EASTERN CONNECTICUT RC&D
ENVIRONMENTAL REVIEW TEAM REPORT
ON
KILLINGLY TOWN-OWNED LAND
Suitability for a Sanitary Landfill

EASTERN CONNECTICUT RC & D ENVIRONMENTAL REVIEW TEAM

REPORT ON

KILLINGLY TOWN-OWNED LAND - SUITABILITY FOR A SANITARY LANDFILL

<u>Purpose:</u> To determine if other parts of the town-owned site are suitable for a landfill operation

This report is the outgrowth of a request from the Town of Killingly, to the Windham County Soil and Water Conservation District. The S & WCD referred this request to the Eastern Conn. RC & D Project Committee for their consideration and approval as a project measure. The request had been approved and the measure reviewed by the Environmental Review Team.

The soils of the site were mapped by a soil scientist of the USDA, Soil Conservation Service. Reproductions were made of the soil survey and forwarded to all members of the Team prior to their review of the site.

The Team that reviewed the site consisted of the following personnel:

Al Weeks, District Conservationist, SCS
Ed Minnick, Engineering Specialist, SCS
Dave Miller, Climatologist, Extension Service, UConn
Tim Linkkila, Wildlife Biologist, Region IV, DEP
Cliff Tiffany, Supervising Forester, Region IV, DEP
Joseph Piza, Fisheries Supervisor, Region IV, DEP
Hugo Thomas, Geologist, Natural Resource Center, DEP
Sid Quarrier, Geologist, Natural Resource Center, DEP
John Hester, Planner, Town of Plainfield

The Team met and reviewed the entire site on the afternoon of November 20th. Reports from each Team member were sent to the Team Coordinator for review and summarization.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. The report identifies the existing resource base and evaluates its significance to the proposed land use. The results of the Team action are oriented toward the development of a better environmental quality and the long-term economies of the land use.

The Eastern Connecticut RC & D Committee hopes you will find this report of value and assistance in making your decisions on this particular site. If you require any additional information, please contact:

Windham County Soil and Water Conservation District Brooklyn Agricultural Center Brooklyn, Connecticut 06234

Phone: 774-0224

Summary:

In the opinion of the Environmental Review Team, no area exists at the site reviewed that would allow a sanitary landfill operation with normal consideration of conventional design or site preparation. Even with special design or site preparation, a properly operated landfill within the scope of reasonable costs is likely to be prohibitive. The critical factors of consideration in part or combination are: Location within the headwaters of a watershed, rapid surface and subsurface water flow into the Quaduck Brook, shallow to bedrock conditions, high or perched water table conditions, slope conditions, adjacent favorable location for availability of groundwater supplies, existing fish management aspects of Quaduck Brook, and a productive wildlife marsh to the south.

Although the public acceptance of the site, its "out-of-sight" location, and the existence of a suitable road condition are all favorable attributes, they cannot be considered as a reasonable trade-off for the critical leachate and sedimentation problems that would likely occur.

Several suggestions are made relative to the operation of the present landfill which include: A request to the Soil Conservation Service for the handbook, "Erosion and Sediment Control," which discusses the standards and specifications for both temporary and permanent seeding on critical areas; also the availability upon request of the Departmental of Environmental Protection assistance in forest and wildlife management, if the town should decide to apply such management to the site.

		HATURAL RE	SOURCE, CONSIDER	ATTORS FOR THE	EVALUATION OF:	SAMETARY LAMBE	III - Variation	Section)
	FEM FOR STIDERATION	SPECTFIC CONCERN	PROPLEM TO BE AMDRESSED	RESOURCE INPORMATION	ontgalkiratkuau. Giba	REQUIRES SPECIAL DESIGN OR SETU		
- No.	pography	Erosion	Surface flow through	Slope		Slope varies - exceeds 15% - a	in places it average 9.4%	DISCUSSION
 		- •	drainage Sheet runoff Mass movement Settling and compaction	Physiographic location	Small portion in upland	Remainder is a valley wall		The average valley slope above the floodprone west of the brook is 9.4%. The quaduok Brook receives all
	Transfer Tra	Surface water collection	Depressions Exterior drainage col- lection on landfill surface	Surface drainage		Minor flow through drainage	Headwater for watershed	waters from this slope. The longest length of travel water must take to reach the brook on the west side is 2500'. This indicates if a longfill could by physically
-	erburden (or Soils)	Trans- missibility Ion exchange	llost Rollains dry and workable year round Rotards Leachate	Type of Unconsoli- dated Material (or Soil)		Clayey till over shallow to bedrock conditions		located on the west side, and if leachate formed, it would have a short travel distance to the brook.
	d i		movement and renovates that which moves					The dominance of thin cover material and the relatively steep slopes would indicate that runoff
		Workability	Cover Not suscepti- ble to crosion or barrowing organisms Workable			See soils map		would indicate that the warface is predominantly by surface water flow and would likely produce an erosion and sedimentation problem if the cover material were disturbed.
		;	source year round Supports vegetations Allows gases to dissipate but does not allow water	,		-		Although a groundwater supply system has not yet been developed, the adjacent area has been identified as a favorable location for availability of groundwater. This would be contaminated
	drock	Rapid move- ment of leachate	to infiltrate Leachate will flow through bedrock-over- burden con~	Depth to bedrock and type of overburden			Shallow to bedrock conditions	if leachate from a landfill were to enter the system. A typical upland habi-
		Solution of	tact without renovation to the surface or ground- water An undesirable	Degree of fracture, porosity, bedding, etc.	Not observed	;		tat of Eastern Connecticut exists at the site. Imme- diately south of the area there are substantial wet- lands along Quaduck Brock which conceivably could be
	1	rock	chemical re- action will occur with the bedrock	of bedrock	and schists (chemically stable rocks)	·		harmed by pollutants leaching from a landfill area. Also one mile south there is a highly pro- ductive state-owned wild-
L	rdrology	Prevent loachate from formir	To keep solid wastes dry (i.e., the landfill out of the water and the water	Thickness of unsaturated overburden and water table Perched	Very little over water table con bedrock depre	erburden - like ondition in til ssions	ly perched and	life marsh which may be adversely affected by continual leaching of pollutants into Quaduck Brook.
		Prevent contamina- tion of water sup- plies and surface water bodio	out of the landfill To control loachetes that do form (i.e., retard movement and renovate; collect lea-	water table conditions Transmissi- bility of cover				Quaduck Brook is one of the best small trout stream within the state. There ar many miles of the stream stocked below the Disposal Area. It is one of the few streams within the state where small natural repro- duced brown trout can be
		Prevent leachate from moving	chate and treat)	material Location of water sup- plies, well, and surface water bodie Groundwater circulation system			Movement of wat Loward a poten tial wat, supp	-
	keologic, economic, o acathetic	Effects of Landfill on environ mental quality or resource use	important,	Identifica-	No unusual or unique condi- tions identi- fied in area			
	agternative and use to	Best use of		r tion of other poers				
			:	i			· " ."	

B, ECONOMIC CONSIDERATIONS FOR THE EVALUATION OF: SANITARY LANDFILL

M FOR THE TOTAL TO	SPECIFIC CONCERN	PROBLEM TO BE ADDRESSED	RESOURCE INFORMATION	USUALLY NEEDS CONLY NORMAL CONSTDERATION SOF CONVENTIONAL DESIGN OR SITE	ERATION THAT S EN IN THE EVAL CONFLICT: REQUIRES EPECIAL DESIGN OR SITE PREPARATION	
Value	Availability of land and purchase price	Land not available (Cost or not for sale)	Finances			DISCUSSION No problem apparent in transporting the waste to the landfill.
eparation	Preparation cost to overcome limitations	Limitations require too great a cost for site preparation	Amount of site preparation		e. 7 53/	Brichhouse Road which leads directly to the entrance of the landfill has recently been paved which facilitates easier truck traffic.
agement Coperation		Town does not want to ,appropriate finances	Finances	No	Commi	
l Grading Cover	Cost to prepare for secon- dary use	Secondary use preparation requires additional expenditure	Pinances and site preparation			

C. SOCIAL-POLITICAL CONSIDERATIONS FOR THE EVALUATION OF: SANITARY LANDFILL

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EM FOR	SPECIFIC CONCERN	PROBLEM TO BE ADDRESSED	RESOURCE INFORMATION	CONSIDERATION THAT SHOULD BE GIVEN IN THE EVALUATION USUALLY NEEDS CONFLICT: CRITICAL CON- ONLY NORMAL REQUIRES FLICT: MAY BE CONSIDERATION SPECIAL PROHIBITIVE OF CONVENTIONAL DESIGN OR EVEN WITH SPECIAL DESIGN OR SITE SITE DESIGN OR SITE PREPARATION PREPARATION PREPARATION PREPARATION	
rounding and Uses	Acceptibil- ity of use for land- fill		Public attitude	The "out-of-sight" aspect of the area appears acceptable to townspeople, but they may not be as enthusiastic if the trade-off is the pollution of Quaduck Brook. Availability is good off Route 6.	
lessibility f Location	Is site available to public?	Location may be too remote	Road availability		
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N FOR DERATION ,	SPECTFIC CONCERN	PROBLEM TO BE ADDRESSED	RESOURCE INFORMATION	OHACTY HEEDS OHLY NORMAL CONSTDERATION OF CONVENTIONAL DESIGN OR SITE PREPARATION		JATION CHIPTCAL CON- FELCT: MAY BW PROHEBITIVH EVEN WITH SPECIAL DESIGN OR SITE PREPARATION	
graphy	Erosion	Surface flow through drainage	Slope			Generally greater than 15%	DISCUSSION
*	Land stability	Sheet runolf Mass movement Settling and compaction	Physlographic location		Valley wall		The average valley slope above the floodplain east of the brook is 9.1%. The
# :	Surface water collection	Depressions Exterior drainage collection on landfill surface				Headwater for watershed	Quaduck Brook receives all waters from this slope. The longest length of travel water must take to reach the brook on the east side is
burden Soils)	Transmissi- bility	Most Remains dry and workable year round	Type of unconsoli- dated		Sandy till		1500'. This indicates if a landfill could be physically located on the east side, and if a leachate forms, it would have a short travel
	Ion exchange	Retards lea- chate movemen and renovates that which	material (or soil)		Some sand and gravel in pockets		At the time of the review water was flowing out
	Workability	moves Cover Not susceptible to erosion or barrowing organisms			See Soils Map		of the material along the cuts in the sandy till from the east slope indicating rapid movement of ground water into the valley. Although a ground water
		Workable sourc year round Supports vegetation Allows gases to dissipate					supply system has not yet been developed, the adjacent area has been identified as a favorable location for the availability of ground water. The relative rapid
		but does not allow water to infiltrate			Some bedrock	·	movement of water from the slope to the valley would carry with it any leachate that would form from refuse
lock	Rapid move- ment of leachate	Leachate will flow through bedrock-over- burden con- tact without	overburden_		near surface but depth to rock varies		coming in contact with this water. A typical upland habi-
		renovation to the surface or ground- water	fracture, porosity, bedding, etc		42. NY 18		tat of Eastern Connecticut exists at the site. Immedi- ately south of the area there are substantial wet- lands along Quaduck Brook
	Solution of rock	An undesirable chemical re- action will occur with the bedrock	Composition of bedrock	Mainly gneisses and schists (chemically stable rocks)			which conceivably could be harmed by pollutants leaching from a landfill area. Also one mile south there is a highly pro-
ology	Prevent leachate from forming	To keep solid wastes dry (i.e., the landfill out of the water and the water				Water table is near the surface - probably perched water table in the till and shullow bedrock	ductive state-owned wild- life marsh which may be adversely affected by con-
大学 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Prevent contamina- tion of water supplies and surfac water bodi	out of the landfill) To control leachates that do form (i.c., retartes wovement and renovate;				Movement of water toward a potential water supply	Quaduck Brook is one of the best small trout streams within the state. There are many miles of the stream stocked below the Disposal Area. It is one of the few streams within
	Prevent leachate from movin	collect leachate and treat	host materia				the state where small natural reproduced brown trout can be found.
igla, Monic, of Thetic	Effects of landfill o environmen tal qualit or resource	- ecologically important, e etc., area may be	system Identifica- tion of	No unusual or unique con- dition iden-		-	
Frontive if use area	Bost uso of land	A priority use may exist for site as a water suppl	Identifica- tion of other users				

B. ECONOMIC CONSIDERATIONS FOR THE EVALUATION OF: SANITARY LANDFILL

				CONSIDERATION THAT	SHOULD BE	
7M FOR DERATION	SPECIFIC CONCERN	PROBLEM TO BE ADDRESSED	RESOURCE INFORMATION	USUALLY NEEDS CONFLICT: ONLY NORMAL REQUIRES CONSIDERATION SPECIAL OF CONVENTIONAL DESIGN OR DESIGN OR SITE PREPARATION PREPARATION		
Value	Availability of land and purchase price		Finances			DISCUSSION No problem apparent in transporting the waste to the landfill. Brickhouse
paration	Preparation cost to overcome limitations	require too great a cost	Amount of site preparation	NO COMMENTS		Road which leads directly to the entrance of the landfill has recently been paved which facilitates easier truck traffic.
gement and eration	Equipment, staff, cover, fence, gate control for windblown material, etc.	Town does not want to appropriate finances	Finances			
1 Grading	Cost to prepare for secondary use	Secondary use preparation requires additional expenditure	Finances and site preparation			

C. SOCIAL-POLITICAL CONSIDERATIONS FOR THE EVALUATION OF: SANITARY LANDFILL

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			[USUALLY NEEDS CONFLICT: CRITICAL CON- ONLY NORMAL REQUIRES FLICT: MAY BE
標準EM FOR	SPECIFIC	PROBLEM TO	RESOURCE	CONSIDERATION SPECIAL PROMIBITIVE
IDERATION	CONCERN	BE ADDRESSED	INFORMATION	OF CONVENTIONAL DESIGN OR EVEN WITH SPECIAL
				DESIGN OR SITE SITE DESIGN OR SITE PREPARATION PREPARATION
				E AND ELECTRICAL DEPOSIT OF THE PROPERTY OF TH
Proungling	Acceptabil-	Location may	Public	The "out-of-sight" aspect of the area appears
ind Use	ity of use for land-	not be com-	attitude	acceptable to townspeople, but they may not be as enthusiastic if the trade-off is the pollu-
***	fill	surrounding		tion of Quaduck Brook. Avail-
	<u> </u>	land use		ability is good off Route 6.
essibility	Is site	Location may	Road	
Location	available	be too	availability	
Albert	to public?	remote		
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M FOR DERATIO	SPECIFIC CONCERN	PROBLEM TO BE ADDRESSED	RESOURCE INFORMATION	ONLY MORMAL CONSIDERATION OF CONVENTIONAL DESTGN OR SITE PREPARATION	CONFLICT: REQUIRES SPECIAL DESIGN OR SITE PREPARATION	CRITICAL CON- FLICT: MAY BE PROHIBITIVE EVEN WITH SPECIAL DESIGN OR SITE	-
graphy	Erosion	Surface flow through drainage	Slope		to 15% slope	PREPARATION	
	Land stability	Sheet runoff Mass movement Settling and compaction	Physiographic location			Vloodprone area	Discussion The entire town owned
	Surface water	Depressions	Surface			Major drainage	land flows into Quaduck
graphy	collection	Exterior drainage col- lection on landfill surface Host	drainage			adjacent to landfill, sur- face water ponding	Brook. Although the materials are physicically capable of being excavated, and cover material is locally available, the sur-
burden (Soils)	Transmissi- bility	Remains dry and workable year round	Type of Uncon- solidated		Water satur- ated sand and gravel grades		face and groundwater system associated with the area flows into the brook adjacent to the site. Any
	Ion exchange	Retards lea- chate movement and renovates that which moves	material (or		graver grades into sandy till See Soils Map		leachate forming (there are indications that leachate is forming) will move directly and rapidly into the brook.
	Workability	Cover Not susceptible to erosion or barrowing	·				Water was observed entering the landfill area with no visible outlet.
		organisms Workable source year round					This water infiltrates through the cover and refuse and moves toward the brook.
ock		Supports vegetations Allows gases to dissipate but does not					Although a groundwater supply system has not yet been developed, the area has been identified as a favorable location for
ock	Rapid move-	allow water to infiltrate Leachate will	Depth to	Greater than			the availability of ground water. If any leachate from a landfill were to
₹ 1. \$	ment of leachate	flow through bedrock-over- burden con- tact without	bedrock and type of overburden Degree of	10 feet, but water satur- ated			enter the system, it would contaminate the potential water supply.
		renovation to the surface or ground- water	fracture, porosity, bedding, etc.				The flood storage capacity of the brook is being reduced as the land-fill builds up and en-
	Solution of rock	An undesirable chemical reaction will occur with the bedrock	Composition of bedrock				croaches upon the brook. This will increase the speak runoff from the area. The situation also increases the potential for the structure of th
i fology	Prevent leachate from formin	To keep solid wastes dry (i.e., the landfill out	Thickness of unsaturated overburden and water			Water table near present surface	undesirable sedimentation in the brook. The upland habitat being destroyed by the present
	Prevent con- tamination of water	of the water	table Perched water table conditions			Ponding in deeper exca- vations Favorable ground	operation is not unique, but rather is typical up- land habitat of Eastern Connecticut. However, loss
	supplies and surface		Transmissi- bility of cover material			area downstream	of habitat near the Quaduck Brook is unique in that all streambelt habitat has high wildlife production potential.
	Prevent leachate from moving		Transmissi- bility of host ma- terial				Immediately south of the area are substantial wet- lands along Quaduck Brook
			Location of water sup- plies, wells and surface				which condeivably could be harmed by pollutants leaching from the Landfill area. Also one mile south there is a
			water bodies Groundwater circulation system				highly productive state-owned wildlife marsh which may be adversely affected by continual leaching of pollutants into Quaduck Brook.
Nogie, momie, or sthetic	Effects of landfill on environ- mental quality or resource use	A fragile, unique, eco- logically important, efc., area may be de- graded	Identification of ecologic, economic or aesthetic aspects			- a ; !	When the present landfill peration is terminated, the urea could be converted into an upland game habitat by planned planting of wild-tife schrubs and trees. DEP personnel, upon request,
imativo Ed uso aroa		may exist for	dentification of other users			1	ill assist in plans for future development of the weather wildlife.

ECONOMIC CONSIDERATIONS FOR THE EVALUATION OF: SANITARY LANDFILL

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				CONSIDERATION THAT SHOULD BE GIVEN IN THE EVALUATION	PISCUSSION
M FOR DERATION	SPECIFIC CONCERN	PROBLEM TO BE ADDRESSED	RESOURCE INFORMATION	USUALLY NEEDS CONFLICT: CRITICAL CON- ONLY NORMAL REQUIRES FLICT: MAY BE CONSIDERATION SPECIAL PROHIBITIVE OF CONVENTIONAL DESIGN OR EVEN WITH SPECIAL DESIGN OR SITE SITE DESIGN OR SITE PREPARATION PREPARATION PREPARATION	Since a forest environ- ment is being depleted by cutting and bulldozing, those areas where the land- fill operation is complete
Value	Availability of land and purchase price		- Finances	Need for major engineering for site preparation	ought to have a new stand of timber established to stabilize the soil and to make the area more aesthetically pleasing. Tree
aration	Preparation cost to overcome limitations	Limitations require too great a cost for site preparation	Amount of site pre- paration		species such as white pine and larch should do well on the site. The entire acreage could be managed as a town forest and recreation area. Upon re-
ement and ation	Equipment, staff, cover,	Town does not want to appropriate	Finances		quest DEP would assist in writing such a management plan for the tract.
	fence, gate, con- trol for windblown material, etc.	finances			On July 2, 1969, decomposed trout and bullheads were observed below the area. The water was very silty and turbid. This condition was traced back
Grading Cover	Cost to prepare for	Secondary use preparation	Finances and site pre-		to the present disposal area. A rust colored and polluted condition of

SOCIAL-POLITICAL CONSIDERATIONS FOR THE EVALUATION OF: SANITARY LANDFILL

stac	; Ra				Training water and the same	GIVEN IN THE EV.	ALUATION	pise
Sugar A	M FOR EDERATION	SPECIFIC CONCERN	PROBLEM TO BE ADDRESSED	RESOURCE INFORMATION	OSUALLY NEEDS ONLY NORMAL CONSIDERATION OF CONVENTIONAL DESIGN OR SITE PREPARATION	CONFLICT: REQUIRES SPECIAL DESIGN OR SITE PREPARATION	CRITICAL CON- FLICT: MAY BE PROHIBITIVE EVEN WITH SPECIAL DESIGN OR SITE	Since a ment is be cutting an those area fill opera
	Value varation	Availability of land and purchase price		- Finances	Need for major er		PREPARATION ite preparation	ought to hof timber stabilize make the a thetically
	aration	Preparation cost to overcome limitations	Limitations require too great a cost for site preparation	Amount of site pre- paration				and larch on the sit acreage co as a town reation ar
	that ion	Equipment, staff, cover,	Town does not want to appropriate	Finances		· · · · · · · · · · · · · · · · · · ·		quest DEP writing su plan for t
	đ	fence, gate, con- trol for windblown material, etc.	finances					On July posed trouwere obser area. The silty and condition
	Grading Cover	Cost to prepare for secondary use	Secondary use preparation requires additional expenditure	Finances and site pre- paration				to the prearea. A repolluted of Quaduck Brobserved in 1972.
	त्र	C. SOCIAL-PO	DLITICAL CONSIDE	RATIONS FOR T	HE EVALUATION OF:	SANITARY LANDE	FILL	Quaduck the best s within the many miles stocked be Area. It streams wi where we c small natu
Section 2	3				l l	NSIDERATION THAT GIVEN IN THE EV	ALUATION	brown trou brook trou
	EM FOR IDERATION	SPECIFIC CONCERN	PROBLEM TO BE ADDRESSED	RESOURCE INFORMATION	USUALLY NEEDS ONLY NORMAL CONSIDERATION OF CONVENTIONAL DESIGN OR SITE PREPARATION	CONFLICT: REQUIRES SPECIAL DESIGN OR SITE PREPARATION	CRITICAL CON- FLICT: MAY BE PROHIBITIVE EVEN WITH SPECIA DESIGN OR SITE PREPARATION	The dra the presents 36 acre or side hit be install south.
	ounding d Use	Acceptabil- ity of use for land- fill	Location may not be compatible with surrounding land use	Public attitude	The "out-of-sigh acceptable to to as enthusiastic tion of Quaduck ability is good	nt" aspect of the pwnspeople, but if the trade-of.	e area appears	Some de tion may be this diver surface ruthe sanita
	ssibility Location	Is site available to public?	Location may be too remote	Road availabilit		off Route 6.	•	This would and very c moval of e fill mater this could
	Location							A manag be develop for establ trees, and area. A C and Sedime book can b

polluted condition of Quaduck Brook was again observed in the summer of

Quaduck Brook is one of the best small trout streams within the state. There are many miles of the stream stocked below the Disposal Area. It is one of the few streams within the state where we continually find small natural reproduced brown trout as well as ut.

rainage area above ent landfill site es. A diversion led to divert water

egree of protecbe afforded by be afforded by earsion of all runoff away from tary landfill area. Id be extensive costly. If reexisting landrial is considered, d certainly be a . ve cost.

gement plan should sped and followed lishing grades, connecticut Brosion
ent Control Handbe furnished upon town request. This handbook adequately handles standards and specifications for both temporary and permanent seeding on critical areas.