Potential Landfill Sites in Atlantic County
Modeling the ACUA Landfill

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ABSTRACT
This project was devised to determine suitable locations for the construction of a landfill site in Atlantic County. The waste in Atlantic County is currently being handled efficiently by the Atlantic County Utilities Authority (ACUA) landfill in Egg Harbor Township but with the population increasing and the casino industry expanding, there is a need to find another landfill site for the future. Using GIS applications, suitable locations were selected, and then two potential sites were chosen that satisfied the necessary requirements. Those requirements included the following: soil type, proximity to streams, lakes, wetlands, flood prone areas, public well sites, wildlife management areas, Pinelands preservation areas, residential land, and airport restrictions. Landfill sites were determined using maps of each of the criteria in Geographic Information System (GIS), supplemented by aerial photographic images. The two potential landfill sites along with other sites would need to be analyzed further, by using other factors such as transportation costs, historical evidence, endangered species, and land availability.

OBJECTIVE
To find two suitable locations in Atlantic County to construct a landfill based on New Jersey state regulations.

INTRODUCTION
The population in Atlantic County continues to rise, particularly in the three major growth townships of Egg Harbor, Galloway and Hamilton. Families who produce the most waste occupy the majority of the housing. In addition, the casino industry continues to flourish and expand, increasing the construction waste. Today, the waste in Atlantic County is being handled efficiently by the ACUA landfill; however, this landfill has a finite amount of space that will eventually reach capacity. According to the feasibility studies at the ACUA landfill, this site will be able to keep collecting waste until the year 2031 (Gannett Fleming). The projected year is based on three landfill expansions being accepted by the NJDEP. Without approval of these expansions, the ACUA landfill will be at capacity by the year 2019, only 15 years from now. Currently, the production of waste is covered by the ACUA, but once it has reached capacity, the county will have no viable options for waste disposal. In the study, the ACUA landfill was used as a model for the search for a new site. The ACUA landfill operates a state-of-the-art landfill, which will eventually cover 120 acres. In addition to the landfill area, there is also a 22 acre compost facility, recycle plant, transfer station, and office buildings. The potential landfill sites would need to have enough space for a landfill and additional facilities. Using GIS, the potential sites were located in accordance with the regulations set by the state of New Jersey. GIS also helped to estimate the total area of the two potential landfills.

ACKNOWLEDGEMENTS
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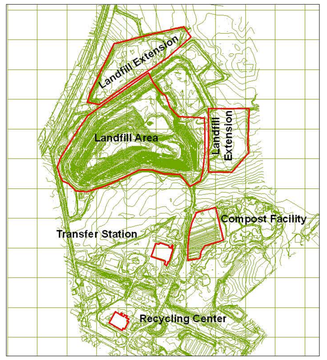
Aerial Photo of Atlantic County Utilities Authority (ACUA) landfill.



Layout Diagram of ACUA landfill

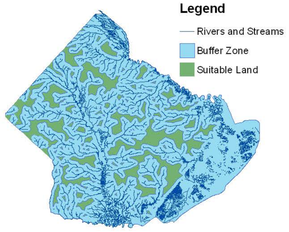


Figure 1. Streams, Rivers, Lakes, and Floodprone Areas

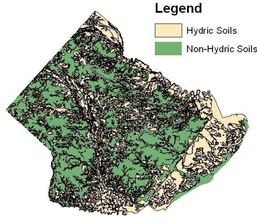


Figure 2. Soils Limiting Landfill Development

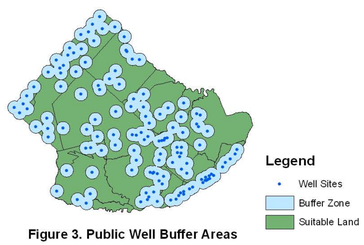


Figure 3. Public Well Buffer Areas

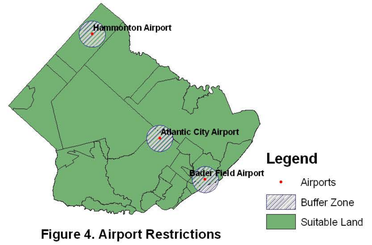


Figure 4. Airport Restrictions

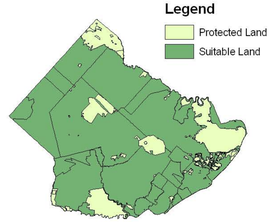


Figure 5. Major Protected and Open Space Areas

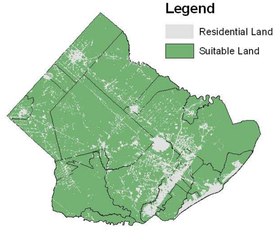
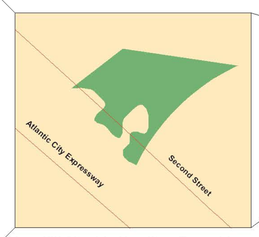


Figure 6. Residential Land

SITE 1
This 414 acre area is north of Second Road in Hamilton Township, and approximately 2,000 ft north of the Atlantic City Expressway on which there is currently a sand and gravel extraction operation owned by Arawak Paving Company. The proximity to the Expressway gives this site easy accessibility for all of Atlantic County. The nearest residential land is 340 ft away and the closest body of water is 900 ft north. There are no airports or well sites in close proximity. The ACUA landfill will eventually cover 120 acres, giving it a life expectancy of around 40 years. This site has enough area to meet the specifications of the ACUA landfill and have enough area for the other facilities. Further investigation of the area would be needed to determine if the landfill would pose an environmental risk.

Aerial photo of Arawak Paving Company



Landfill Site 1 in Hamilton Township

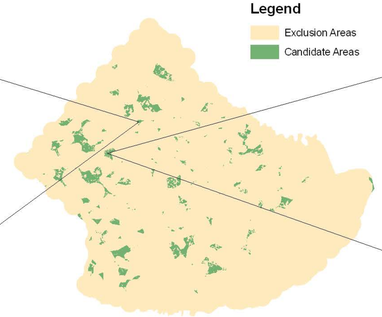


Figure 7. Exclusion Areas and Candidate Areas

Landfill Site 2 in Buena Vista Township

Aerial photo of open land in Buena Vista Township

SITE 2
This 345 acre area crosses over 9th Street in Buena Vista Township. The land is open at present, and meets the requirements of the six criteria. This site is 2,500 ft away from the nearest body of water and has no well, airport, or soil restrictions. However, this landfill site area is in close proximity to some residential land, and therefore may not be approved by the current landowner. The area mapped here has 2 residencies within 300 ft. This 345 acre site would have enough space to build a landfill and facilities that meet the standards of the ACUA landfill. Further investigation of the area would be needed to determine if the landfill would pose an environmental risk.

CONCLUSION
The ACUA landfill will continue to collect waste from an increasing population, and a flourishing casino and construction industry in Atlantic County. The ACUA landfill will eventually cover 120 acres, which will allow the landfill to operate for another 20 - 30 years. The need for another landfill is not urgent at present but planning for a future landfill needs to be taken into consideration. The six criteria that were studied illustrated many candidate areas as shown in Figure 7. Site 1 was chosen for its accessibility to the Atlantic City Expressway, whereas Site 2 was chosen because the land was currently open. Site 1 and Site 2 both have advantages and disadvantages and in comparison, Site 1 would be the better option as there are no residencies within 300 ft of the proposed layout. At present, Site 1 is an excavation area for the Arawak Paving Company, which would limit the amount of excavation needed to construct a landfill. The two sites that are highlighted are examples of the many sites that could be used to construct a landfill. This study aims to illustrate the criteria that are required for construction of a landfill. The potential candidate sites in this study would have to go under further investigation. Endangered species, transportation costs, sub watershed drainage areas, historical/archaeological sites, property tax revenues, site development costs, and site configuration are among several other factors that are important for the construction of a landfill.