

GUDE LANDFILL REMEDIATION

GLCC/DEP MEETING NO. 17

DATE: May 12, 2011
TIME: 7:30 PM to 9:00 PM
LOCATION: Montgomery County Transfer Station

ATTENDANCE:

<u>Name</u>	<u>Organization</u>	<u>Designation</u>
Laszlo Harsanyi	Gude Landfill Concerned Citizens (GLCC)	Member
Dave Peterson	Gude Landfill Concerned Citizens (GLCC)	Member
Julia Tillery	Gude Landfill Concerned Citizens (GLCC)	Member
Keith Ligon	Gude Landfill Concerned Citizens (GLCC)	Member
Peter Karasik	Montgomery County Dept. of Env. Protection (DEP)	Section Chief
Steve Lezinski	Montgomery County Dept. of Env. Protection (DEP)	Engineer III
Mark Gutberlet	EA Engineering, Science, and Technology, Inc (EA)	DEP Consultant

The Meeting Agenda is included as Attachment 1.
Contact information for attendees is included as Attachment 2.
Chronology of Closed Action and Follow-up Items is included as Attachment 3.
Other Attachments are referenced within the text.

MINUTES:

- 1) Steve Lezinski of DEP noted that Keith Ligon of GLCC approved the minutes from GLCC/DEP Meeting No. 16 via e-mail on May 6, 2011.
- 2) Keith Ligon provided a brief summary of GLCC's recent meeting with MDE. Keith will provide a more formal summary at the next GLCC/DEP meeting scheduled for June 2011. Keith did reiterate that GLCC is content with the Communications Plan previously presented by DEP and asked that it should be updated as the Remediation and Reuse Project moves forward.
- 3) Steve Lezinski stated that waste excavation and/or relocation (to some extent) along the northwest slope of the Gude Landfill (Landfill) is a probable corrective measure to be implemented at the site. Mark Gutberlet of EA provided an overview of the primary purposes, processes and considerations, etc. of potential waste excavation and reclamation activities. EA and DEP prepared a handout for the meeting entitled, "An Overview of Waste Excavation and Reclamation," which is included as Attachment 4. Discussion on the topic ensued:

- a) Keith Ligon asked if there was a regulated boundary offset from other adjacent properties for the Landfill site. Peter Karasik of DEP responded that there is not a regulatory requirement for minimum boundary offset for the waste mass or the Landfill.
 - b) Keith Ligon commented that moving the Landfill further back from the property boundary is preferable. He stated that the complete excavation of the Landfill site (e.g. waste mass) would be one of the best outcomes, but noted it would be a difficult task.
 - c) Keith Ligon commented that the aesthetics of the Landfill buffer and potential vegetation in the buffer area would also be an important consideration in the remedial effort and land reuse.
 - d) Dave Peterson of GLCC asked how the excavation of waste would impact the generation of landfill gas. Steve Lezinski stated that landfill gas infrastructure in the area of waste excavation would have to be decommissioned, but the overall landfill gas collection system would continue to operate. Steve added that the installation of temporary passive landfill gas vents would potentially be an interim measure to manage landfill gas in the area of waste excavation.
 - e) Julia Tillery of GLCC stated that potential odors and noise would be her biggest concerns with waste excavation. Steve Lezinski and Mark Gutberlet discussed typical methods used to control odor as well as dust for waste excavation projects, such as limiting the area of open excavation, placing interim cover over the waste material during excavation, limiting excavation to colder times of year, etc. With respect to noise, Steve added that management of operational hours are a measure to control noise.
 - f) Steve Lezinski noted that some waste excavation and/or relocation could be performed as an interim corrective measure and requested input from GLCC regarding the potential timing of such a project.
 - g) Keith Ligon stated that interim corrective measures might be costly and considering it as part of the overall remedy at the Landfill site seems to be appropriate.
 - h) Dave Peterson stated that performing a smaller excavation separately, before beginning larger excavation, might provide some “lessons learned” to adjust excavation and handling procedures, if needed, before a larger excavation project began.
 - i) Peter Karasik stated that waste excavation will require further planning and would likely be part of the overall remedy at the Landfill. Peter noted that the additional work required for the Nature and Extent Study would need to be completed first, before any waste excavation activities would occur.
- 4) Keith Ligon provided commentary on the Derwood Station Residential Community’s vision for land reuse at the Landfill. Keith stated that this information was previously presented to the County at a previous GLCC/DEP meeting, which is included as Attachment 5. The vision includes passive use, not commercial use, something that provides a community benefit, and something that offsets the “disamenity” of living adjacent to the Landfill. Some reuses that align with that vision may include: a remote control airplane park, a dog park, picnic areas, walking trails, etc.
- 5) Peter Karasik provided an article from Civil Engineering magazine regarding reuse of New York City’s Fresh Kills Landfill for GLCC’s use, which is included as Attachment 6.

- 6) Keith Ligon asked if the County has any intended reuses established for the Landfill site. Peter Karasik stated that there are no current plans for reuse of the Landfill. GLCC and DEP discussed inviting the County Executive, County Council members and other County stakeholders to a future GLCC meeting to discuss potential reuse options and reuse processes. DEP will discuss inviting senior County representatives to a future GLCC meeting. Mark Gutberlet added that MDE may place restrictions on reuse options for the Landfill site depending on the selected corrective measures for remediation.
- 7) Steve Lezinski reviewed current operations at the Landfill. He advised that the Spring 2011 semi-annual groundwater sampling event was completed and DEP is awaiting the receipt of the laboratory data. Following review, DEP will prepare the semi-annual report with updated constituent concentration trends. The most recent improvements to the landfill gas collection system (December 2010/January 2011) continue to be very effective – the weekly and quarterly landfill gas monitoring events have indicated no methane exceedances.
- 8) Peter Karasik noted that new groundwater monitoring wells will be installed in the couple months in order to collect additional information to address MDE's comments on the Nature and Extent Study.
- 9) Steve Lezinski also advised that the landfill maintenance contractor continues to perform access road maintenance and selective tree trimming and cutting along site roads and landfill gas collection piping.
- 10) Steve Lezinski stated that there are several smaller scale leachate seeps evident along the northwest and south central slopes of the Landfill following the heavy rains this Spring. The leachate seeps were previously addressed and fixed in the summer of 2010 and DEP is currently reviewing other alternative interim corrective measures.
- 11) Laszlo Harsanyi of GLCC inquired about a complaint from a Derwood Station resident who smelled gas near his house. Peter Karasik indicated that a DEP staff member visited the neighborhood to take readings and there appears to be a small natural gas leak from a Washington Gas pipeline near the residence in question. DEP contacted Washington Gas and made them aware of the issue. The odor is not related to the Landfill.
- 12) The next GLCC/DEP meeting will be scheduled for June. GLCC asked if the land reuse meeting could be scheduled for July based on the potential availability of senior County representatives and stakeholders. The July meeting will include discussions about the County's decision making process for site reuse, potential County site reuse options and the integration and consideration of the Community's reuse options.

Recently Closed Action and Follow-up Items

- 16-1 DEP and EA will evaluate the potential corrective measure of excavation and relocation of waste in greater detail, and present this to GLCC at a future monthly meeting.
Status: Closed. DEP and EA presented the potential corrective measure of waste excavation

and reclamation during the GLCC/DEP Meeting No. 17.

New Action and Follow-up Items

- 17-1 DEP will contact senior County representatives and stakeholders regarding their attendance at a future GLCC/DEP monthly meeting to discuss the County's decision making process for Landfill site reuse, potential County site reuse options and the integration and consideration of the Community's reuse options.
Status: Open.
- 17-2 DEP will add a timeline/milestone review section to future meeting agendas.
Status: Open.
- 17-3 DEP will create a quarterly newsletter to orient the larger Community and other adjacent property stakeholders on the Landfill. The newsletter will contain an update on the Nature and Extent Study activities that have occurred in the past three months. The newsletter will be provided to GLCC to include in an upcoming HOA newsletter.
Status: Open.

The above summation is the writer's interpretation of the items discussed at the meeting. Comments involving differences in understanding of any of the meeting items will be received for a period of thirty (30) days from the date of these meeting minutes. Clarifications will be made, as deemed necessary. If no comments are received within the specified time period, the minutes will remain as written.

ATTACHMENT 1



**Gude Landfill Remediation
Gude Landfill Concerned Citizens
Monthly Meeting No. 17**

Meeting Agenda

- 1. GLCC/DEP Meeting Minutes (Meeting No. 16)**
 - a. Approved via K. Ligon email 5/6/11.

- 2. Interim or Long-Term Corrective Measure: Waste Relocation & Reclamation**
 - a. See attached handout.
 - b. Purpose.
 - c. Evaluation.
 - d. Planning.
 - e. Permitting.
 - f. Process.
 - g. Environmental Control Considerations and Mitigation Mechanisms.
 - h. Action and Follow Up Item 16-1 – Complete.

- 3. Integration of Land use and Reuse**
 - a. GLCC Commentary
 - b. Article on Landfill Reuse

- 4. Current Gude Landfill Operations**
 - a. Monitoring
 - DEP Groundwater & Surface water – Semi-Annual monitoring complete; awaiting laboratory results.
 - DEP Landfill Gas – Weekly monitoring has indicated no methane exceedences.
 - b. Post-Closure Care
 - Site Maintenance – DSWS Landfill Maintenance Contractor continues to perform access road maintenance and tree removal along existing landfill gas pipes and future locations of gas collection infrastructure in May 2011.

- 5. Next Meeting/Action Items**
 - a. To Close
 - 16-1 – as referenced above.
 - b. To Leave Open
 - 16-2 – to be discussed at a future monthly meeting.
 - c. New Actions Items from Meeting

Montgomery County Transfer Station

May 12, 2011

7:30 PM – 9:00 PM

Page 1 of 1

ATTACHMENT 2



Date	May 12, 2011	Meeting No. 17
Time	7:30 - 9:00 PM	
Meeting	Gude Landfill Remediation: GLCC/DEP	

Name	Initial if Present	Affiliation	Phone	Email	Address
Stephen Lezinski	SLZ	DEP	240-777-6590	Steve.Lezinski@montgomerycountymd.gov	16101 Frederick Road Derwood, MD 20855
Peter Karasik	PK	DEP	240-777-6569	Peter.Karasik@montgomerycountymd.gov	16101 Frederick Road Derwood, MD 20855
John Kumm		EA Eng.	410-329-5141	JKumm@eaest.com	15 Loveton Circle Sparks, MD 21152
Dave Peterson	DP	GLCC/DS1 HOA	301-921-6357	Kmpdhp@hotmail.com	7612 Anamosa Way Derwood, MD 20855
Keith Ligon	KL	GLCC	301-340-3358	KLigonfamily@verizon.net	15501 Moravia Court Derwood, MD 20855
Julia Tillery	JT	GLCC	202-329-8740	Julia@tilleryoffice.com	15461 Indianola Drive Derwood, MD 20855
Laszlo Harsanyi	LH	GLCC/DS2 HOA	301-840-3822	LastloH@comcast.net	7228 Titonka Way Derwood, MD 20855
Nick Radonic		GLCC/DSS HOA	301-294-9124	Big.Rad@gmail.com	15408 Indianola Drive Derwood, MD 20855
Bob Day		GLCC	301-294-3272	bobcarolday@yahoo.com	7128 Grinnell Drive Derwood, MD 20855

Other Meeting Attendees

Mark Gutbarst	MG	EA	410-329-5135	m.gutbarst@east.com	15 Loveton Circle Sparks, MD 21152

ATTACHMENT 3



Chronology of Closed Action and Follow-up Items
as of
GLCC/DEP Meeting No. 17

- 5-01 DEP and EA to research the existence of a comprehensive database for closed landfill reuse options.
Status: Closed. EA provided a list of landfill reuse resources, which was attached to the minutes for Meeting No. 7.
- 5-02 GLCC to schedule next Derwood Community Meeting; second quarter 2010.
Status: Closed. GLCC noted that the Community will continue to be welcome at the monthly meetings, and these will be included in the DEP letter to the HOAs and the residents. Therefore, GLCC does not plan to schedule another community meeting at this time.
- 5-03 DEP to contact MDE regarding the spring and northwest slope surface water sampling, and leachate seep repairs on northwest slope.
Status: Closed. DEP and MDE met on December 21, 2009 and discussed these issues. The outcome was summarized in Attachment No. 4 of the Meeting No. 7 minutes.
- 5-04 DEP to post the recent aerial survey of the Gude Landfill on the remediation project website.
Status: Closed. The image has been posted on the website.
- 5-05 DEP to evaluate if Biochemical and Chemical Oxygen Demand (BOD/COD) can be included for analysis purposes in surface water samples.
Status: Closed. After further discussion, GLCC agreed that BOD sampling would not be conducted, since it would be difficult to discern whether the results were affected by the landfill. DEP agreed to collect samples for COD analysis. The objectives and plan for COD sampling was and agreed to between DEP and GLCC.
- 5-06 DEP to reschedule the dioxin/furan testing of the Gude Landfill gas-to-energy engine.
Status: Closed. The testing was conducted in early March 2010 but the results have not yet been reported.
- 5-07 EA to provide a list of the chemical analytes that were detected in the Gude Landfill groundwater/surface water sampling that are carcinogens.
Status: Closed. EA provided a summary of risk and carcinogenic effects for chemical analytes, which is included as Attachment No. 6 to the Meeting No. 7 minutes.
- 6-01 DEP and EA to create a list of open agenda items (i.e., action and follow-up items).
Status: Closed. This list is included in the meeting minutes and will be carried into subsequent minutes.
- 6-02 DEP and EA to finalize more precise locations of the new monitoring wells. Follow-up work with permitting agencies, utility locators, and adjoining property owners will be conducted.
Status: Closed. Additional location information finalized.

Chronology of Closed Action and Follow-up Items
as of
GLCC/DEP Meeting No. 17

- 6-03 GLCC/DEP/EA to finalize an approach to communicate all aspects of the expanded monitoring well program to the Derwood Community.
Status: Closed. Initial letters to be sent to the HOAs, with follow-up letters to residents in the immediate area of proposed intrusive activities.
- 7-01 DEP to complete interim measures for leachate redirection at seep locations.
Status: Closed. Completed May/June 2010.
- 7-02 DEP to finalize and send letter to HOAs regarding the landfill remediation project and proposed groundwater monitoring well locations within the Community.
Status: Closed. DEP prepared the Community notification letter dated 2-26-10 for distribution to the residents via the HOA presidents.
- 7-03 DEP to obtain dioxin/furan test results for flare and engine.
Status: Closed. Results provided to GLCC June 2010.
- 8-01 EA will provide DEP with a full version of the Draft Study Plan as a PDF for posting on the website and an abbreviated PDF version for distribution to GLCC members.
Status: Closed. Received by County on August 6, 2010. County to post on remediation webpage.
- 8-02 GLCC will distribute the DEP Community Letter in a special edition of each of the three HOA newsletters, both by e-mail and standard mail, by the end of March.
Status: Closed.
- 9-01 DEP and EA will provide a list of milestones and dates to include as a schedule update with minutes from each meeting.
Status: Closed.
- 9-02 DEP and EA will identify special instructions for residents and the driller to be used during the actual well drilling for inclusion in the individual resident notification letters.
Status: Closed. Completed June 2010.
- 10-1 EA will prepare a Maryland Toxic Air Pollutant regulation compliance demonstration for dioxin/furan emissions from the flares and engines at Oaks and Gude.
Status: Closed. DEP will post on the Remediation webpage.
- 10-2 GLCC will meet independently on June 20, 2010 to discuss the process of early integration of end use objectives into the corrective action planning process and will propose a pathway and procedure to DEP at the July 8, 2010 DEP/GLCC meeting.
Status: Closed. During Meeting No. 11, GLCC provided the County guidance on preferred end uses from the Community for the Gude Landfill site.

Chronology of Closed Action and Follow-up Items
as of
GLCC/DEP Meeting No. 17

- 11-1 GLCC requested Bob Hoyt, Director of DEP to attend the next GLCC/DEP monthly meeting on September 15, 2010 to discuss the Request for Expression of Interest (REOI).
Status: Closed.
- 11-2 GLCC inquired if the County had investigated the potential for a Brownfields Grant for the Remediation/Land Reuse project.
Status: Closed. Grant funding options were presented to GLCC on 4/14/11.
- 12-1 Using the risk evaluation methodology, EA will back calculate contaminant concentrations that would represent a human risk concern for vapor intrusion from groundwater into indoor air.
Status: Closed. The calculation was made by EA and included in the analysis and provided to GLCC.
- 13-1 EA will revise the last two sentences in paragraph 5) of the minutes for Meeting No. 12 to clarify the concept.
Status: Closed. Changes are reflected in Meeting No. 12 Minutes.
- 13-2 EA will prepare and submit to DEP for review a summary of the project status including background, status, and the remaining activities to complete the project. The HOA Presidents will distribute this summary to Derwood Station residents.
Status: Closed. The Nature and Extent Study Fact Sheet was e-mailed to GLCC/HOA Presidents by Steve Lezinski on 12/23/10 for distribution to the Derwood Station Residential Community.
- 13-3 EA will research the applicability of 40 CFR Part 258 Subpart E and report back to DEP and GLCC.
Status: Closed. A response was provided via e-mail by Steve Lezinski to GLCC on 11/3/10 – the regulation is not applicable to Gude Landfill.
- 14-1 DEP will address conformance of the current monitoring program to the 2001 County Groundwater Protection Plan.
Status: Closed. It was determined that the Ground Water Protection Strategy is not an active program within DEP.
- 14-2 DEP will contact the County Attorney and the County Real Estate Office concerning potential property value impacts and seller's obligations.
Status: Closed. The Office of the County Attorney cannot provide legal advice to members of the Community. If members of the Community desire advice on property value impacts and seller's obligations, they would have to obtain this legal advice from their own legal counsel.
- 15-1 DEP and EA will establish a list of key project milestones for inclusion in the Project Communications Plan.
Status: Closed. As part of the Project Communications Plan, an updated project schedule and key project milestones were presented to GLCC on 4/14/11.

Chronology of Closed Action and Follow-up Items
as of
GLCC/DEP Meeting No. 17

- 15-2 DEP and EA will determine the current regulation for setbacks at new landfills and report this information to GLCC.
Status: Closed. Applicable setback requirements were determined and presented to GLCC on 4/14/11.
- 15-3 DEP will submit the proposed action plan for further investigation and analysis to satisfy MDE's concerns about the Nature and Extent Study to MDE by March 18, 2011.
Status: Closed. The work plan of Amendment No. 1 to the Nature and Extent Study was submitted to and accepted by MDE in March 2011.
- 16-1 DEP and EA will evaluate the potential corrective measure of excavation and relocation of waste in greater detail, and present this to GLCC at a future monthly meeting.
Status: Closed. DEP and EA presented the potential corrective measure of waste excavation and reclamation during the GLCC/DEP Meeting No. 17.

ATTACHMENT 4



OVERVIEW OF WASTE EXCAVATION AND RECLAMATION

Purpose

The primary purposes of waste excavation (selective or extensive) and reclaiming available recyclable materials at the Gude Landfill includes:

- Increase the land buffer between the Derwood Station South Residential Community and the Landfill property boundary with respect to the edge of waste.
- Increase the compliance boundary distance between the groundwater and landfill gas monitoring wells with respect to the edge of waste.
- Increase the land space between the Landfill property boundary and the edge of waste to implement interim corrective measures or other remedial measures for groundwater protection, landfill gas migration, leachate seepage, stormwater control, etc.
- Reclaim available recyclable materials from the excavated waste to decrease the volume of waste to be managed and conform to the best management practices for excavating waste and County recycling initiatives.
- Compliance with the Maryland Department of the Environment (MDE) Remediation Objectives.

Evaluation

A review of historical subsurface data and potential field work investigations would be performed (as necessary) to determine the general composition and vertical extent of the in-place waste to be excavated and potentially reclaimed for recycling. This information would be used to develop the Waste Excavation and Reclamation Plan and associated operational cost estimates.

Planning

A detailed Waste Relocation and Reclamation Plan would be prepared for review and approval by MDE. The Plan would also be reviewed with the Montgomery County Department of Permitting Services (DPS) to confirm local planning and permitting requirements. The Plan would address: waste excavation and handling; material processing & segregation (waste vs. recyclable material); material reuse (soil); fill placement (soil, structural fill, other select media, etc.); waste disposal; environmental control considerations and mitigation mechanisms; and health and safety.

Gude Landfill remediation and reuse stakeholders will be involved in the planning, permitting and implementation process if a waste excavation and reclamation project is initiated.

OVERVIEW OF WASTE EXCAVATION AND RECLAMATION

Permitting

Currently, the Landfill does not have a MDE refuse disposal or operating permit. Therefore, the primary mechanism to implement a waste excavation and reclamation operation would be MDE approval of the Waste Excavation and Reclamation Plan (that may include waste processing and select material reuse). With respect to the County DPS, sediment control, stormwater permits and waste hauling permits may be required.

Process

After any required public/project information meetings are held, formal plans are approved, and permits are obtained, the waste excavation and reclamation operation can be implemented. The operation would include the following primary activities:

- **Environmental Control Infrastructure Installation** – Prior to the excavation of waste, environmental control infrastructure would be designed, procured and constructed. Such infrastructure may include temporary or permanent: site fencing; sediment traps and silt fence; stormwater tarps, basins and diversion berms; passive landfill gas vents; and leachate containment sumps; etc. Daily soil cover or impermeable synthetic tarps would also be placed over exposed waste at the end of each workday. Health and safety plans and protocols would also be reviewed and implemented prior to work initiation.
- **Waste Excavation and Handling** – previously landfilled waste along the Landfill property boundary or Landfill interior would be excavated and handled on-site. The existing top soil and soil cover system would be stripped and stockpiled on-site for re-use (if approved). The waste may be excavated and handled by a variety of heavy equipment such as excavators, backhoes, loaders, tandem dump trucks, etc. The waste would be transported to the designated on-site material processing and segregation area.
- **Waste Material Processing and Segregation** – Excavated waste material would be processed and segregated at the designated on-site area. The waste would be screened to separate excavated material into different components (i.e. soils, residual waste, and recyclable materials such as metals). The residual waste would be hauled to the County Transfer Station or relocated to a location on-site and covered with soil (if approved). The remaining screened and segregated soil and recyclable materials would be stockpiled separately on-site until the soil could be reused (if approved) and the recyclables transported to the Transfer Station or another appropriate recycling facility.

OVERVIEW OF WASTE EXCAVATION AND RECLAMATION

- **Material Reuse as Fill** – A considerable portion of the landfilled material on-site likely consists of soil. This includes top soil, the soil cover system and the daily cover soil that was placed between the waste filling lifts during the Landfill’s operation. With MDE and County DPS approval, the soil material has the potential to be reused as fill material to replace the void space of the excavated waste. Recommended use of previously landfilled soil following sifting would be as backfill on the interior of the Landfill site, since it may have residual contamination. The import of fresh clay, clean fill soil or other select material (e.g. organic material) would be recommended for use as backfill in the perimeter areas of the Landfill to assure clean soil is placed in the newly constructed buffer areas.
- **Fill Placement** – Once waste excavation is completed for a given area of the site, soil, structural fill or other select material would be backfilled into any below grade void spaces to fill to specified ground surface elevations. Once the soil is placed, it will be stabilized with seed, straw and/or other mechanisms to provide for long-term vegetative cover and stability.
- **Disposal** – Residual waste that cannot be recycled would be hauled to the County Transfer Station for processing and disposal or be relocated on-site, covered with soil, and stabilized (if approved).
- All waste excavation and reclamation processes must be in accordance with the approved Waste Excavation and Reclamation Plan and associated local, state and federal permits.

Environmental Control Considerations and Mitigation Mechanisms

The process of waste excavation and reclamation brings with it numerous environmental control considerations, which will require mitigation mechanisms. Environmental control considerations and mitigation mechanisms would be detailed in the Waste Excavation and Reclamation Plan. The following are examples of typical considerations and mitigation mechanisms for this type of work:

- **Erosion and Sedimentation** – Silt fence and super silt fence would be used around the perimeter of the waste excavation area, material processing and segregation area and other existing stormwater infrastructure to control erosion and keep sediment from washing off-site. Temporary or permanent sediment traps may be required depending on site conditions.
- **Stormwater Run-on/Run-off** – Waste excavation would be implemented to avoid any deep depressions that would allow stormwater to pond within the excavation area.

OVERVIEW OF WASTE EXCAVATION AND RECLAMATION

Additionally, when required, soil diversion berms would be constructed in areas of excavation on the side slopes and above the area of excavation to prevent stormwater from contacting the exposed waste. Temporary or permanent stormwater tarps or basins may be required depending on site conditions.

- **Leachate Seepage** – During waste excavation, layers of perched water within the waste (i.e. leachate) may be encountered. Leachate seepage can be controlled locally through the use of aggregate fill and cover material to facilitate infiltration or pumped, containerized and transported to the Oaks Landfill Leachate Pretreatment Plant for treatment. Temporary or permanent leachate containment sumps may be required depending on site conditions.
- **Landfill Gas Migration/Oxygen Intrusion** – During waste excavation, the existing landfill gas collection system (above grade conveyance piping and extraction wells) may have to be relocated or temporarily taken out of service to prevent oxygen intrusion into the Landfill. Landfill gas collection infrastructure located within the waste excavation area could be decommissioned as part of the work. Temporary passive landfill gas vents may be utilized during periods when existing gas extraction wells that are normally under vacuum are taken out of service.
- **Dust** – During waste excavation, handling and disposal, dust will likely be generated by heavy equipment on the Landfill's work area and access roads. Typical dust suppression methods include spraying water (via on-site water truck) on the road surface to keep it wet.
- **Noise** – Most aspects of the waste excavation and reclamation operation involving heavy equipment will generate noise pollution. Waste excavation and reclamation operations will be restricted to hours listed in the approved Waste Excavation and Reclamation Plan as well as in accordance County DPS noise ordinance requirements.
- **Odor** – At the end of each work day, exposed waste would be covered with soil or a temporary cover material such as a synthetic tarp. Waste would not be permitted to be uncovered overnight. Operations could be coordinated to occur during the fall, winter, and spring months when the potential for nuisance odors is lower depending on site conditions and proximity to other adjacent properties. Odor control sprays may be required depending on site conditions.
- **Vehicle Decontamination** – Upon leaving the Landfill site, certain vehicles may be required to rinse or wash off the tires to prevent tracking of dirt and sediment on external roadways. A wheel wash or wash station with liquid containment may be required depending on site conditions.

ATTACHMENT 5



Gude Landfill Future Use

General

The hill should be terraced with retaining walls and landscaped appropriately. Walking paths off the hill should provide access to hikers and neighbors. The major public entrance should be a gate on Gude Drive. Roads should have an easily renewable surface that can be graded/compacted. Parking areas should be located near activity centers. To compensate for the lack of shade, pavilions and water features should be emphasized in the design.

Running/walking trails

A cinder path of two closed loops – ¼ mile and ½ mile –should have a common start area. The smaller loop should be generally flat, and the larger should include hills. A spur should exit the hill and connect to the Rock Creek Hiker Biker Trail. Start area should have a pavilion and drinking fountain for people and dogs. The shorter loop should include fitness stations along its course.

Cross country bike course

A dirt path of hills and turns and bumps that is approximately half mile long should be a closed loop course. Start area should have a bike rack, water fountain and pavilion.

Community garden plots

An 8-foot fence around an area should have extra depth in topsoil, walkways of shredded mulch, and water spigots. We suggest that 25'x25' plots be requested and assigned via a DSWS web portal.

Dog Park

A 4-foot fence around a grassy area should include a shallow pool that has a gentle water spray/fountain.

Children's play area

The ground should be covered with rubberized mulch. Kid's play equipment should be inside an open pavilion for shade. Adjacent to the pavilion should be a tiled patio area for kids that includes an integrated water spray/fountain (e.g. Rockville Town Center).

Model plane flying area

A 4- foot fence around an area should contain a pavilion for equipment, two 100-ft crossed cinder runways and a windsock on a pole.

Skate park

This should be a street course with a variety of ramps for skateboarding, in-line skating and freestyle biking. Bleacher seats to allow for visitor viewing and a pavilion for shade should be provided.

Picnic area

Open pavilions with picnic tables should be scattered through the area with groups near activity areas. All pavilions should have spigots.

ATTACHMENT 6



development manager for Mott MacDonald in the Netherlands. But that is not a viable option because increasing the size of the dike system would affect scores of old villages that line the river. Therefore, one of the primary challenges of the Room for the River program is to protect people and property from floods without significantly affecting the river's surrounding landscape, Croese explains.

The existing dikes along the Rhine were designed for a typical discharge of 15,000 m³/s at the point where the river enters the Netherlands, but studies have revealed that climate change is driving that discharge to 16,000 m³/s, an increase of nearly 7 percent, Croese says. As a result of more extreme flows, the next safety norm will be 18,000 m³/s, an increase of 20 percent over the current level. Although the river is rising, the average annual river level is not likely to change because climate change is causing extremes of both drier and wetter periods. "The problem is that in the periods of heavy rainfall you have to do something to defend yourself against the increased discharge," Croese says.

Mott MacDonald has several options

for controlling flooding at its project sites. They include enlarging the river's footprint by lowering the summer bed—the main river course between the summer dikes—along the river IJssel and lowering portions of the winter bed, that is, the floodplain between the winter dikes, near Arnhem. If the Rijkswaterstaat proceeds with lowering these areas, it will use conventional dry excavation methods to dig out approximately 200,000 m² of soil at the Arnhem site. This will take the winter bed to a maximum depth of roughly 3 m, Croese says. Clean soil excavated from the site will be reused locally, while heavily contaminated soil will be removed. Lowering the river IJssel's summer bed will entail removing approximately 1 m of soil from the upstream point at the city of Zwolle and up to 3 m at the downstream end at the city of Kampen, Croese says. The excavation method for the IJssel has not yet been determined.

As Mott MacDonald and other firms work along the river, they must be cautious because of undetonated ordnance from World War II embedded in and around the riverbed. Crews will use Global Positioning System devices and specialized software to locate these objects, and the Rijkswaterstaat will follow standard safety precautions when handling these objects to ensure the safety of the workers and nearby residents.

"A protocol of safe, slow digging will be applied, with regular checks with manual magnetometers and additional techniques," explained Rob Nieuwenhuis, a senior consultant on water management for Mott MacDonald and a technical manager for the Room for the River program, in response to written questions from *Civil Engineering*.

While the goal of the program is to improve flood control without significantly affecting the villages that line the waterways, some homes will probably have to be removed as part of the project. In the end, however, the program will not only protect people and property from flooding but also create a more pleasing environment for the millions of people who live near the rivers and enjoy the recreational activities they make possible, Croese says. Many project areas will be landscaped to include natural habitats that will make it possible for cows and horses to graze and for people to hike during dry periods. The idea is to encourage people to live with the river rather than struggle against it, according to Nieuwenhuis. "Instead of standard solutions like [expanding] the dikes, innovative solutions are sought that have less impact on the environment," he wrote. "And most importantly, flood resilience is increased by allowing room, or rather space, for the river." —JENNY JONES

URBAN RENEWAL

NYC Project Transforms Landfill into a Sprawling Recreational Oasis

IN 1948, WHEN the marshy area in the New York City borough of Staten Island known as Fresh Kills was converted into a landfill, city officials intended to use it as a dump for only a few years. They planned to deposit just enough trash there to stabilize the marsh for development. But instead the 2,200-acre site became a primary dumping ground for the city's municipal and household waste, at one point taking in 29,000 tons of trash a day. The landfill accepted its last load of waste in March 2001, although the site was temporarily reopened later that year by



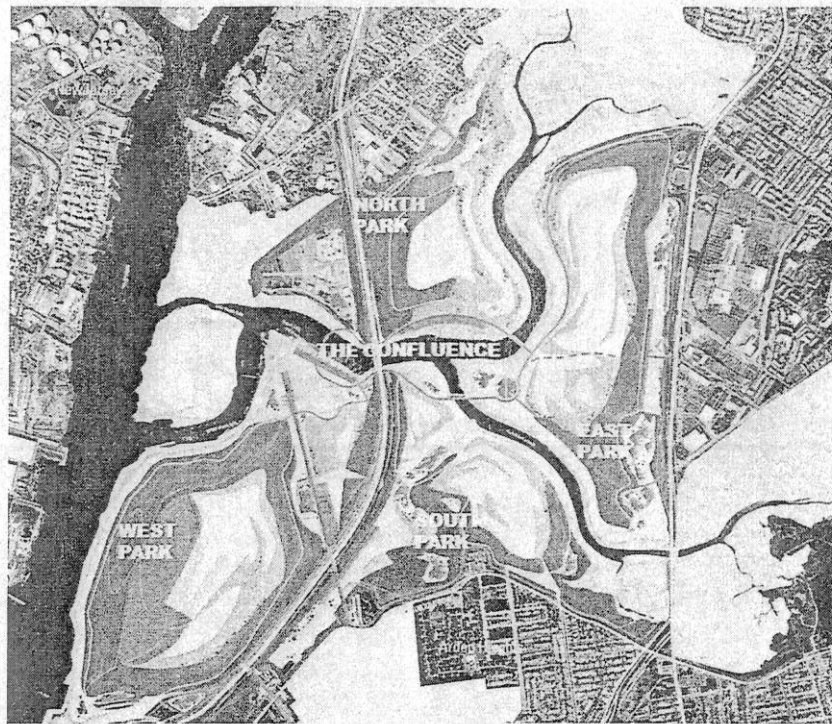
RENDERING BY JAMES CORNER FIELD OPERATIONS. COURTESY OF THE CITY OF NEW YORK

Civil Engineering NEWS

order of the governor to handle the sorting of materials made necessary by the terrorist attacks on the World Trade Center. Now the city is in the early stages of an ambitious project to reclaim the land and convert it from an eyesore into one of its largest public parks.

Fresh Kills is located along the western shore of Staten Island. Its name comes from the Dutch, who settled the area in the 17th century, and it means "fresh creek" or "fresh waters." The area was originally fertile marshland, and the new settlers used it to grow salt hay and other crops. In the late 19th century several brick factories moved into the area, and cargo ships began plying the adjacent waterways. But even as the city burgeoned around it, Fresh Kills remained virtually undeveloped until the landfill operations began. During its 53 years as a landfill, approximately 45 percent of the site was used to store waste; the rest remained as creeks, marshes, and wetlands. The trash was heaped into four large mounds, two of which were capped in 1996 and 1997 with natural and synthetic membranes in preparation for the landfill's closure. (See "Monitoring the Fresh Kills Landfill," *Civil Engineering*, October 2000, pages A2–A9.) The two other mounds are being capped now as part of the park project.

In 1999, with the closure of the landfill imminent, New York City planners began discussing the possibility of transforming the dump into a park, and two years later they held an international design competition for what is one of the largest landfill-to-park projects ever undertaken. The city received several proposals but ultimately selected a design from James Corner Field Operations, a landscape architecture and urban design firm based in New York City. Justine Heilner, its marketing director, says her firm was eager to be involved in such a monumental project. "It seemed like a really interesting challenge...and it's in New York," she says. "It's pretty amazing to have such a huge amount of open space in the city." The firm has since developed a master plan for the park, which



will be nearly three times the size of the city's famous Central Park. The plan divides the space into five main areas: the Confluence, the North Park, the South Park, the East Park, and the West Park.

Each section of the park will encompass recreational and natural spaces. The 100-acre Confluence will be located at the point where Richmond and Main creeks meet. It will serve as the core of the park and will have a boat launch and visitor center. North Park will comprise 233 acres and include such passive recreation facilities as bird-watching stations and picnic areas, while the 425-acre South Park will include such active recreation facilities as equestrian and biking trails, softball fields, and soccer fields. East Park will encompass 482 acres and besides large vegetated spaces will offer sweeping views of the surrounding area from atop one of the former landfill mounds, while the 545-acre West Park will give visitors 360-degree views of the region and unobstructed sight lines to lower Manhattan from the peak of the largest mound.

In addition to the parks within the landfill, two parks on the edge of the site are being developed as part of the project. These are Owl Hollow Fields—an expanse of 21 acres that will include a pedestrian pathway and four soccer

New York City is in the midst of an ambitious project to reclaim a 2,200-acre landfill and transform it into one of the city's largest parks.

fields with synthetic turf—and Schmul Park, an area of 8.5 acres that is being renovated to include a playground and handball and basketball courts. Construction work on these neighborhood parks has already begun, but work on

the landfill portion of the project is expected to take years to complete. "The time frame of the project is laid out as thirty years because it's such a complicated site," says Angelyn Chandler, a registered architect and the Freshkills Park capital program manager for New York City. The entire project is expected to cost between \$1 billion and \$2 billion.

The New York City Department of Sanitation, which is responsible for closing the landfill, is in the process of capping the last two mounds of trash and preparing the two older mounds for the park. It has designed a multilayer cover to conceal the waste and make the park safe for visitors. After a base layer of soil has been spread over the waste, a gas migration layer will be added to facilitate the uptake of the methane gas by a collection system. Next, an impermeable plastic liner or hydraulic barrier will be put over the base layer. An additional drainage layer will be added on top of that to reduce water pressure on the barrier layer in some areas, followed by a thick layer of soil of residential grade

RENDERING BY JAMES CORNER FIELD OPERATIONS; COURTESY OF THE CITY OF NEW YORK

to protect the hydraulic barrier from weather extremes. A minimum of 6 in. of planting soil will cap the lower layers. "We're not taking any trash away," Chandler notes. "We're just creating a park on top of what is there."

The landfill cover will help prevent water from reaching the refuse. As a result, the amount of leachate will be significantly diminished. The site's leachate collection system will capture any leachate that does materialize and funnel it to an on-site treatment plant, where solids will be separated from the water. The solids will be compressed and shipped off-site, and the clean water will be discharged into the nearby Arthur Kill. "There's a leachate containment wall around the base of every mound and a drainage structure that carries that leachate away from the mound to a treatment plant," explains Chandler, who points out that the system is "monitored highly by both [the Department

of] Sanitation and the state." A separate on-site landfill gas system will continue to capture the gas that is generated by the decomposing waste. This system includes an on-site recovery plant that converts the gas—a mixture of methane, carbon dioxide, water, and other organic compounds—into a substance suitable for domestic energy use, Chandler says.

The park will be developed in roughly 20-acre segments. Construction work will involve forming trails, building restrooms, restoring the wetlands and marshlands, and creating athletic fields. A public road system also will be constructed through the park. These roads will not only provide access to different areas of the park but also offer an alternative route between Staten Island's West Shore Expressway and Richmond Avenue. The design of this road system remains under review. "The road is still a really contentious issue...because traffic is a major, major political issue on Staten Island," Heilner says. "Right now, Fresh Kills Landfill is kind of like a big block in the middle of Staten Island that people have to go around."

As development of the park progresses, one of the greatest challenges will be preserving the landfill's infrastructure and mound caps while providing an assortment of park amenities, Chandler says. As a result, none of the park structures will be built on the landfill mounds. "The New York State [Department of Environmental Conservation] to date is not allowing us to build structures on top of the mounds because they aren't allowing us to put piles through the mounds," Chandler explains. "Putting a pile through would mean puncturing the cap, and they have not approved this puncturing."

While construction of the park is expected to take decades, those involved in the project are already anticipating its benefits. "When you're up on top of those mounds, you have this amazing expansive view of the entire harbor area, which you really can't get anywhere else in the city," Heilner says. "It says a lot about New York that they're trying to make something this great out of what was really a blight in the city."
—JENNY JONES

FLOOD CONTROL

California Moves Toward Comprehensive Flood Protection Plan

PEOPLE have been building levees in California's Central Valley in piecemeal fashion since the 19th century, and the result is a complex, decentralized flood control system. Local levee districts, reclamation districts, cities, counties, public agencies, and even private landowners manage the hodgepodge of facilities in more than 100 jurisdictions. Now the state government

The Natomas Levee, which lies just north of the confluence of the Sacramento and American rivers, is but one of the many structures that make up the sprawling flood protection system in California's Central Valley. One of the challenges facing the FloodSAFE California initiative is to improve the reliability of structures that are tightly confined between private property on one side and important riparian habitat on the other.



is leading an effort to integrate those systems by developing the region's first comprehensive flood protection plan in nearly 60 years.

The Central Valley, which encompasses the floodplains of the Sacramento

and San Joaquin rivers, is home to the city of Sacramento and other urban centers as well as to some of the nation's most productive agricultural lands. It is also vulnerable to floods, raising concerns in recent years that the area could become

CALIFORNIA DEPARTMENT OF WATER RESOURCES

197

Re
For
W