

Report on the feasibility of reinstating  
Hempstead Village Pond, Essex.

1. Situation. In the north-east angle formed by the crossing of the village stream, here flowing on the east side of road B.1054, and the minor road running rather south of east past the church. National Grid TL 634380. Geol. Survey New Series One-inch sheet 205 (with Memoir).

2. History. In former years a pond existed on this site, being dammed up by a bank where the small tributary valley in which it lies, joins the valley of the main village stream. It was fed by a runnel in its own valley and (principally) by overflow from the cistern which is situated higher up this valley and which feeds the village fountain through a pipe. This cistern is a collecting chamber for water emerging as a spring from sand or gravel forming a bed enclosed by the Builder Clay which forms most of the countryside hereabouts. The existence of this water-bearing sand was proved in recent years in a sewer trench along the minor road running past the pond.

Some years since, the pond being disused, a trench was cut through the bank so that water drained direct to the stream. At the same time road sweepings (and doubtless other fill) began to be dumped on the roadside of the pond with a view to filling it in.

Recently it has been decided to reinstate the pond for the sake of its amenity value and interest in Natural History. Chalky Builder Clay has been spread over the bottom; the gap in the bank has been repaired and the bank itself strengthened and heightened with more Builder Clay. A 2-inch steel pipe has been laid through the bank, leading from a permeable drain below the floor of the pond. This pipe is normally kept capped, but a copious flow of water was got from it when uncapped on the occasion of my recent visit; however this flow (which was not allowed to continue more than a minute or two) was at very low pressure and no difficulty was experienced in replacing the cap on the pipe by hand. The purpose of the pipe is to enable the pond to be drained for maintenance and repair.

There is a free seepage of water through the bank in the neighbourhood of the pipe.

The pond, on the occasion of my visit contained only three or four inches of water instead of the desired 18 inches.

3. Recommendations.

(i) It is as yet early in the season, and the pond may fill deeper if left alone.

(ii) However, the seepage outwards round the pipe seemed to me to be about as great as the seepage inwards at the upper end of the pond. It is accordingly recommended that the bank be made watertight with puddled clay round the pipe, a hole of generous size being first excavated round the pipe for this purpose.

Alternatively and in my opinion with greater assurance of success, the pipe and associated drain should be removed and the excavation backfilled with puddled clay.

(iii) In my opinion, the present proposed water-level is too high to be retained by the existing bank and pond floor.

A certain amount of seepage is inevitable through a bank such as this which is penetrated by roots of trees and bushes; the amount will be directly proportional to the difference in level between the pond and the adjacent stream bed.

I think it would be reasonable to hope for a viable pond water level at about the present pond bottom level.

(iv) The retaining bank may be too weak to sustain the head of water which it proposed to impound behind it together with the mass of saturated mud at present existing below the pond bottom. There is I think some danger that if the water level is raised as proposed, seepage may become uncontrollable until the bank collapses discharging a large mass of mud and water into the village stream.

(v) With the water level reduced as suggested in (iii) above, one may expect that the original pond bottom will be tight enough to sustain the full pond of water, without use of either a puddled clay bottom or an artificial membrane bottom.

(vi) Excavated material which will have to be taken out to a depth of about 18 inches over most of the pond area, if the reduced water level is to be accepted, may be employed to thicken and perhaps to raise the bank on the stream side. An attempt should be made to face this with puddle, covered over and raised in height with other spoil.

(vii) A turfed spillway at proposed water level should be left or formed at the roadside end of the bank.

(viii) I think the present inflow of water should be sufficient to maintain the proposed pond, but may usefully be supplemented by surface drainage from the road by digging of a small grip to the upper corner of the pond near the road.

(ix) If such a grip is dug, care should be taken to block it when the road is resurfaced so that tarry contamination is avoided.

(x) I do not think it will be necessary to tap the filling of the sewer-trench by a pipe, for additional water. It is in any case possible that the backfilled material of this trench may be found not to be water-yielding at this particular spot.

However, the possibility of adding water from this source should be borne in mind if other expedients fail.

(xi) The Chalky Builder Clay which has been applied to the floor of the pond is capable of being adequately puddled though it is far from ideal for the purpose.

(xii) The brushwood included with this clay does not seem to me to serve any useful purpose and should, so far as is reasonably possible, be removed. (The use of brushwood in relation to dew ponds in Wiltshire, was to form a layer below the puddle bottom to provide insulation from the warmth of the ground. This would encourage cooling of the pond surface to condense dew and would generally keep the pond cooler to reduce evaporation. The employment of a brushwood layer was not universal: I know of two ponds which were fed not by dew but by runoff from higher ground and these had no brushwood layer, as has been proved by excavation).

(xiii) If the cost or labour of excavating the whole pond to the proposed reduced bottom level should be considered too great, the work may be divided; a small pond being formed with minimum labour on the north side of the site in the present season and extended either in the summer when ground conditions will be better for excavation, or at any later date.

(xiv) If sufficient clay is available, it would be useful to excavate a trench say 1 ft. wide and extending down to the level of the stream, or to solid Builder clay if this is higher, and to backfill this along the whole length of the retaining dam, with puddled clay. But the formation of such a puddle barrier is a council of perfection and not, I think, by any means essential to success.

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