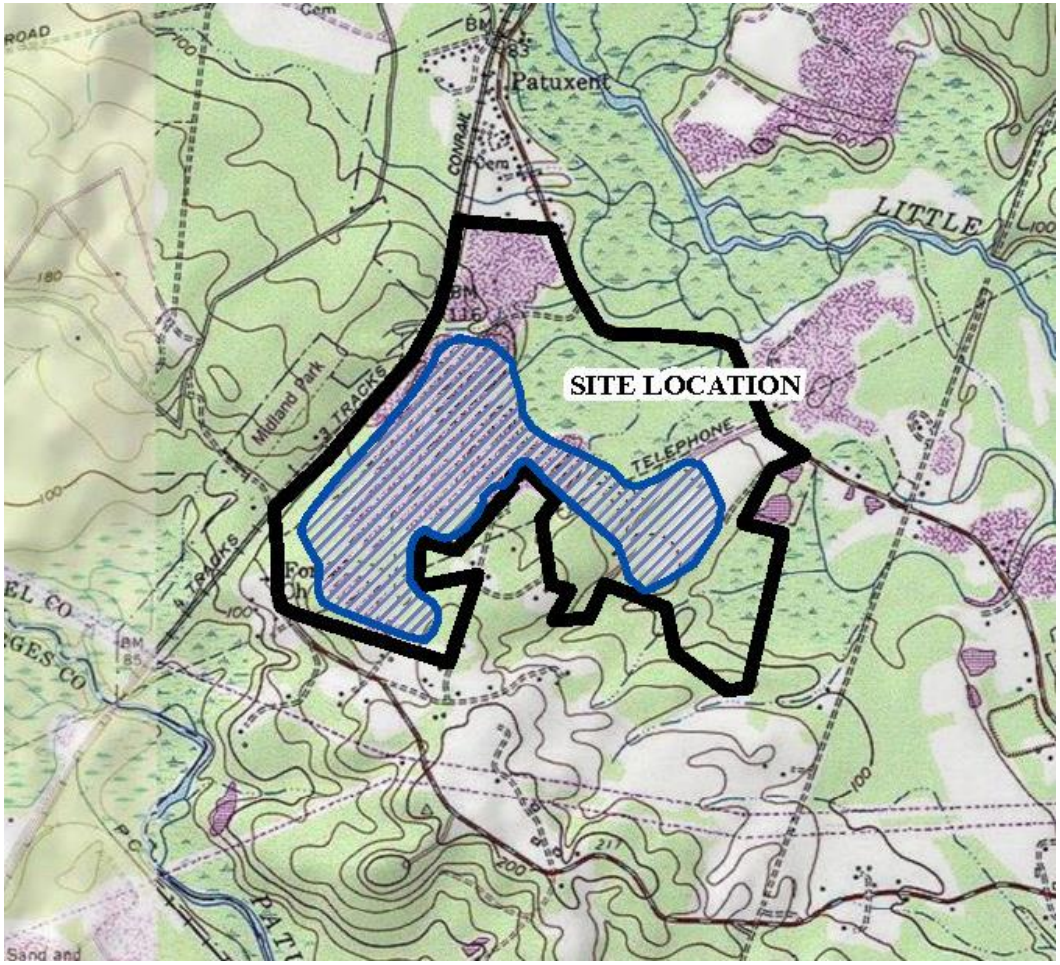
Maryland
Department of
the Environment

Proposed Chesapeake Terrace Rubble Landfill

Public Hearing

February 23, 2023

CHESAPEAKE TERRACE RUBBLE LANDFILL INFORMATIONAL MEETING



Thursday February 23, 2023

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

AGENDA

- **Project Background**
- **Landfill Overview**
- **Permitted Waste Types**
- **Landfill System Components**
- **Operations**
- **Closure**
- **Post-Closure Maintenance and Monitoring**

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

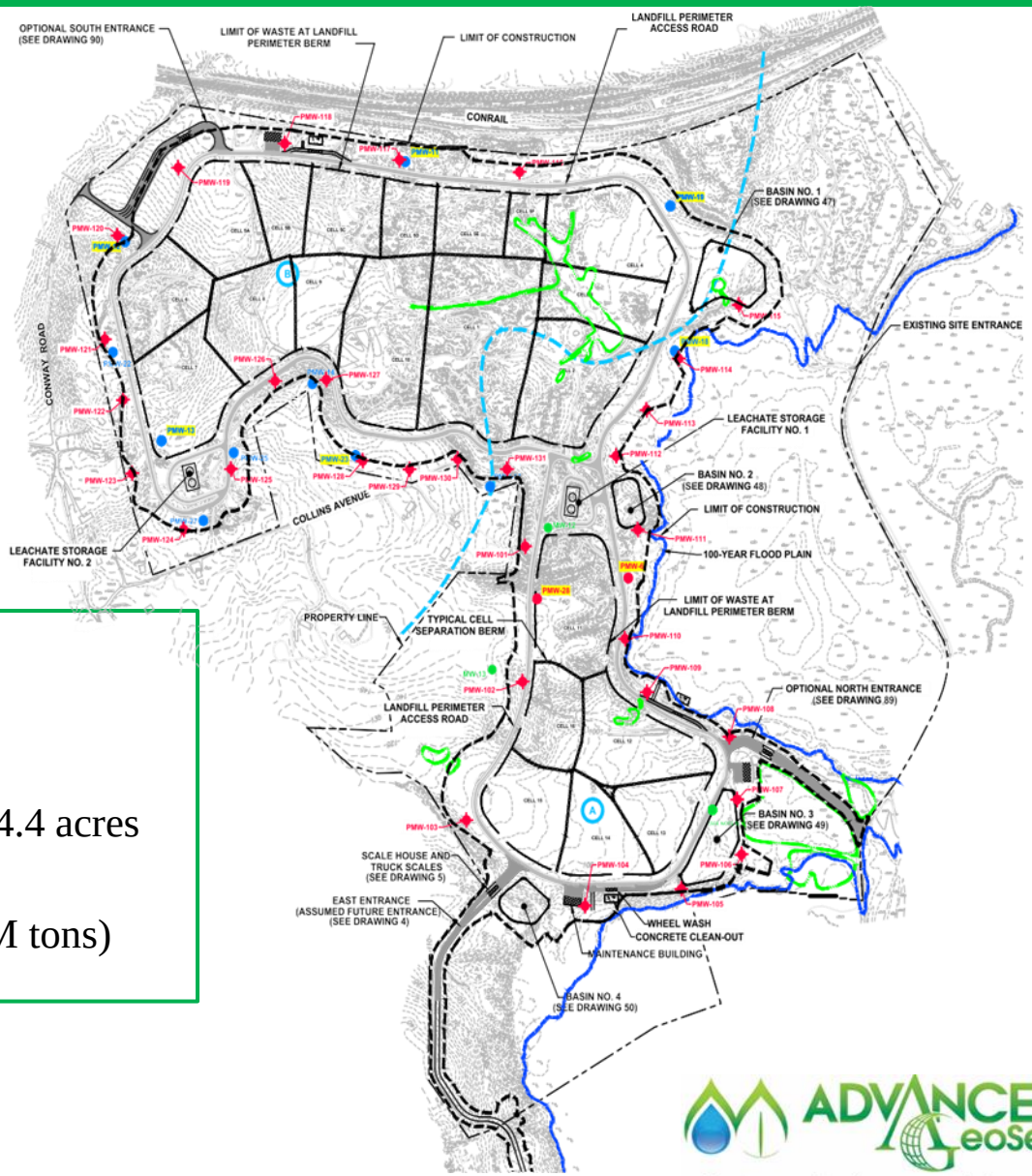
PROJECT BACKGROUND

- Field activities began in 1989, with installation of wells
- Phase I Permit Application to MDE
- Special Exception Permit was granted by Anne Arundel County
- Phase II Permit Application (hydrogeologic study) initially submitted to MDE in 1990. Supplemental investigations in 1998, 2003.
- Phase III Permit Application (landfill engineering design) submitted in 2006 to MDE – MDE comments on Phase III prompted additional investigation as part of the Phase II Report.
- Supplemental Field Investigation was conducted in 2013/2014 to gather more hydrogeologic information to answer MDE comments.
- Phase II Application was revised and resubmitted in 2019 and 2020. MDE approval in June 2020, with final addendum in January 2022.
- Phase III Application submitted in July 2020. MDE Issued Comments July 2021. Revisions provided September 2021, November 2021 and January 2022.

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LANDFILL OVERVIEW

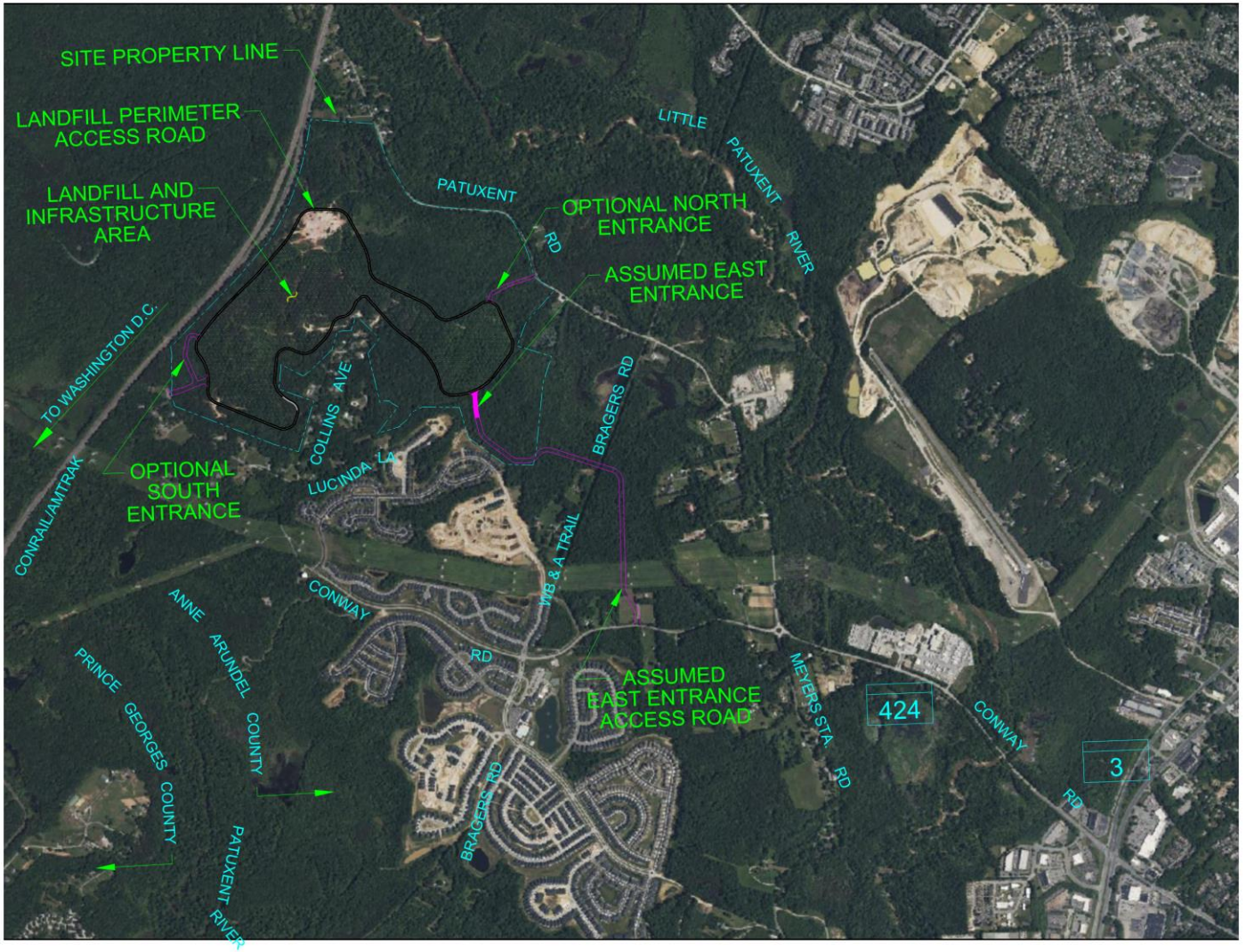


- Total Site Area – 480 Acres
- Two Operational Areas –
  - West Landfill
  - East Landfill
  - Total Disposal Area – 114.4 acres
- Gross Volume – 9.3 MCY
- Net Volume – 8.4 MCY (5.0 M tons)

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LANDFILL OVERVIEW



NWMI
NATIONAL WASTE MANAGERS INC.

PERMITTED WASTE

Acceptable Wastes (abridged, see COMAR Sec. 26.04.07.13)

1) **Land Clearing Debris**.

2) **Demolition Debris** associated with the razing of buildings, roads, bridges, and other structures includes structural steel, concrete, bricks (excluding refractory type), lumber, plaster and plasterboard, insulation material, cement, shingles and roofing material, floor and wall tile, asphalt, pipes and wires, and other items physically attached to the structure, including appliances if they have been or will be compacted to their smallest practical volume.

(3) **Construction Debris** is structural building materials including cement, concrete, bricks (excluding refractory type), lumber, plaster and plasterboard, insulation, shingles, floor, wall and ceiling tile, pipes, glass, wires, carpet, wallpaper, roofing, felt, or other structural fabrics. Paper or cardboard packaging, spacing, or building materials, provided that they do not exceed 10 percent by volume of the waste, may be accepted at the rubble landfill. Paint containers, caulk containers, or glaze containers are acceptable (up to 1% by volume), provided that they are empty, and any residual material is dried before acceptance at the rubble fill.

(4) **Asbestos waste** is acceptable provided that the material that is received is packaged and labeled as specified in COMAR 26.11.15.04, and the material is handled pursuant to COMAR 26.04.07.13.

(5) **Household Appliances and White Goods**. (with refrigerant removed before burial).

(6) **Processed Debris**.

Note: Scrap tires may be accepted at the facility and managed in accordance with the requirements of a scrap tire collection facility license issued under COMAR 26.04.08. Disposal of tires in the landfill is prohibited.

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

PERMITTED WASTE

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

PERMITTED WASTE

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

SITE SECURITY

- Fence around the landfill.
- Secure access through the entrance gate.
- Primary Entrance with a backup entrance.
- No unauthorized access to protect environmental controls and systems.

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

TRAFFIC CONTROL

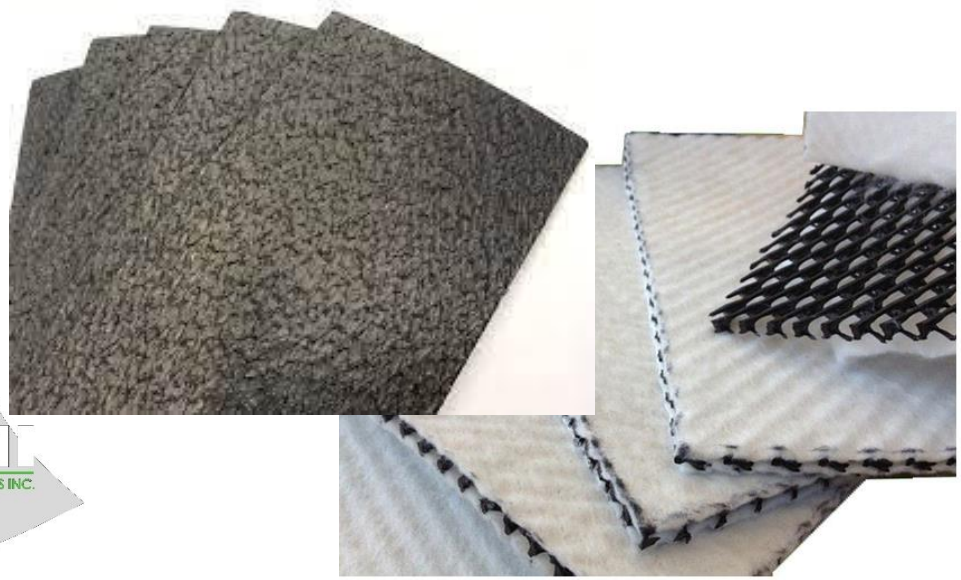
- One Main Entrance for personnel and equipment
- Backup entrance for emergencies only, if the Main Entrance blocked, to allow evacuation and/or entrance by first responders
- All entering will have to go past scale-house and visitors will be required to sign-in

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LINER SYSTEM

- Defines the bottom of the waste and is supported by a 24” thick compacted low permeability (permeability <1x10-5 cm/sec) soil subbase.
- Bottom of 24” subbase is a minimum of 3 feet above the highest predicted groundwater levels
- Geosynthetic components of liner system will consist of:
  - Geocomposite Drainage Layer
  - 80 mil HDPE Geomembrane
- Prevents vertical migration of leachate
- Directs leachate flow to sumps

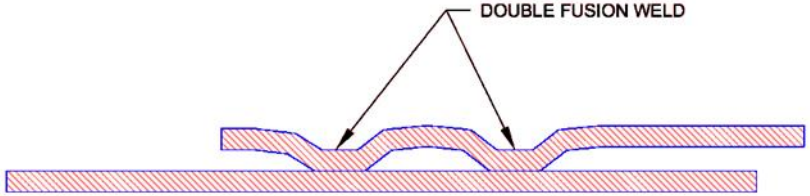


NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LINER SYSTEM

- Adjacent panels of the geomembrane are welded together, called a double fusion weld.



NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LEACHATE COLLECTION LAYER

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LEACHATE COLLECTION LAYER

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LEACHATE REMOVAL & STORAGE

- Leachate
  - the water that comes with the waste
  - rain that falls in the cells and comes into contact with the waste
- The floor of the landfill is sloped to drain to a low spot, called a sump
- There are pumps in the sump, located in riser pipes, which pump the leachate out of the cell and into on-site storage tanks via a force main

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LEACHATE REMOVAL & STORAGE

- Leachate tanks receive the liquid removed from the leachate sumps
- Tanks are located inside of water tight concrete structures that provide containment incase of spills or leaks

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

Waste Placement

- First layer ("lift") of waste placed on the top of the leachate collection layer will be 4-feet thick. The first lift will be material designated as "select waste" and placed in a manner to prevent damage to the leachate collection layer.
- Maximum lift thickness shall be 8-feet after compaction.
- Average daily fill rate based on 5.0 M ton net capacity and 12 years, 5-days/week and 52 weeks = 1,602 tons/day (80 truck loads a day based on 20 tons/load).
- Periodic Cover material shall be placed over exposed waste in the working face every third day of operation. Periodic cover shall be 6-inches of soil or an alternate protective cover.
- A 12-inch thick layer of Intermediate Cover will be placed over areas that will not have additional waste placed for 30+ days.
- A 24-inch thick Final Cover layer will be placed over the final waste surface. The Final Cover will support the Closure Cap

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

CLOSURE CAP

- Closure Cap is installed over Final Cover layer beginning within 24 months of reaching top of waste elevations.
- Closure Cap consists of the following components (from top to bottom):
  - 24-inch thick protective cover layer
    - Grass/vegetation
    - 6-inch vegetative support layer
    - 18-inch soil layer (permeability $<1x10^{-5}$ cm/sec)
  - Geocomposite Drainage Layer to direct infiltration to toe drain
  - 40 mil textured Liner Low Density Polyethylene (LLDPE)

NWMI NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices a Montrose Environmental Group company

CLOSURE CAP

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

CLOSURE CAP

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

STORMWATER MANAGEMENT

- Manage surface water (or stormwater) for critical rainfall events - the 25-year, 24 hour storm event (5.9 inches), with consideration to the 100-year 24 hour storm event (7.4 inches)
- 100-year, 24 hour storm event per NOAA (8.5 inches)
- Surface water features include
  - Terraces
  - Culverts
  - Downchutes
  - Perimeter Channels
  - Sediment Basins
  - Surface Water Management Basins

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

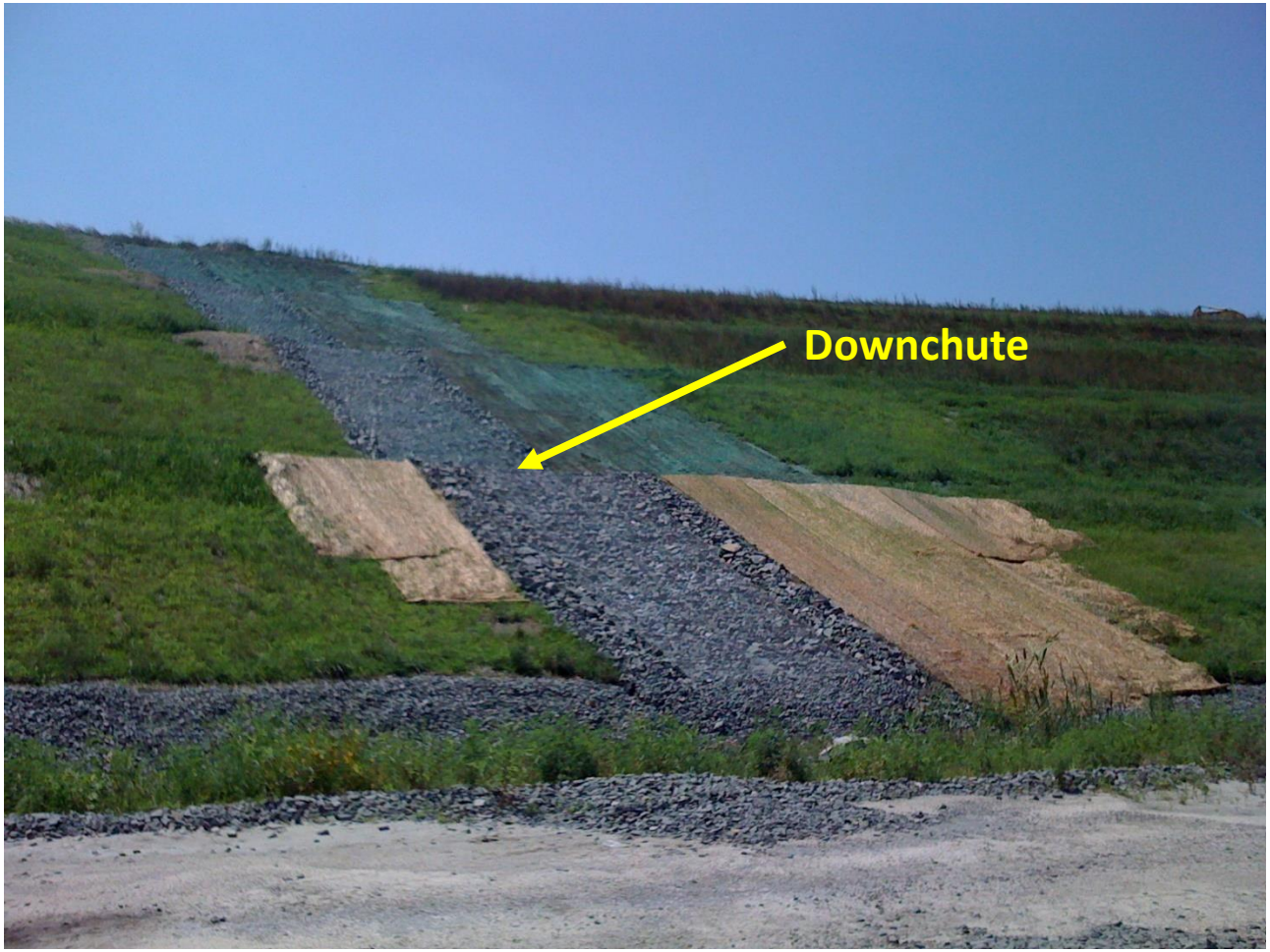
STORMWATER MANAGEMENT

- Terraces

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

STORMWATER MANAGEMENT



NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

STORMWATER MANAGEMENT

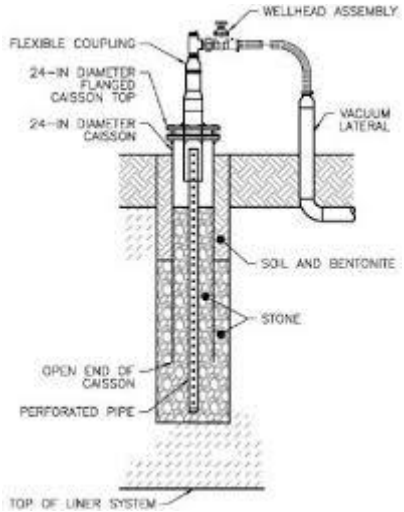
- Stormwater Management Basins

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

LANDFILL GAS SYSTEM

- Proposed design includes the installation of 96 gas extraction wells.
- Installed during cap construction to approximately 8 feet above the bottom of waste.
- System can be operated in active or passive mode depending on gas content, although permit application specifies active.
- Extraction wells connected to a system that creates a vacuum to pull out gas (active mode) or vented to atmosphere (passive mode).
- Collected gas from active mode is sent through a system to remove moisture and burn gas.



NWMI NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices a Montrose Environmental Group company

CONSTRUCTION SEQUENCING

- Build the landfill in stages, only a few cells at a time for numerous reasons, including
  - Manage material coming out of the excavation (stockpile control)
  - Manage stormwater
  - Minimize leachate generation
- As filling grades are approached in that cell, the next cell is constructed and brought online
- Cells are capped as filling grades are achieved
  - Manage leachate generation
  - Manage stormwater
  - To utilize the spoils from the cell construction
  - Limit disturbance for erosion control purposes

NWMI NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices a Montrose Environmental Group company

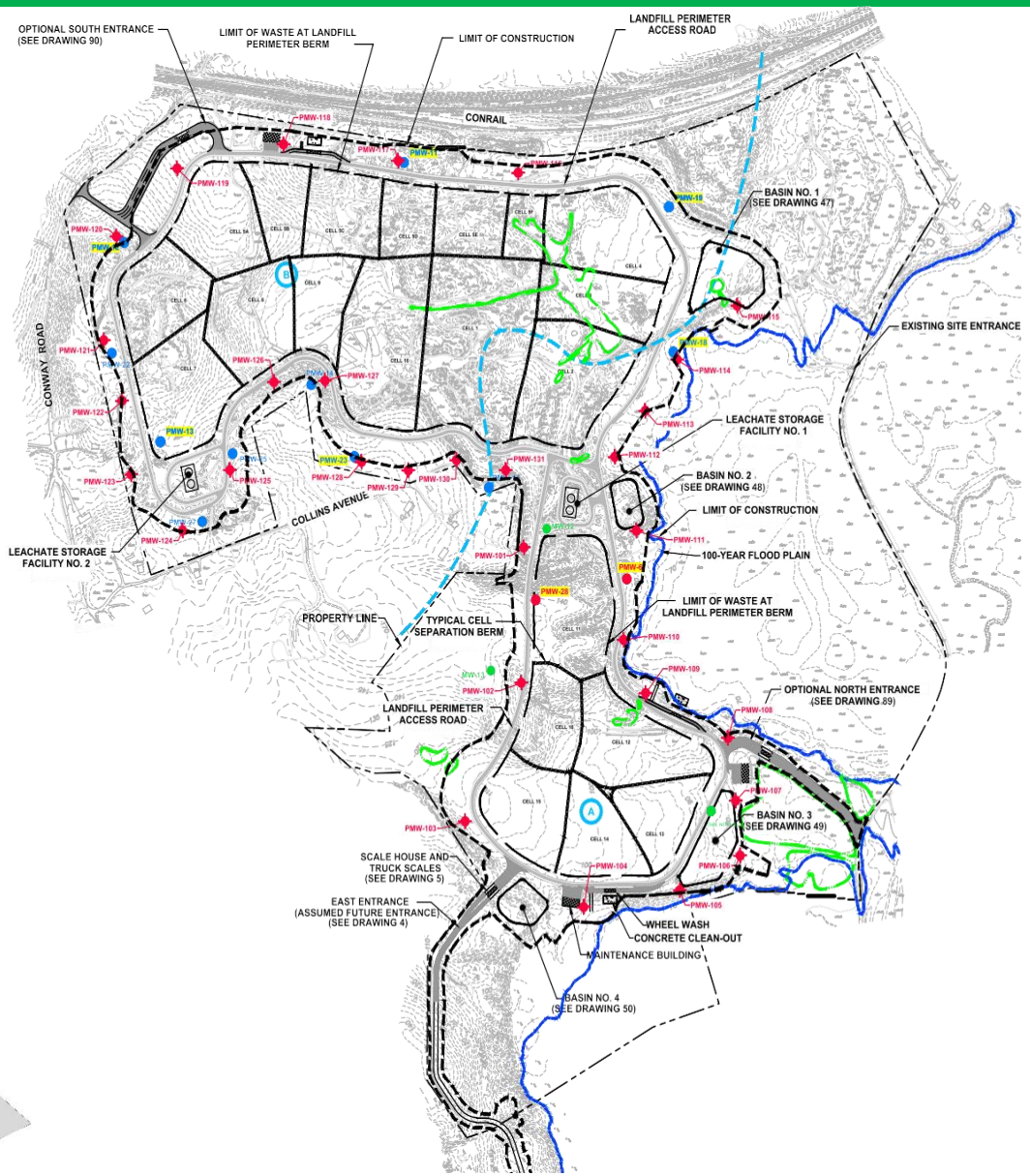
GROUNDWATER MONITORING

- Groundwater monitoring is performed prior to landfill operation to establish existing groundwater quality.
- Groundwater monitoring is performed during landfill operation and after landfill closure to determine whether waste disposal activities are impacting groundwater quality.
- Groundwater monitoring will be performed utilizing 1 existing and 31 new wells installed in the unconfined water bearing zone.
- The 32 wells will be sampled for a minimum of 4 consecutive quarters, and have their depth to water levels measured monthly before the start of waste disposal activities. This data will confirm that groundwater separation of at least 3 feet is maintained, and help refine groundwater quality.
- Adjacent downgradient properties with wells screened in the unconfined water bearing zone will be offered water level monitoring.
- Groundwater monitoring will continue during and after landfill closure

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

GROUNDWATER MONITORING



NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

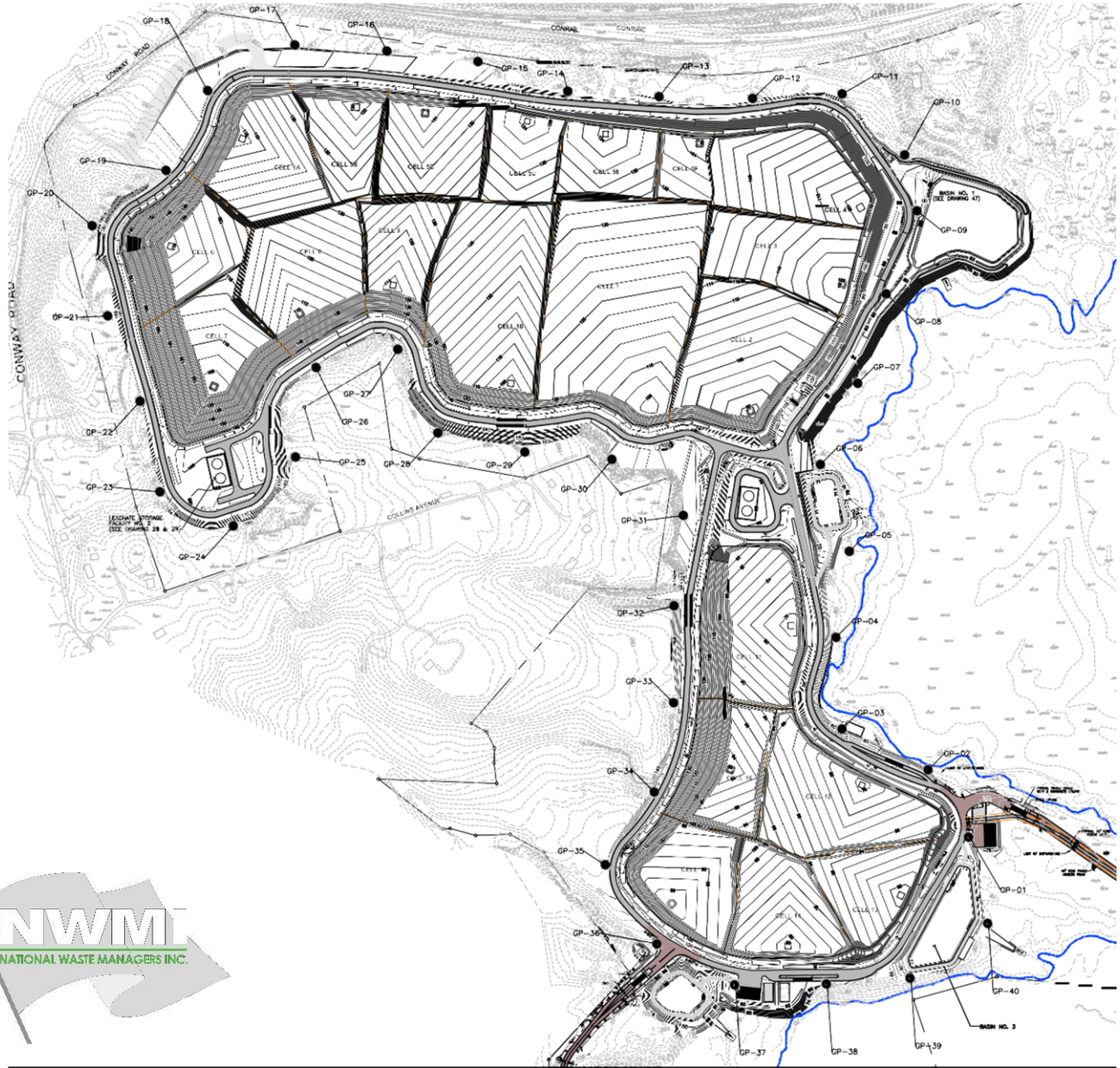
LANDFILL GAS MONITORING

- Landfill Gas Monitoring is performed to ensure that gasses generated during the decomposition of waste do not migrate to adjoining properties or structures.
- Landfill gas monitoring system shall be installed prior to start of waste placement. (40 probes)
- Landfill gas monitoring will begin at the start of waste placement.
- Landfill Gas monitoring will be performed on a quarterly basis, pursuant to USEPA guidelines/recommendations. If results exceed the LEL (5% methane by volume) monitoring will be increased to monthly.
- Monitoring will continue after landfill closure, until no longer deemed necessary by MDE.

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

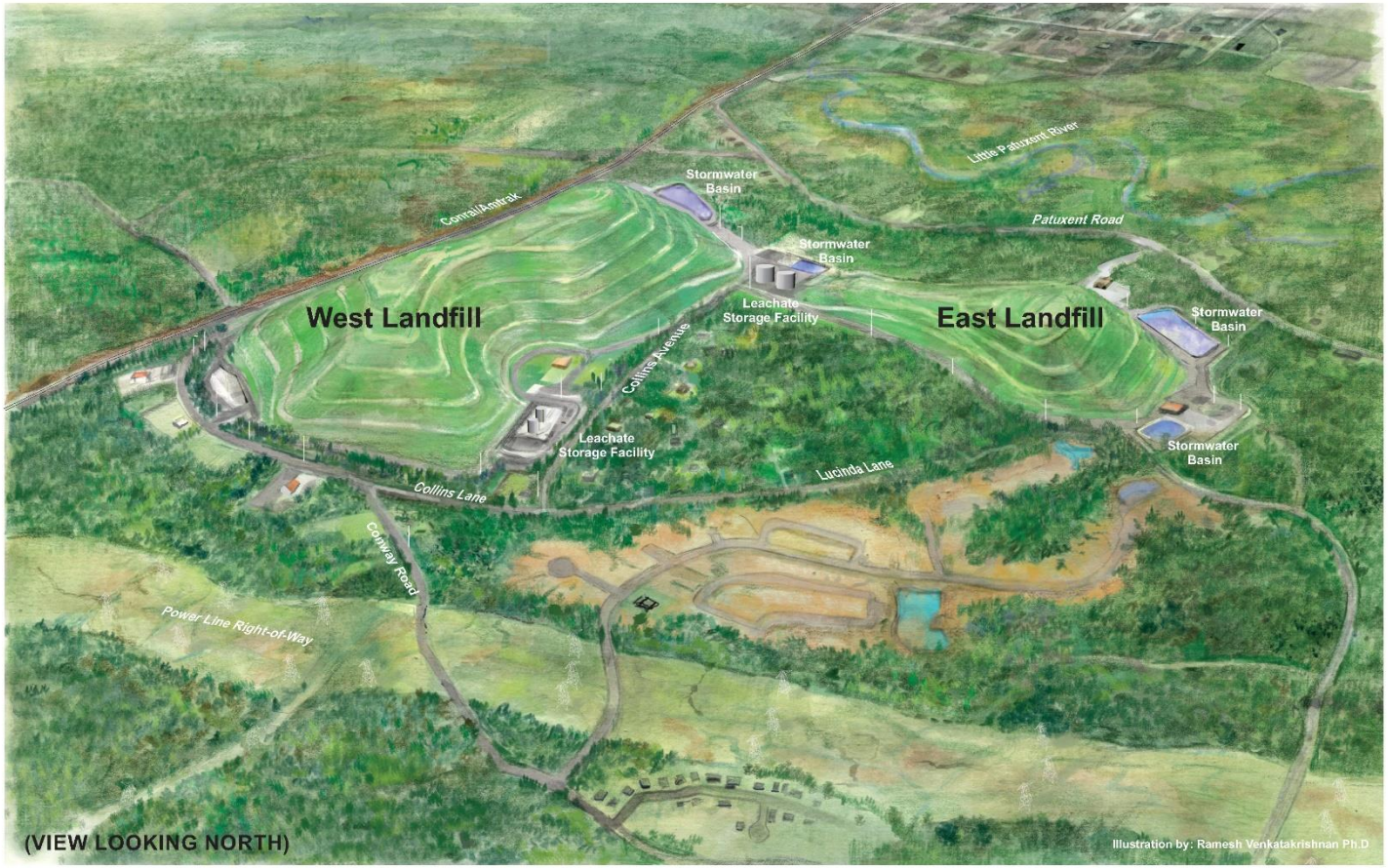
LANDFILL GAS MONITORING



NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

POST-CLOSURE MAINENANCE& MANAGEMENT



NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

POST-CLOSURE MAINENANCE& MANAGEMENT

- Mow at least once per year
- Annual Inspections
  - Erosion
  - Settlement
  - Ponding water
  - Distressed vegetation
  - Removal of woody vegetation on the cap
- Continue Groundwater and Perimeter Gas Monitoring and Reporting

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

POTENTIAL END USES

- Varies from state to state, site to site
- Some current preferred end-uses for landfills
  - Walking & biking trails
  - Bird-watching/habitat
  - Solar panels for green-power generation
- Will need to be evaluated as the closure period approaches, based on markets and regulatory factors

NWMI
NATIONAL WASTE MANAGERS INC.

ADVANCED GeoServices
a Montrose Environmental Group company

Maryland
Department of
the Environment

Questions?

Thank You for Your Participation!

Contact: Andrew Grenzer
andrew.grenzer@maryland.gov
(410) 537-3366