consist primarily of the following: Dodge silt loam, Ringwood silt loam, Sable silty clay loam, Houghton muck, and St. Charles silt loam. The soils have been excavated, graded, or disturbed by landfilling or support activities in most of the expansion area.

### **Hydrology and Hydrogeology**

The expansion is located within the Yahara River watershed. The Yahara River is located about 3.5 miles west of the site and ultimately drains to the southeast into the Rock River near Fulton, Wisconsin. The Yahara River flows through four lakes-Mendota, Monona, Waubesa, and Kegonsa-of which Lake Waubesa is closest to the landfill located approximately 4 miles to the southwest. The watersheds can be further divided into the northern half of the site which is drained by ditches and unnamed streams to the east and eventually contributes to Door Creek which joins the Yahara River near Lake Kegonsa. The southern half of the site is drained by ditches and unnamed streams into Mud Lake (a widening of the Yahara River at the North end of Lake Waubesa). The drainage system of the Yahara River watershed is generally poorly developed with many lakes and wetlands, and poorly drained areas. Natural drainage on the Dane County property has been altered by the construction of the existing landfill. The existing landfill includes a drainage layer in the landfill cap of closed areas and drainage ditches around the landfill which route runoff through sedimentation basins. The sedimentation basins are designed to hold the water long enough for the majority of suspended sediment to drop out before the runoff water is discharged to the drainage basin, thus minimizing the effects on aquatic species caused by turbidity.

Previous hydrogeological investigations show that the elevation of the water table ranges from about 857 feet M.S.L. to 874 feet M.S.L. within the unconsolidated glacial drift. Seasonal fluctuations in the groundwater are apparent at the site-generally higher in the spring and lower in the fall. Shallow groundwater generally discharges to a drainage ditch located within the southern portion of the wetland that parallels the north side of the existing landfill. Groundwater is near the surface in the glacial till deposits, and flows north and slightly west in the area of the proposed expansion and eastern half of the site. On the western half of the site groundwater flows radially away from monitoring well WT204A and radially toward monitoring well M-14A. Regional groundwater flow in the bedrock below the unconsolidated formations is to the southwest.

The geometric mean hydraulic conductivity of the till deposit is  $9.4 \times 10^{-4}$  cm/sec. The average linear velocity for groundwater flowing within the Horicon silty sand till aquifer is estimated to be on the order of 30 feet per year or 0.08 foot per day. This estimate of average linear velocity was calculated using the mean hydraulic conductivity value in the till, the highest observed horizontal hydraulic gradient across the Eastern Expansion between selected wells, and an estimate (0.25 percent) of effective porosity.

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## **DNR EVALUATION OF PROJECT SIGNIFICANCE**

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### **Effects on Terrestrial Resources**

The horizontal expansion would comprise an area between the existing landfill and Highway AB. The eastern boundary of the proposed expansion limits of waste is parallel to highway AB and is about 140 feet west from Highway AB. The north-south width of the proposed eastern expansion would be about 500 feet wider than the existing landfill with about 200 feet extended beyond the current southernmost point of the existing landfill and about 300 feet north of the northernmost point of the existing landfill. The total north-south width of the proposed expansion is about 2,050 feet. Almost all of this area has been disturbed by previous grading, soil stockpiling, composting, and landfill and waste services support activities. Two sedimentation basins would be constructed to treat storm water from the proposed landfill expansion. One sedimentation basin would be to the north of the expansion and would discharge to the northern wetland (Wetland #1). A second sedimentation basin would be located to the south of the proposed expansion and would discharge to the southern wetland (Wetland #4). The proposed vertical overlay would not exceed the current projected height of the existing and approved landfill of 999.6 feet M.S.L.

Construction of the proposed horizontal landfill expansion would permanently alter the existing topography, drainage, and physical resources within the site which are currently dominated by the presence of the existing Dane County Landfill. The expansion would increase the area of new landfill waste filling by about 28.6 acres (by comparison, the current Dane County Landfill facility includes about 76 acres of waste fill area). Approximately 11 additional acres would be altered to accommodate construction of peripheral landfill features including access roads, ditches, 2 sedimentation basins, and a gas to energy facility that consists of reciprocating engines that burn landfill gas and power electrical generators that feed power to the local power grid. The vertical expansion over the existing landfill would occupy an overlay of approximately 17 acres over the already permitted original landfill.

Preliminary calculations indicate that approximately 579,200 cubic yards of general fill and topsoil would be excavated from the horizontal expansion area within or directly adjacent to the Eastern Expansion footprint and from the vertical expansion area. A total of 394,500 cubic yards of general fill and topsoil would be needed to fill low areas; construct berms, roads, ditches, final cover layers; and build other features needing these types of soils; which means that general fill and topsoil needed to construct the expansion would not have to come from an off-site borrow source.

Earth materials would need to be imported to construct the engineered base features of the landfill. The select aggregate fill, meeting NR 504.06(5) Wis. Adm. Code requirements, for use in constructing the drainage layers and for pipe bedding would be obtained from local commercial sources. Approximately 75,500 cubic yards of select aggregate material (gravel) would be required to construct the gradient control system as proposed, the drainage layer for the 17 acre overlay portion, and the drainage layer for the 28.6 acre horizontal expansion. Additional sand or aggregate fill material would be needed to construct the sand blanket portion of the gradient control system. The feasibility report states that a geocomposite layer may be used to cap the expansion. If a geocomposite layer is not used, the amount of select aggregate would be greater. The total estimated volume of select clay to construct the 4-foot thick base liner and the cap for the proposed expansion would be 414,600 cubic yards. The total amount of select clay required to build the first phase, phase 9, including liner and cap is 102,400 cubic yards. The select granular fill would likely be purchased from a commercial source. The clay would be obtained from a borrow source named the Farm Credit Services Clay Borrow Site or from a commercial source. Two commercial sources are mentioned in the feasibility report. If the landfill is approved, Dane County may request approval from the Department through a plan of operation modification to use soils obtained from other soil borrow sources.

The proposed Eastern Expansion is located in an area of flat to gently rolling terrain. Within the property boundaries, the natural land surface elevation varies from approximately 870 feet Mean Sea Level (M.S.L.) in the northern portion to approximately 900 feet M.S.L. in the southern portion near State Highway 12 and 18. Overall, natural on-site relief in the expansion area is approximately 30 feet. The predominant topographic surface feature within sight of the proposed

landfill is the existing landfill, which is directly west of the Eastern Expansion, and rises to an elevation of approximately 999.6 feet M.S.L., about 120 feet above predevelopment grades, or about 110 feet above the land surface elevation at the intersection of State Highway 12 and 18 and County Highway AB. The landfill expansion, when completely filled, would rise to a maximum elevation of 999.6 feet M.S.L, or equal to the approved final grade maximum elevation for the existing landfill. The final cover would consist of 4:1 (25 percent) slopes starting at the landfill perimeter berms and extending up to elevations that range between approximately 960 to 990. From that point, the final cover would consist of a 5 percent slope until it peaks out at approximate elevation of 999.6 feet M.S.L. After closure, the site would be vegetated with a grass seed mixture and maintained as open green space.

The project would occupy about 40 acres upon completion, 28.6 acres of landfill space along with an additional approximately 11.4 acres to accommodate construction of peripheral landfill features including access roads, ditches, sedimentation basins, and a gas to energy facility. The entire 40 acres proposed for landfill development and associated structures would be lost to most other uses indefinitely. Existing topography and drainage within the site would be permanently altered as described above. The landfilling operations would be visible from State Highway 12 and 18, County Highway AB, Hope Park, Yahara Hills Golf Course, and from residences in the vicinity. Dane County intends to keep as many of the existing trees as possible to provide screening for the facility and would use screening berms constructed at the landfill for any waste filling within 1,000 feet of Highway 12 and 18, Hope Park, and the Yahara Hills Golf Course. The soil screening berms would be constructed at the outside edge of the waste mass around the perimeter of the Eastern Expansion when the waste filling starts to extend above the top of the Eastern Expansion perimeter berms or the screening trees that are left in place.

Some of the land that would be used for the Eastern Expansion is prime agricultural land. The prime agricultural land is in small fragmented parts and much of it has trees on it that would prevent farming. It is unlikely that future agricultural use would occur given the current ownership, current use (park, landfill, running trail, and road right of way), the small size of the prime agricultural lands, and the geometry of the parcels

The landfill expansion would be permanent and would need to be cared for by Dane County in perpetuity. The landfill would continue to generate landfill gas that would have to be extracted, managed and monitored for a number of decades. Dane County would also need to monitor the groundwater during the 40-year proof of financial responsibility period following closure and possibly longer.

### **Effects on Aquatic Resources**

The vertical overlay component of the proposed landfill expansion would have a negligible effect on groundwater resources. The horizontal expansion would limit infiltration over 28.6 acres and could slightly reduce the volume of groundwater being discharged to the northern wetland.

The proposed horizontal expansion would alter existing surface water drainage patterns in the immediate area of the landfill. Alterations would be from construction and operation of the landfill phases, and then in the future with capped landfill cells with slopes, and the engineered surface drainage system. There is an estimated 20 acres of land that is part of a 500 acre watershed which currently drains to the existing sedimentation basin on the north end of the proposed expansion area and eventually to the northern wetland. The landfill expansion would change the drainage from the 20 acres to flow to a proposed sedimentation basin to the south of the proposed expansion and then to the southern wetland. Rerouting the surface water is not expected to cause a detrimental effect on the northern or southern wetlands.

Currently, precipitation falling into the proposed landfill area infiltrates directly into the wetland areas or upland areas. After infiltrating uplands, water enters the shallow groundwater flow system typically discharging into the northern wetland, or existing surface drainageways. During landfill operations, water falling into the active waste filling area and percolating through the waste would be captured by the leachate collection system. This leachate would either be recirculated into the waste to aid in decomposition, or would be sent offsite via sewer for treatment at a wastewater treatment plant. After landfill closure, precipitation would fall on grass-covered slopes overlying a granular drainage layer that would route water to drainage ditches and sedimentation basins before discharging it to the natural surface drainage. Additional surface water infrastructure would be built if the project is approved. The additional infrastructure would include the addition of a both a northern and southern sedimentation basin. The northern sedimentation basin would replace an existing northern sedimentation basin that is located entirely within the proposed Eastern Expansion area.

The engineered surface water features would be designed to control runoff and storm water flows in accordance with ch. NR 216 and NR 151, Wis. Adm. Codes. Storm water would be strictly separated from leachate; all water contacting waste

would be directed into the leachate collection system. The storm water diversion berms, conveyance channels, energy dissipaters, sedimentation basins, and where velocities dictate erosion matting and/or riprap would be designed to reduce peak discharges and sediment loads before water leaves the site. With the 20 acre exception above, the drainage system is also designed to replicate the existing (predevelopment) proportions of total site acreage that drain to each receiving surface water body.

Impacts to downstream tributaries closest to the project site would depend on the success of the surface water drainage system in replicating flows as well as the performance of the sedimentation basins in removing suspended sediment prior to discharge. The watersheds can be divided into the northern half of the site which is drained by ditches and unnamed streams to the east and eventually contributes to Door Creek which joins the Yahara River near Lake Kegonsa. This northern watershed would receive the discharge from the northern sedimentation basin. The southern half of the site is drained by ditches and unnamed streams into Mud Lake (a widening of the Yahara River at the north end of Lake Waubesa). This watershed would receive the discharge from the southern sedimentation basin. The drainage system of the Yahara River watershed is generally poorly developed with many lakes and wetlands, and poorly drained areas. Due to previous disturbances of ditching, tiling, and wetland fill the area in proximity to the landfill does not contain any aquatic flora of public rights feature or public trust importance as stated in NR 1.06(5) Wis. Adm. Code<sup>1</sup>, and contains only very tolerant fauna represented by forage species associated with high temperatures, soft sediments, and low flows. Discharges would be to the uppermost reaches of small tributaries in these systems, where specific fish species have not been recorded. Species in downstream tributaries include central mudminnow, creek chub, white sucker, green sunfish, black bullhead, brook stickleback, bluntnose minnow, and northern pike.

During construction, best management practices would be used to minimize and control erosion and prevent damage to wetlands and surface water systems. Examples of these practices include temporary diversion berms, sedimentation basins, silt fencing, and hay bale check dams.

**Wetlands:** There would be no direct loss of wetlands to complete this project. There are 2 wetlands in proximity to the landfill expansion

There is a wetland to the north (northern wetland, or Wetland #1) that is approximately 150 acres in size. None of the wetland is on the property currently owned by Dane County. However, 3.2 acres of the northern wetland are on the approximately 24 acres of property that Dane County has a pending agreement with the City of Madison to purchase. The northern wetland is about 200 feet from the proposed limits of fill for the proposed expansion. Grading and excavating may occur as close as 20 feet from the northern wetland to construct a sedimentation pond. However, no grading or excavating is proposed within the wetland boundaries. In addition, a groundwater gradient control system would rarely discharge a low volume (up to 5 gallons per minute) of groundwater to the northern wetland.

There is a wetland to the south of the proposed expansion (southern wetland or Wetland #4) that is approximately 1.3 acres in size. Grading and excavating may occur as close as 50 feet from the southern wetland to construct a sedimentation pond. No grading or excavating is proposed within the southern wetland boundaries.

As the landfill is developed, the individual phases would be constructed by installing a very low permeability liner. Precipitation that contacts the liner after the initial placement of waste would be treated as leachate and sent offsite for treatment. This would slightly impact groundwater by reducing infiltration in the area of the liner.

Approximately 20 acres of the 500 acres within the Wetland #1 (northern wetland) watershed would be rerouted to Wetland #4 (southern wetland) as part of the Eastern Expansion development. As a result, the total anticipated flow would be reduced to the northern wetland by approximately 3.5 percent. This reduction equates to an approximate decrease in potential drainage of 0.35 inches to the northern wetland. Although a decrease, the change is insignificant because water flowing from the sedimentation basin discharge point will only flow to the small portion of the delineated wetland located to the south of the drainage ditch (see plan sheet 22, Final Grades with Closure Sequence). The drainage ditch that drains the northern wetland and maintains the northern wetland water level will capture any flow of significance before the water reaches the remainder of the northern wetland complex. The drainage ditch controls the level of the water in the northern wetland thus maintaining a constant maximum head.

Currently shallow groundwater at the site in the area of the expansion flows to the north and discharges to the northern wetland and an associated drainage ditch that maintains the water level in the northern wetland. A gradient control

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<sup>1</sup> Public Rights Features are defined in attachment 1

system will intercept groundwater below the liner on rare occasions at a volume of up to 5 gallons per minute. This will reduce groundwater flow to the northern wetland. However, the groundwater intercepted by the gradient control system will be piped to the northern wetland resulting in a net neutral impact to the northern wetland

The southern wetland water level is above the nearby groundwater levels in monitoring wells and it appears to be fed by surface water discharges. The southern wetland appears to be a result of the reconstruction of U.S. Highway 12 and 18. The high water level in the southern wetland is controlled by a culvert. Since this wetland appears to be primarily fed by surface water, it is upgradient of the gradient control system, and since the gradient control system is expected to have a low volume discharge (up to 5 gallons per minute) no significant impacts on the southern wetland are anticipated as a result of operating the gradient control system. The diversion of 20 acres of surface water run-off from the northern wetland to the southern wetland may result in impacts to the small approximately 1.3 acre southern wetland. The potential impacts to the southern wetland will be evaluated as a part of the plan of operation and the storm water permitting process. Some of the potential impacts could be mitigated by the size and overall design of the southern storm water pond. These potential impacts could also be mitigated by changing the design of the storm water control features at the existing landfill and proposed landfill expansion.

### **Effects on Biological Resources**

**Wildlife and Habitat:** A Natural Heritage Inventory (NHI) database review was conducted for the Dane County Eastern Expansion and a two-mile radius around the site on May 31, 2012. Three plant species; the Giant Yellow Hyssop (threatened in Wisconsin), the Prairie False-dandelion (special concern in Wisconsin), the Slim-stem Small Reed Grass (special concern in Wisconsin); and one animal species; the Prairie Vole (special concern in Wisconsin) were identified. A June 6, 2012 email from Emma Pelton (Endangered Resources Specialist) stated that there was no suitable habitat at this site for any of the three plant species listed above. A June 27, 2012 email from Mike Mossman (Forest Community Ecologist) stated that there was no suitable habitat for the Prairie Vole at this site. An additional Natural Heritage Inventory (NHI) database review was conducted for the Dane County Eastern Expansion and a two-mile radius around the site on May 30, 2013. In addition to the species listed above two more plant species were identified, the Knotweed Dodder (special concern in Wisconsin) and the Rope Dodder (special concern in Wisconsin). A June 7, 2013 email from Kelly Kearns (Invasive Plant Coordinator) stated that as long as wetland regulations are being adhered to, there would be no additional concern for the dodder species listed above.

Most of the area within the proposed expansion area has been used for landfill support activities such as a roll off box storage area, a yard residuals composting area, a gas to energy facility, soil stockpiles, a sedimentation pond, and roads. The balance of the expansion area is wooded, a cross country running trail, and open green space.

**Forestry Resources:** Dane County would keep as many existing mature trees around the expansion as possible for screening purposes. The remaining trees are typically of low value due to both species and diameter. A timber sale may be possible for the trees that would be cut. However, the amount of timber acres available and the low value of the timber limit its marketability for a timber sale. There are some burr oak trees on the northern end of the Eastern Expansion site that may be impacted. These burr oaks have some wildlife food and habitat value.

### **Buildings, Roads and Structures**

The expansion would share the existing gas-to-energy facility located on the western end of the site with the existing landfill. The gas to energy and flare station currently located to the east of the landfill would be relocated to a location just east and slightly north of the landfill gated entrance. The existing sewer lines and lift stations would continue to be used. Additional lift stations and sewer line would be added as necessary to serve the expansion. An existing sedimentation basin would be abandoned because it is within the limits of waste for the proposed Eastern Expansion. Two new sedimentation basins would be constructed, one to the north of the proposed expansion and one to the south of the proposed expansion. Additional roads would be constructed primarily on the east end of the proposed expansion. There would be a net increase in road length at the facility of 0.45 miles as a result of the proposed expansion.

### **Emissions and Discharges**

**Air:** The proposed landfill expansion would generate landfill gas. Gas from municipal landfills primarily contains methane and carbon dioxide with trace amounts of sulfur dioxide, nitrogen dioxide, and nonmethane organic compounds (NMOCs), such as vinyl chloride, toluene, benzene, and formaldehyde. The methane and carbon dioxide is generated through the

decomposition of organic refuse in the absence of oxygen. Particulate matter (dust) is also a potential air emission resulting from landfill operations and construction.

Dane County operates a landfill gas to energy facility that generates electrical power sold to the local utility and distributed through the local power grid. Seven landfill gas fired reciprocating engines/generator sets and a flare are currently permitted at this facility. A portion of the landfill gas collected is processed and used for vehicle fuel for Dane County vehicles. The County's existing system includes a series of vertical gas extraction wells connected to a gas header pipe placed in the waste mass and blowers that transport the collected gas to the County's existing gas to energy systems located at the western and eastern ends of the existing landfill. The County proposes to relocate the existing gas to energy system on the eastern end of the existing landfill to an area along the southern boundary of the existing landfill when the system is removed for construction of the proposed expansion.

The existing active landfill gas management system would be advanced into the new expansion area. The expansion design for the active landfill gas management system would consist of vertical gas extraction wells installed in the waste mass, leachate collection lines at the base of the landfill, and combination leachate recirculation/gas collection lines that would collect and transport gas by header pipes to blower and engine buildings. This system would control the migration and concentration of landfill gas. The gas system would also be designed to control the emission of hazardous air contaminants. Gas monitoring probes would be installed around the perimeter of the landfill and monitored regularly. The landfill gas collection system would be installed to control the migration and concentration of explosive gases, as well as the emission of hazardous air contaminants. The expansion would include a low-permeability composite liner and cap to prevent methane gas from escaping and migrating. The volume of collected landfill gas, as well as the fugitive emissions from the landfill cover, would increase as a result of the Eastern Expansion. The chemical characteristics of the landfill gas are not expected to change. Air quality would be monitored to comply with the Federal Title V regulations. A detailed landfill gas management system would be included in the plan of operation.

The existing landfill currently operates under an air pollution control permit. An application for a construction air permit per NR 406 for the Eastern Expansion would be developed in conjunction with the plan of operation preparation and would be submitted to WDNR's Air Management Program. An approved construction air permit would be obtained prior to landfill construction. The approved construction air permit would demonstrate that the applicable ambient air quality standards would be attained and maintained. Dane County has been classified as attainment for ambient air quality, by the U.S. Environmental Protection Agency (EPA).

A dust, odor, and windblown debris control plan would be included in the plan of operation and implemented during construction and operation of the landfill. Dust may be generated at times, especially during periods when soil is excavated and moved, and during landfill construction. Dane County would use a combination of paved and unpaved access roads constructed to and around the landfill perimeter. The main haul road from the scale house through much of the property is currently paved. The County currently controls dust through the implementation of its Dust Control Plan, which includes watering the haul roads, applying calcium chloride, setting up wind screens, and other operations to minimize the emission of particulate matter. Dane County would continue to utilize this plan as part of Eastern Expansion operations.

Dane County utilizes an odor control plan. In general, the existing plan controls odor from daily operation by covering waste each day with soil or approved alternate daily cover and through the operation of an active gas management system. A final cover consisting of clay (or as an alternative, a geosynthetic clay liner (GCL)), geo-membrane, rooting zone, and topsoil would be placed over areas that are closed. Prior to final cover placement, gas extraction wells would be drilled through the waste mass at different locations and a vacuum would be applied to the wells in those areas, in order to draw gas out of the landfill and combust the gas.

The combination of the composite liner and the active gas extraction system should prevent any significant off-site, subsurface migration of potentially explosive methane gas from the proposed site. Gas probes would be installed around the site to allow monitoring for gas migration.

Perimeter fencing would be used to control windblown litter. The surrounding landfill facility would be monitored for windblown litter, and the litter would be collected by site personnel as required.

There would be emissions from trucks delivering waste to the facility. In addition there would be emissions from trucks hauling clay, aggregate/granular soil materials, and other materials used in landfill construction and operation.

**Dust, Noise, Litter and Odors:** Dust, litter, noise, and vehicle exhaust gases would continue to occur in the immediate vicinity of the site during the 15-year construction and operational life of the expansion. In addition, odors produced by decomposing waste may be noticeable at times during the operational life of the facility. The odors would vary depending on temperature, wind speed and direction, and other weather conditions. The level or intensity of these effects would be similar to those occurring at the current Dane County Landfill. There are a number of strategies for odor control at landfills, including effective gas collection and destruction, use of adequate daily cover, minimizing open area; effective leachate control and, if needed, vapor masking agents that can be sprayed to reduce odors.

Truck traffic on unpaved roads, disposal operations, and construction activities would create airborne dust. The Department could require dust control measures as a condition of approval. Typical measures include spraying water onto roads and dusty waste. Monitoring for total suspended particulates was previously required for the current facility and discontinued after the facility satisfied the requirements to limit particulate concentrations.

Windblown litter (mostly paper and plastic film) can occasionally pose problems at municipal solid waste landfills particularly when wind speeds are high, the working face is exposed to the wind, or when the active phase is at a high elevation. Dane County can reduce windblown litter generation by minimizing the size of the working face, installing litter fences, reducing or ceasing operations during the windiest days, and employing litter collection personnel. Currently, Dane County uses all the methods listed above to control and collect windblown litter.

The proposed expansion limits of waste are approximately 250 feet from the nearest residential dwellings located to the east of County Highway AB and the proposed Eastern Expansion. The residential properties along County Highway AB have the potential to be the most impacted by noise, dust, odors, windblown litter, and the visual impacts of landfill operations. In addition, the risk for fugitive gas emissions is increased due to the proximity of the properties and their associated residences to the proposed limits of waste. However, the risk of fugitive emissions is reduced due to the proposed Eastern Expansion design that includes both a composite cap, composite liner, and an active gas extraction system.

**Leachate:** The proposed landfill would include a comprehensive leachate containment and collection system. Leachate would be extracted from the landfill. Dane County estimates that most or all of the leachate would be recirculated into the waste mass during the period of active landfilling. Leachate that could not be recirculated due to excessive volumes or other reasons would be sent to the Madison Metropolitan Sewerage District via onsite sewer lines to the sanitary sewer that serves the property. Dane County has a permit from Madison Metropolitan Sewerage District to allow for disposal of leachate until the permit expires on May 4, 2015. Leachate generated by the expansion would be expected to have similar characteristics to the leachate currently being generated by the Dane County Landfill that is currently being recirculated or sent to Madison Metropolitan Sewerage District for treatment. This leachate contains some amounts of metals and organic compounds, such as volatile organic compounds (VOCs) that leach out of the waste.

Dane County estimates the maximum rate of combined leachate generation for the existing landfill and the Eastern Expansion during landfill operations would be approximately 18,300 gallons per day. Leachate generation would continue at a reduced rate after landfill closure; the calculated rate of generation after closure, both from the current sites and the proposed expansion, is approximately 9,000 gallons per day. Amy Schmidt, DNR wastewater engineer, did an analysis and concluded that the designated Madison Metropolitan Sewerage District wastewater treatment plant that would receive leachate via the City of Madison sewer system has sufficient capacity to accept the leachate.

**Surface Water:** No significant discharge of surface water pollutants would be expected to result from the project. Leachate would be segregated from storm water and handled either within the waste fill or sent to the Madison Metropolitan Sewerage District for treatment at a wastewater treatment facility. Storm water would be routed through sedimentation basins before discharge to surface water. The facility is designed to attenuate storm flow peaks.

**Groundwater:** Significant impacts to groundwater quality from the Eastern Expansion, if approved, are not anticipated. Current regulation of landfill design and construction under chapters NR 500 through 538, Wis. Adm. Code and 40 CFR Part 258 (Subtitle "D") of the federal administrative code should prevent significant impacts to the groundwater. The groundwater standards under chapter NR 140, Wis. Adm. Code are enforceable, and if exceeded would require the Department to seek restoration to acceptable standards. The proposed landfill design includes a composite liner with 4 feet of compacted clay overlain by a 60-mil synthetic geomembrane. It is estimated that this composite liner, in conjunction with efficient collection and removal of leachate from within the landfill, would virtually eliminate infiltration of leachate to the subsoils and the water table. Groundwater at the site would be monitored semiannually for a variety of contaminants and indicator substances to ensure that any contamination that occurred would be detected and remediated

before traveling offsite or to a point of groundwater use. The Department could also require analysis of any water collected from the groundwater gradient control system beneath the landfill liner to ensure that any leakage through the liner was detected as early as possible.

Baseline groundwater monitoring of the proposed expansion area indicates that groundwater quality has not been affected by contaminant discharges in the horizontal expansion area. Some existing landfill site wells have elevated levels of alkalinity and hardness that represent high natural background soil, bedrock, and groundwater concentrations of these substances. In addition, elevated levels of chloride are found in some existing site wells. It appears that the elevated chloride concentrations are related to road salt applications on public roads adjacent to the facility and road salt applications and tracking on facility roads. Well M 17B is located upgradient of the site and it has elevated chlorides in it further indicating chloride is likely to be emanating from off-site sources. Although there have been trace levels of VOCs found in some monitoring wells in the past, the results are typically not confirmed by subsequent sampling or they are compounds that are typical laboratory contaminants. The annual 2012 sampling had no VOC exceedances. VOCs are the best indicator of a release from a municipal solid waste landfill; however, their presence in groundwater samples does not always mean that a release from the landfill has occurred, if there are other potential sources in the area, including spills, storage tanks or even contamination from the laboratory analyzing the samples. Based on the results for the wells at the Dane County Landfill it does not appear that the existing landfill is having a detrimental effect on groundwater.

### **Social/Economic/Cultural Effects:**

The Dane County Landfill is located in a rural area that contains a mix of agricultural, industrial, and residential land uses. The neighboring property to the south is a publicly owned golf course; to the east is a tavern, a self-storage business, residences, a construction contractor's materials yard; to the north is Hope Park, the approximately 150 acre northern wetland, and another tavern; and to the west is the existing landfill and a hotel.

The majority of the proposed landfill expansion site is not used by the public for scenic or recreational resources. However, areas outside of the current landfill fence are used for a cross country running track and part of the landfill grounds to the north of the landfill are used as a remote control airplane park. Dane County has indicated that after closure, the site would be designated as open green space, but has not proposed any public access or use of the closed landfill. State codes prohibit building structures, farming, or excavating on closed landfills. The presence of the landfill provides some economic benefits to the local community. Many of these are defined by the terms of the local negotiated agreement. Dane County and the participating municipalities have begun negotiations for the proposed expansion, but have not yet completed an agreement. However, based on the host agreement that covers the current active landfill, and on typical agreements in Wisconsin, Dane County would pay a per-ton fee to the host community and provide additional funds for road maintenance. Dane County may also monitor private water supply wells in the vicinity of the landfill, and provide property value protection for neighboring properties whose value is diminished by the presence of the landfill. The landfill and the associated transfer station also employs about a dozen people and purchases local goods and services.

Social and economic costs of landfills include degraded visual aesthetics due to the landfill and the height of the landfill, increased truck traffic, odors, noise, dust, and foregone other future productive uses, and some long-term risk of environmental contamination due to air emissions and future groundwater contamination. However because of the proposed landfill design, the risks from environmental contamination are believed to be small.

An Initial Site Inspection (ISI) was conducted on June 15, 2012. An ISI is done at the request of the applicant to identify any conflicts with the locational or performance criteria listed in NR 504 Wis. Adm. Code. A review of DNR's archeological and historic structures geographic information systems maps at the time of the ISI indicated that there were potential archeological or historical features in the northeast portion of the project area. Subsequent survey work was performed by Archeological Consulting and Services, Inc., and a report was submitted with the Initial Site Report (ISR) and to DNR Archeologist Mark Dudzik. Mark Dudzik concurred with report's findings in an email dated November 16, 2012 and declared the area cleared for archeological concerns. An ISR is a report submitted under NR 509 Wis. Adm. Code which describes a solid waste facility in sufficient detail to allow the Department to give a written opinion on whether or not a feasibility report should be prepared. There are no state natural areas in or near the proposed landfill expansion area.

### **Significance of Cumulative Effects**

Solid wastes have been landfilled on the Dane County property for nearly 30 years. This proposal would be the second expansion of the original landfill that began operations in 1985. This expansion would increase the cumulative impact of

landfilling in this area resulting in a 104.6 acre landfill. Concentrating landfilling on this property would result in economies of scale for support activities and infrastructure, and would avoid disruption of hauling routes. It would be likely that the waste-to-energy utilization of landfill gas would continue and possibly be expanded.

Some impacts would not be cumulative. Noise, odor, air emissions, dust, litter, and traffic would persist into the future, but would not necessarily increase in impact. Although the impacts themselves would not necessarily increase, the proximity to nearby homes would decrease. As stated above the nearest residential dwellings are approximately 250 feet from the proposed limits of waste. The nearby properties to the east would experience an increase in noise, odor, air emissions, dust, litter, and traffic just due to the proximity to the waste filling activities at the proposed expansion.

### **Significance of Risk**

The environmental effects of solid waste disposal facilities have been well documented by the Department as well as nationwide in the scientific literature. The requirements and specifications for landfill siting, design, construction, operation, monitoring, closure and long-term care, as defined by chapters NR 500 through 538, Wis. Adm. Code, have been developed to prevent the adverse environmental effects that have been associated with landfills in the past. All new municipal solid waste facilities must be developed in accordance with chapters NR 500 through 538, Wis. Adm. Code, and with federal criteria (40 CFR Part 258), and are expected to meet the performance standards established by these rules. Department staff would inspect key areas of construction, general operation, and maintenance procedures to ensure compliance with the above codes.

The landfill expansion would also be evaluated during operation and after closure for compliance with pertinent performance standards through an extensive environmental monitoring program to reduce the possibility, or the extent, of any groundwater contamination. Water from groundwater monitoring wells would be sampled and analyzed on a semi-annual basis. All surface water that contacts the waste would be collected in the leachate collection system.

Gas generated from the decomposition of the waste would be collected in the active gas collection system. As a result, the possibility of subsurface landfill gas migration would be very remote. Gas monitoring probes would monitor the effectiveness of the gas collection system in controlling any subsurface gas migration from the landfill expansion. In addition, the operation of the landfill expansion would be inspected periodically by Department staff to ensure compliance with operational requirements.

Specific hazardous air pollutants generated by the site would vary with the waste being accepted and the level of decomposition. The actual quantity of these pollutants generated prior to the installation of the control system is unknown, although it is generally believed that by the time these pollutants are generated in significant quantities, they would be largely collected by the gas collection system and destroyed through combustion at the flare or energy recovery system. This is consistent with federal and state air quality regulations for modern landfills and the site-specific air pollution control permit that would be required.

There is general agreement among landfill engineers and regulators that, over the long term, the engineered components of modern landfills will eventually fail, and although the time frame for failure is unknown, it is believed to be decades if not centuries. Many of these engineered components (e.g., gas extraction wells, cover and drainage components) can be repaired, but for others (e.g., liner), repair is unlikely to be practical. As long as decomposition of the waste proceeds fast enough to render the waste stable and eliminate the generation of toxic components of leachate and gas before the liner begins to leak, there is little risk that the landfill would produce significant adverse environmental effects.

In addition, the final cover on the landfill would significantly reduce water infiltration into the waste and in-turn the amount of leachate generated and the potential for leachate to contaminate the groundwater.

One potential barrier to completing the project if approved by the Department includes inability to reach a local agreement. Another potential barrier to completing the project would be an inability to reach a purchase agreement with the City of Madison to purchase the additional acreage necessary to build the proposed expansion as currently designed.

### **Construction and Operating Problems, Malfunctions, and Remedies**

The potential problems that might occur at the proposed facility involve construction errors or equipment failures such as inadequate liner compaction, faulty seaming of the geomembrane, leachate pipe clogging, or improper base grade preparation. Such problems would be unlikely to occur because of required materials standards, construction

documentation, quality assurance/quality control, routine leachate pipe cleaning, site inspections, and audits conducted by Department staff both prior to and during construction, operation, and closure.

The required environmental monitoring network should provide early detection of any released contaminants in the event of a failure in the facility's containment system. Dane County would be responsible for addressing any hazards that might arise in accordance with state and federal regulations.

Small amounts of household hazardous waste (e.g., solvents, pesticides) are likely to be mixed with the waste placed in the proposed landfill. This factor is considered when the Department evaluates all municipal waste disposal sites and is the reason the current federal regulations for municipal solid waste disposal facilities (40 CFR Part 258) were developed. In addition, 40 CFR Part 258.20 requires owners/operators to implement a program to detect and prevent the disposal of regulated hazardous waste and PCB waste. Disposal of large quantities of hazardous waste is not likely to occur because of liability concerns and Department surveillance as well as separate licensing and regulatory controls imposed upon facilities which produce or handle hazardous wastes.

### **Significance of Precedent**

The proposal would have no known conflicts with plans or policy of local, state, or federal agencies. Any decision on this proposal is not expected to foreclose options that may affect the quality of the environment. Landfill expansions are common in the state of Wisconsin when additional waste disposal capacity is needed. There is a statutory anticipated site life limit of 15 years in Wisconsin. However, the total disposal capacity of any one site location usually allows for a number of expansions, none of which can be approved if the anticipated site life is greater than 15 years. Each landfill expansion is subject to the siting process and the local negotiated agreement process. This expansion does not involve setting any precedents that the Department is aware of.

### **Significance of Controversy over Environmental Effects**

To date, there has been little controversy over the proposed landfill. Potentially controversial socioeconomic effects may be addressed through the local negotiation/arbitration process.

The Township of Cottage Grove and the City of Madison are participating in the local negotiation process at the Dane County Landfill. Dane County and the Township of Blooming Grove have not adopted siting resolutions and are therefore not participating in the local negotiation process. Any issue is negotiable under this process except the need for the proposed facility and any conditions which would make the owner's responsibilities under a Department approved feasibility report less stringent.

The issue of well variances for nearby wells may be controversial, but variances and exemptions are frequently issued for water supply wells when the groundwater flow direction, geology, and well construction techniques demonstrate adequate protection for the wells.

Dane County has continued efforts since the Western Expansion feasibility process to maintain communications with neighbors and leaders in the local community, to improve the aesthetics of its property, and to publicize the environmental benefits of activities like its waste-to-energy landfill gas utilization system and landfill gas vehicle fueling station.

There may be concern about overlaying the expansion onto a landfill area that is not equipped with a composite liner. A low permeability barrier would be used between the existing landfill and the overlay to direct leachate from the new overlay to the new composite liner.

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## **ALTERNATIVES**

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### **No Action**

The current service area capacity is expected to be consumed by 2017. If the proposed expansion is not developed, the waste that would be disposed of at the Eastern Expansion would have to be disposed of at another existing or new facility. The increase in hauling distances and decreased competition and capacity would likely result in increased costs for waste disposal in the service area. This might result in some decrease in the amount of waste generated for disposal,

although this effect is speculative. Employment at the Dane County Landfill and the demand for supplies and services would be lost to the area. The impacts of the landfill (noise, odor, dust, traffic, litter) would be significantly reduced. The local host communities would lose their tipping surcharge revenue.

### **Alternative Site**

Developing the same amount of landfill capacity in another location would increase the costs and forego the efficiencies of using the same landfill infrastructure and established hauling routes and transfer stations. There could be more opposition to a new landfill site than an expansion of the existing site.

### **Same Site – Reduced Size**

Reducing the size of the proposed expansion would decrease the life of the site and would require that disposal capacity elsewhere be developed sooner, given constant waste generation rates. A smaller landfill would also be less cost-efficient for Dane County. A smaller landfill with higher base grades may also have a net cut and fill balance that would require trucking in offsite fill to complete the project.

A smaller landfill expansion would reduce some of the impacts of the proposed landfill expansion or curtail them sooner. A smaller landfill with higher base grades could avoid the use of a gradient control layer and the associated potential risk of impacts to the northern wetland. A smaller landfill would help maintain the code required 100-foot separation from the limits of waste to the property boundary or the easement of Highway AB and the required 50-foot separation from the toe of landfill support berm to the easement of Highway AB. In addition, a smaller landfill would reach capacity sooner and impacts like truck traffic, windblown litter, noise, and odor would have a shorter total duration. A smaller gradient control layer would have less impact on the nearby wetland in terms of its influence on groundwater and the influence of its discharge on surface water.

The proposed horizontal and vertical landfill designs apply slopes, base elevations and final elevations which maximize the capacity gained from the footprint, so it is not possible to reduce the footprint while maintaining the same proposed airspace.

### **Same Site – Increased Size**

Enlarging the expansion proposal to any significant degree is not possible because of the statutory limit on site life of 15 years and the fact that the site is bounded by State Highway 12 and 18, County Highway AB, and by the northern wetland, and by property boundaries.

### **Alternative Waste Disposal Methods**

Waste reduction, reuse, and recycling are alternatives to land disposal, and these activities have already reduced the volume of waste in the service area. Other alternatives to landfilling, such as incineration and waste composting, appear not to be feasible based on air emissions restrictions and lack of economic viability or end users for the byproducts according to Dane County's analysis in the Feasibility Report. It is possible that different assumptions or further research could change the results of the analysis and provide support for non-landfill alternatives to manage some or all of the waste in the Dane County service area. However, the Department does not have authority to impose a different waste management approach on Dane County or on the service area.

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## **SUMMARY OF ISSUE IDENTIFICATION ACTIVITIES**

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*List agencies, citizen groups and individuals contacted regarding the project (include DNR personnel and title) and summarize public contacts, completed or proposed.*

<u>Date</u>	<u>Contact</u>	<u>Comment Summary</u>
Various	Ann Bekta, P.E. DNR Waste Mgt Engineer	Completeness, Design and Operation Issues, Feasibility Report Review; Gradient Control Layer Design and Operation, Easement and Highway AB Setback Issues

Various	Dennis Mack, P.E. DNR Waste Mgt Supervisor	Design and Operation Issues, Feasibility Report Review, Gradient Control Layer Design and Operation, Easement and Highway AB Setback Issues
Various	Brad Wolbert, P.G. DNR Waste Mgt Supervisor	Design and Operation Issues; Feasibility Report Review, Easement and Highway AB Setback Issues
Various	Robert Grefe, P.E. DNR Waste Mgt Engineer	Design and Operation Issues, Gradient Control Layer Design and Operation, Easement and Highway AB Setback Issues
Various	Joe Lourigan, DNR Hydrogeologist	Completeness, Design and Operation Issues, Feasibility Report Review, Wetlands Issues, Local Notification, Storm Water Issues, Gradient Control Layer Design and Operation, NR 140 Exemptions, Clay Borrow, Easement and Highway AB Setback Issues
Various	Mark Dudzik, DNR Archeologist	Historical and Archeological Issues
Various	DNR Endangered Resources Staff (See Memos Listed in Documents Section)	Endangered Resources, Endangered Resources at Farm Credit Services Clay Borrow Site
Various	Kurt Welke, DNR Fisheries Biologist	Fisheries and Aquatic Habitat Impacts, Aquatic Flora of Public Rights Feature or Public Trust Importance
Various	Wendy Peich DNR Water Management	Wetlands Issues, Potential Water Level Impacts in Northern and Southern Wetlands NR 103 Compliance, Discharge from the Gradient Control System to the northern wetland, Farm Credit Services Clay Borrow Site
Various	Thomas Nedland DNR Water Management	Wetlands Issues, Potential Water Level Impacts in northern and southern wetlands
Various	Cheryl Heilman DNR Legal Counsel	Legal Issues, Local Notification, Property Purchase Timing and Legal Issues, Easement and Highway AB Setback Issues
Various	Susan Lindem, P.E. DNR Air Mgt Engineer	Air Quality
Various	Jennifer Hamill, P.E. DNR Air Mgt Engineer	Air Quality
Various	John Oswald, P.G Consultant TRC, Inc.,	Completeness; Design, Needs and Site Life, Feasibility Report, Alternative Geotechnical Investigation, NR 140 Compliance; Hydrogeological Data, Geophysical Data, Prime Agricultural Lands
Various	John Welch Dane County Solid Waste Manager	Completeness, Design, Gradient Control Layer Design and Operation, Needs and Site Life Feasibility Report, Farm Credit Services Clay Borrow Site, Existing Landfill Remaining Site Life, Prime Agricultural Lands, Easement and Highway AB Setback Issues
Various	Tom Roushar Environmental Engineer Supervisor, Air Mgt.	Air Quality, Air Permits, Particulate Monitoring

Feb.14, 2011	Bill Phelps DNR Groundwater Program	NR 140 Compliance, NR 140 Exemptions
May 10, 2011	Randell Clark DNR Drinking Water Program	Exemptions and Variances for Setbacks to Water Supply Wells

On-site inspections or past experience with site by evaluator.

Project Name: Dane County: Eastern Expansion Feasibility Report, Dane County #2  
(Rodefeld) Landfill, Madison, Wisconsin

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PRELIMINARY DECISION

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In accordance with s. 1.11, Wis. Stats., and Ch. NR 150, Wis. Adm. Code, the Department is authorized and required to determine whether it has complied with s. 1.11, Wis. Stats., and ch. NR 150, Wis. Adm. Code.

The Department has made a preliminary determination that the Environmental Impact Statement process will not be required for this action/project. This recommendation does not represent approval from other DNR sections which may also require a review of the action/project.

Signature of Evaluator 	Date Signed 10/30/2013
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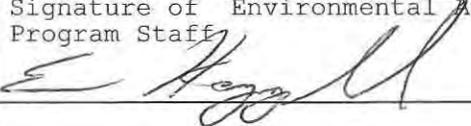
FINAL DECISION

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The public review process has been completed. The Department received and fully considered responses to the news release or other notice.

Pursuant to s. NR 150.22(2)a., Wis. Adm. Code, the attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action, and therefore the environmental impact statement process is not required prior to final action by the Department.

The Department has determined that it has complied with s. 1.11, Wis. Stats., and ch. NR 150, Wis. Adm. Code. This decision does not represent approval from other DNR sections which may also require a review of the action/project.

Signature of Environmental Analysis Program Staff 	Date Signed 12/13/13
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NOTICE OF APPEAL RIGHTS

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If you believe that you have a right to challenge this decision, you should know that the Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with section NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30 day period for filing a petition for judicial review.

# Public Rights Features

NR 1.06 Identification of public rights features. (1) To fulfill its affirmative duty to protect public trust waters, the department shall assess the state's public trust waters to identify location of public rights features where activities shall require general or individual permit review in lieu of exemptions, or reasonable limitations on location to assure that public's rights and interests under the public trust doctrine are protected,...

Exemptions not allowed in Public Rights Features include; intake/outfall structures other than dry hydrants, replacement culverts with inside diameter not more than 24 inches; dredging without auxiliary power. The presence of public rights features in a waterbody will identify that waterbody as a Priority Navigable Waterway, which results in additional protection measures (eg. Bank is defined as 300 feet).

Public Rights Features are:

1. Fish and wildlife habitat, including specific sites necessary for breeding, nesting, and nursery and feeding.

Note: Physical features constituting fish and wildlife habitat includes;

- a. stands of aquatic plants;
- b. riffles and pools in streams;
- c. undercut banks with overhanging vegetation or that are vegetated above;
- d. areas of lake or streambed where fish nests are visible;
- e. large woody debris.

2. Physical features of lakes and streams that ensure protection of water quality.

Note: Physical features that protect water quality include;

- a. stands of aquatic plants (that protect against erosion and so minimize sedimentation),
- b. natural streambed features such as riffles or boulders (that cause turbulent stream flow and so provide aeration)

3. Reaches of bank shore or bed that are predominantly natural in appearance (not man-made or artificial) or that screen man-made or artificial features.

Note: Reaches include those with;

- a. stands of vegetation that include intermixed trees, shrubs and grasses;
- b. stands of mature pines or other conifer species;
- c. bog fringe;
- d. bluffs rising from the water's edge;
- e. beds of emergent plants such as wild rice, wild celery, reeds arrowhead.

4. Navigation thoroughfares or areas traditionally used for navigation during recreational boating, angling, hunting or enjoyment of natural scenic beauty.

Note: Physical features indicative of navigation thoroughfares include;

- a. shallow water areas typically used by wading anglers or areas frequently occupied by regularly repeated public uses such as water shows.

Note: Sensitive Areas designated under NR 107 (Aquatic Plant Management) are by Admin. Rule considered Public Rights Features and lakes and streams specifically named in the Wisconsin Land Legacy Report (Pub LF-001-2004) are known to contain Public Rights Features.

## Field Procedures for the Identification of Public Rights Features

1. Information that is needed to formally designate a Public Rights Feature (PRF);
  - a. Locations of public rights features
    1. This may involve one or more of the following;
      - a. GPS coordinates for area of lake or upstream and downstream extent of PRF.
      - b. TRS ¼, ¼ description
      - c. Address and/or lot numbers
      - d. Stream order and mile
  - b. Description of the possible public rights features and the basis for its determination.
    1. Photographs visually documenting the PRF where appropriate.
    2. Field surveys and inspections, including historical surveys for fish, wildlife, rare species, aquatic plants geologic features or water quality.
    3. Survey or plans from federal, state or local agencies
    4. Factual documentation of features or use patterns from property owners, user groups or knowledgeable users on the waterbody.

Note: The department staff involved with the identification of public rights features should work with the Water Regulation and Zoning staff to complete the notification process to formally designate a Public Rights Feature. This will involve the completion of the public notice requirements and participation in a public hearing if one is requested.

BEFORE THE  
STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

NOTICE OF FEASIBILITY REPORT AND  
PRELIMINARY ENVIRONMENTAL IMPACT DECISIONS

NOTICE IS HEREBY GIVEN, pursuant to sections 289.24 and 289.25, Wis. Stats., that the Department of Natural Resources has determined that the feasibility report submitted by the Dane County Rodefeld Landfill, and the environmental impact statement process for the proposed Dane County No. 2 (Rodefeld) Landfill Eastern Expansion are complete. The proposed landfill expansion is located in the NE1/4 of Section 25, Township 7 North, Range 10 East, City of Madison, Dane County Wisconsin on land presently owned by Dane County and the City of Madison, Wisconsin.

NOTICE IS HEREBY GIVEN, pursuant to Section 289.23(5), Wis. Stats., that Dane County has submitted to the Department of Natural Resources a feasibility report describing a proposal to expand the Dane County Rodefeld Landfill.

The Department has completed an environmental analysis for the proposal and has made a preliminary determination that an environmental impact statement is not needed under section 1.11, Wis. Stats. Pursuant to sections 289.25(3) and 1.11, Wis. Stats. This recommendation does not represent approval from other DNR sections, which may also require a review of the project. Written comments by any person concerning the proposed solid waste disposal facility and the environmental analysis are invited. All written comments shall be submitted within 30 days after the date of publication of this notice to Adam Hogan, 3911 Fish Hatchery Road, Fitchburg, WI 53711 or [adam.hogan@wisconsin.gov](mailto:adam.hogan@wisconsin.gov). Copies of the Department's Environmental Assessment that led to this preliminary determination can be obtained from Adam Hogan, (608) 275-3292, or at our Environmental Analysis Program website address: <http://dnr.wi.gov/topic/CompAssist/EADocs.html>

A public hearing concerning the feasibility report may be requested in writing by any county, village, city or town, the applicant, or any 6 or more persons. The request shall indicate the interests of the municipality or persons who file the request and state the reasons why the hearing was requested. The hearing shall be conducted as an informational hearing utilizing the procedures in s. NR 2.135, Wis. Adm. Code unless the request filed indicates pursuant to section 289.27(1), Wis. Stats., that the hearing is to be treated as a contested case, as provided under section 227.42, Wis. Stats., and that:

1. A substantial interest of the person requesting the treatment of the hearing as contested case is injured in fact or threatened with injury by the Department's action or inaction on the matter;
2. The injury to the person requesting the treatment of the hearing as a contested case is different in kind or degree from injury to the general public caused by the Department's action or inaction on the matter; and
3. There is a dispute of material fact.

All hearing requests shall be filed with the Department within 30 days after the publication date of this notice, either by delivery to the Office of the Secretary of the Department at 101 South Webster Street, Madison, WI 53703 or by mailing to the Secretary, Department of Natural Resources by certified mail at the following address: P.O. Box 7921, Madison, WI 53707.

Copies of the complete feasibility report and the environmental analysis are available for public review at <http://dnr.wi.gov/topic/Waste/Comment.html> and the following locations:

Madison Public Library

Pinney Branch  
204 Cottage Grove Rd  
Madison, WI 53716

Madison Public Library  
Central Library  
126 S Hamilton St  
Madison, WI 53703

Monona Public Library  
1000 Nichols Road  
Monona, WI 53716

E.D. Locke Public Library  
5920 Milwaukee Street  
McFarland, WI 53558

Town of Cottage Grove Clerk  
4058 County Road N  
Cottage Grove, WI 53527

Town of Blooming Grove Clerk  
1880 South Stoughton Road  
Madison, WI 53716

Madison City Clerk  
Room 103,  
City-County Building,  
210 Martin Luther King Jr. Blvd.  
Madison, WI 53703

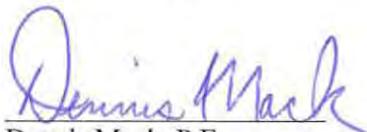
Dane County Clerk  
Room 106A,  
City-County Building,  
210 Martin Luther King Jr. Blvd.  
Madison, WI 53703

Dane County Rodefild Landfill  
7102 US Hwy 12  
Madison WI 53718

The Department of Natural Resources  
South Central Region Office  
3911 Fish Hatchery Road  
Fitchburg WI 53711  
Please Contact Adam Hogan (608) 275-3292 for an appointment

Dated at Fitchburg, Wisconsin this 30<sup>th</sup> day of October, 2013.

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES  
for the Secretary



Dennis Mack, P.E.  
Waste Management Team Supervisor  
South Central Region



October 30, 2013

John Welch  
Dane County Landfill  
1919 Alliant Energy Center Way  
Madison, WI 53713

FID # 113127300  
Dane County  
SW/CORR

Subject: Completeness Determination for the Feasibility Report for the Proposed Eastern Expansion at the Dane County Landfill, Dane County, Wisconsin (License #3018)

Dear Mr. Welch:

We have reviewed the report entitled "Eastern Expansion Feasibility Report, Dane County No. 2 (Rodefeld) Landfill," dated May 16, 2013 and received by the Department on May 20, 2013. We have also reviewed "Feasibility Report Addendum 1 Eastern Expansion Feasibility Report, Dane County No. 2 (Rodefeld) Landfill " dated August 30, 2013 and received by the Department on September 3, 2013 and "Feasibility Report Addendum 2 Eastern Expansion Feasibility Report, Dane County No. 2 (Rodefeld) Landfill " dated October 21, 2013 and received by the Department on October 22, 2013. The feasibility report and the addenda were prepared for Dane County, by TRC, Inc.

Based on our review, we have determined that the feasibility report is complete. This is not an approval of site feasibility but does confirm that the minimum information required by Chapter NR 512, Wis. Adm. Code, and s. 289.24 (3), Wis. Stats. has been provided.

The Department continues to review the needs and site life information in Addendum 2, especially the predicted waste generation growth rates used and may ask for additional information. When the review is complete, the Department's estimated site life calculation may be different than the County's.

The Department is arranging to have a public notice published in the Wisconsin State Journal newspaper on Monday, November 4, 2013, to invite public comments for a period of 30 days on the content and completeness of the feasibility report and the enclosed environmental analysis (EA). The Department will distribute copies of this letter, the public notice and the EA to the clerk of each affected municipality and the main public library in each affected municipality. The Department will also post an electronic copy of these documents, the feasibility report, all addenda, the additional information, and the EA on its internet web site at <http://dnr.wi.gov/topic/Waste/Comment.html> on November 4, 2013 and during the 30 day comment period.

Please note that upon receipt of this determination, s. 289.24(4) and s. 289.32, Wis. Stats., requires that the applicant immediately distribute copies of the feasibility report, addenda and any additional information submitted as part of the feasibility report to the clerk of each affected municipality and the main public library in each affected municipality.

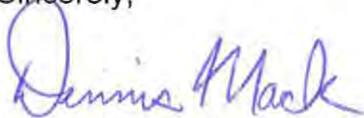
You should be aware that as the Department continues its feasibility review or after it receives comments on the feasibility report and EA, the Department may require additional information from Dane County before it can make a feasibility determination. If you have any questions regarding this determination, please contact Adam Hogan, Hydrogeologist at (608) 275-3292 or Ann Bekta, Waste Management Engineer at (608) 743-4845.

### NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes and administrative codes establish time periods and requirements for reviewing Department decisions.

To seek judicial review of the Department's decision, sections 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. You have 30 days after the decision is mailed or otherwise served by the Department to file your petition with the appropriate circuit court and serve the petition on the Department. The petition shall name the Department of Natural Resources as the respondent.

Sincerely,



Dennis Mack, P.E.  
Waste Team Supervisor  
South Central Region

cc: John Oswald, TRC, Inc  
Mr. David Schwarz – Executive Director, Wisconsin Waste Facility Siting Board  
Airport Director of Engineering – Wisconsin DOT, Bureau of Aeronautics  
Joe Olson, Wisconsin DOT, District Planning Chief  
Mike Stephen Airports Program Analyst U.S. Dept. of Transportation - FAA  
Madison Public Library, Pinney Branch  
Madison Public Library, Central Library  
Monona Public Library  
E.D. Locke Public Library, McFarland, WI  
Town of Cottage Grove Clerk  
Town of Blooming Grove Clerk  
Madison City Clerk  
Dane County Clerk  
Mark Aquino, Regional Director – Fitchburg (electronic copy)  
Bob Manwell – Fitchburg (electronic copy)

Acting Regional Water Leader – Fitchburg (electronic copy)  
Russ Anderson – Fitchburg (electronic copy)  
Eric Heggelund– Fitchburg (electronic copy)  
Ann Bekta – Janesville  
Jennifer Hamill – Fitchburg (electronic copy)  
Susan Lindem – Fitchburg (electronic copy)  
Nancy Frost – Sauk Prairie Recreation Area (electronic copy)  
Randall Clark – DG/5 (electronic copy)  
Amy Schmidt – Fitchburg (electronic copy)  
Wendy Peich – Fitchburg (electronic copy)  
Thomas Nedland – Oshkosh (electronic copy)  
Kurt Welke – Fitchburg (electronic copy)  
Steve Holiday – Fitchburg (electronic copy)  
Robert Grefe – WA/5 (electronic copy)  
Brad Wolbert – WA/5 (electronic copy)  
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SUMMARY OF THE FEASIBILITY REPORT  
FOR THE PROPOSED EXPANSION OF THE DANE COUNTY LANDFILL

Dane County has a proposal before the Department of Natural Resources for a horizontal and vertical expansion of its existing Dane County No. 2 (Rodefeld) Landfill located approximately 1 mile east of the of the Interstate 90 and U.S. Highway 12 and 18 interchange in Dane County. The horizontal expansion would occupy a 28.6-acre area immediately east of the approved and operating Dane County No. 2 (Rodefeld) Landfill. The proposed landfill expansion is located in the NE¼ of Section 25, Township 7 North, Range 10 East, City of Madison, Dane County Wisconsin on land presently owned by Dane County and the City of Madison. The address for the expansion is 7102 U.S. Highway 12 and 18, Madison, 53718, Dane County, Wisconsin. The entrance gate for the facility is currently at the address above approximately 1 mile east of the Interstate 90 and U.S. Highway 12 and 18 interchange. Waste would continue to be delivered to the landfill through the existing site entrance.

The approved design capacity of the existing Wisconsin Department of Natural Resources (WDNR) approved landfill consists of an approximately 76 acre footprint developed in eight phases and has a design capacity of approximately 7,071,400 cubic yards. The original landfill footprint, which was approved by the WDNR in August 1984, began operations in January 1985 and consists of a 50.5 acre footprint with a design capacity of 3,800,000 cubic yards. A Western Expansion consisting of a 25.5 acre horizontal footprint and vertical overlay was developed with a design capacity of 3,271,400 cubic yards and was approved by the WDNR in March 1994. The proposed expansion, with some 28.6 acres of waste fill area and a 17 acre overlay over the east end of the existing landfill, would provide an additional 3,867,400 cubic yards of disposal capacity and an estimated 15 years of site life. Successful completion of the Eastern Expansion will bring the total landfill size to 104.6 acres. Dane County projects that the landfill would accept an estimated average waste intake of 164,390 tons (or approximately 193,400 cubic yards using an in place density of 1,700 pounds per cubic yard) annually initially with a yearly increase due to population growth and the increasing trend in commercial and industrial waste volumes. The waste would be non-hazardous residential, commercial, industrial and special wastes from a service area that includes only Dane County.

The existing Dane County Landfill Property consists of 169 acres. An additional 24 acres would need to be purchased from the City of Madison to accommodate the proposed expansion. The property owned by the City of Madison is located on the southern, eastern and northern boundaries of the Dane County owned property (see Plan Sheet 3 and Figure 1-2). Currently, Dane County has a pending agreement with the City of Madison to purchase approximately 24 acres necessary for development of the Eastern Expansion upon issuance of a Feasibility Determination.

The proposed Eastern Expansion is located and currently configured in a way that would avoid grading, excavating, or filling in either of the 2 nearby wetlands, the northern wetland and the southern wetland. The proposed Eastern Expansion is designed with a gradient control system that would gravity discharge to the northern wetland during very rare instances of high groundwater. The estimated discharge would be between 1 and 5 gallons a minute according to calculations included in the feasibility report. Approximately 20 acres of land that is currently in the drainage basin of the northern wetland will be rerouted to the southern wetland. These changes are not expected to significantly impact either the northern or southern wetlands since both wetland water levels are controlled by drainage ditches. Another potential concern is the gradient control system dewatering the wetlands by removing groundwater recharge to the wetlands. The southern wetland water level is above the nearby groundwater levels in monitoring wells and it appears to be fed by surface water discharges. The southern wetland appears to be a result of the reconstruction of U.S. Highway 12 and 18. The northern wetland appears to be a groundwater discharge area.

However, any groundwater that is removed by the gradient control system will be piped to the northern wetland resulting in a net neutral water balance for the wetland.

The proposed expansion is located within the Yahara River watershed. The Yahara River is located about 3.5 miles west of the site and ultimately drains to the southeast into the Rock River near Fulton, Wisconsin. The Yahara River flows through four lakes - Mendota, Monona, Waubesa, and Kegonsa - of which Lake Waubesa is closest to the landfill located approximately four miles to the southwest. The watersheds can be further divided into the northern half of the site which is drained by ditches and unnamed streams to the east and eventually contributes to Door Creek which joins the Yahara River near Lake Kegonsa. The southern half of the site is drained by ditches and unnamed streams into Mud Lake (a widening of the Yahara River at the North end of Lake Waubesa). The drainage system of the Yahara River watershed is generally poorly developed with many lakes and wetlands, and poorly drained areas. Groundwater is near the surface in the glacial till deposits, and flows north and slightly west in the area of the proposed expansion and eastern half of the site. On the western half of the site groundwater flows radially away from monitoring well WT204A and radially toward monitoring well M-14A.

Soils in the area of the proposed expansion are generally described as silt loam and clay silt loam, and muck overlying unconsolidated glacial drift of the Horicon Formation deposited over dolomite bedrock of Ordovician age. The Horicon Formation generally consists of brown sandy till, but also includes sand and gravel deposited by glacial meltwater and clay, silt and sand deposited in glacial lakes. The till was deposited by the Wisconsin Valley Lobe during the Wisconsin Stage of continental glaciations. Subsurface investigations performed in the area of the proposed Eastern Expansion encountered glacial sediments that extended down to at least 95 feet below the land surface. The sediments encountered in the investigation consist of silty clay (glacial lacustrine deposits), silty sand glacial till with scattered pebbles, cobbles, boulders (poorly sorted ice contact deposits), and sand and gravel (outwash and lacustrine sand deposits).

Logs from local water wells along CTH AB immediately east and north of the proposed expansion indicate that Galena-Platteville dolomite bedrock of the Sinnipee Group ranges in depth from 70 feet below ground surface (bgs) near the USH 12 & 18 intersection with CTH AB (PW 37) to 153 feet bgs just to the east of the Expansion footprint to 110 feet bgs in the park to the north of the footprint (PW 48). To the west of the proposed expansion logs from previously abandoned onsite water supply wells indicate dolomitic or shale bedrock ranges in depth from 194 feet bgs to 90 feet bgs. Area water supply wells appear to obtain water from the bedrock. According to regional sources the groundwater flow direction in the bedrock in the vicinity of the site is to the southwest.

The proposed landfill would be lined with a composite clay and geomembrane liner. Dane County proposes to install a gradient control system below the liner to prevent groundwater from entering the liner. The system as proposed consists of either sand or a geosynthetic layer located 25 feet laterally from the gradient control collection pipes under the subbase of the landfill (i.e. under the liner) to route groundwater away from the landfill during liner construction. There will be 2 perforated gradient control pipes in gravel trenches one under each leachate collection line trench. Groundwater that collects in the gradient control layer will be gravity discharged to the northern wetland. After the landfill reached final grades, it would be covered with a composite clay and geomembrane cap that would include a vegetated soil cover. Leachate would be collected for recirculation into the waste to enhance breakdown of organic materials, or for treatment offsite in a municipal wastewater treatment plant. A portion of the leachate from the existing landfill is routed to the Madison sewer system and is treated at the Madison Metropolitan Sewerage District Wastewater Treatment Plant. The proposed expansion would also route excess leachate to the same wastewater treatment plant. An active gas collection system that currently includes a flare and energy recovery engines would be expanded to destroy landfill gas. Surface water that does

not come into contact with waste would be routed to sedimentation basins located around the landfill perimeter.

Groundwater and air quality near the landfill would be monitored, and gas probes would be installed to detect any potential movement of landfill gas below the ground surface. There are 6 private water supply wells within 1,200 feet of the proposed limits of waste filling at the expansion. There are no additional wells within 1,200 feet of the existing landfill. Dane County intends to request exemptions and variances for 2 of the 6 water supply wells, abandon and replace 2 of the water supply wells at locations greater than 1,200 feet from the limits of fill, and abandon 2 water supply wells without replacing them.

The peak elevation of the expansion would rise about 110 feet above the roadway elevation at the intersection of U.S. Highway 12 and 18 and County Highway AB to 999.6 mean sea level. This would be approximately equal to the maximum height of the existing landfill.