CITY OF RAMSEY LAND USE APPLICATION
TECHNICAL REVIEW FILE

DATE	6/30/17	**PROJECT ADDRESS**	TBD
PROJECT. TITLE	PEARSON PLACE – PRELIMINARY PLAT AND ZONING AMENDMENT		
PROJECT #	17-106		
DEPARTMENT:	Community Development – Planning Division		
TECHNICAL REVIEWER:	Name: Chris Anderson, City Planner Phone: 763-433-9817 Email: canderson@cityoframsey.com		

We offer the following comments regarding your Preliminary Plat submittal, which consists of four total (4) sheets, all prepared by Otto Associates. The Preliminary Plat consists of two (2) sheets dated May 24, 2017; the Grading Plan consists of one (1) sheet dated June 8, 2017; and Tree Preservation and Landscape Plan consists of one (1) sheet dated June 16, 2017. *Note that all future plan submittals must have a consistent date on each sheet to eliminate confusion when referencing a plan set.*

The following revisions to the plan set are required:

Preliminary Plat Sheet 1:

- Need to identify all existing buildings within the plat boundaries, including the home(s) and accessory buildings at 14821 Bowers Drive and 8846 Highway 10, and out to 100 feet beyond the boundaries of the plat per City Code Section 117-588.
- Existing home at 14821 Bowers Drive should be excluded from the plat as it is already a separate parcel (it was not included in the Sketch Plan).
- The parcel with PID #30-32-25-11-0025 is an existing, separate parcel and includes buildings (appears to have a home and multiple detached accessory buildings). Since there are existing buildings on this parcel, it cannot be platted in its entirety as an outlot. There are two (2) options to consider, either leave this as an exception to the plat (but still include that part of Outlot A as proposed) or plat the area with the buildings as a lot and the remainder can be platted as an outlot.
- Add square footage of project area.
- Provide clarification as to who will own Outlots A and C.

Preliminary Plat Sheet 2:

- Add square footage and acreage of Outlot A and Outlot C.

Preliminary Grading Sheet:

- A setback of at least sixteen and a half feet (16.5') from the normal water level elevation of the stormwater pond is required and must be encumbered with a drainage and utility easement. This must be shown on the grading plan and on Sheet 2 of the Preliminary Plat.
- Add symbol for the culvert to the legend.
- Minimum culvert size permitted is fifteen (15) inches in diameter.
- Tree save fencing shall be shown on this sheet (and included in the legend).

Preliminary Tree Preservation and Landscape Plan:

- Add symbol for the culvert to the legend.
- Minimum culvert size permitted is fifteen (15) inches in diameter.
- Add planting table that indicates quantities, size, and root stock of proposed trees. Note that deciduous trees shall have a caliper of no less than one (1) inch.
- Add table to plan sheet that includes species, tag #, diameter, condition, status (removed/preserved) and a total tally of significant tree DBH inches, total tally of inches removed, and total tally of inches preserved.

General Information

The project site is located in the R-1 Residential (MUSA) zoning district, as well as the Mississippi River Critical Corridor Area (MRCCA) Overlay District. The MN DNR just recently completed a rulemaking process that amended various standards in the MRRCA. However, they have yet to provide the necessary guidance to municipalities as to how to proceed with updating local Zoning Codes. Until that guidance is received, municipalities are 'stuck' with outdated MRCCA standards. Staff has had discussions with the MN DNR and they have indicated that a Planned Unit Development (PUD) would be an acceptable zoning tool to utilize to address deviations from the current MRCCA standards as they appear to actually comply with the new MRRCA standards.

The project proposes to subdivide the land into twelve (12) residential lots and three (3) outlots. However, existing homes at 14821 Bowers Drive NW and 8846 Highway 10 NW will need to be platted as individual lots rather than included in Outlot B as outlots shall not contain any structures nor are they considered to be buildable lots until such time that that land is re-platted.

Comprehensive Plan

The development site is guided as Low Density Residential in the Comprehensive Plan. The Comprehensive Plan defines Low Density Residential as areas that are within the MUSA and would average three (3) units per acre. The development site is within the MUSA and the proposed average density will be 1.3 units per acre [Zoning Code allows for up to 3 units per acre].

The Low Density Residential designation requires that urban services be available for development. However, the entire Bower's Drive neighborhood, while also guided as Low Density Residential, is served by private septic systems and individual wells. The Sketch Plan and now the Preliminary Plat proposes that the twelve (12) new lots also be served by private services. The proposal also indicates there will be a request for a Zoning Amendment to process this development as a Planned Unit Development. That designation, if approved by City Council, would allow for certain deviations from the underlying Zoning District standards, including the use of private utilities, with a defined public benefit.

The submittal again includes a fifty (50) foot wide outlot behind the existing lots on the north side of Bowers Drive that would serve as a buffer from future development of the agricultural land. This was a result of comments received from the neighborhood during multiple workshops last year and is being proposed as that public benefit. However, it is not clear is who will ultimately own Outlot A. *Please provide clarification as to the ultimate owner of this outlot.*

Mississippi River Critical Corridor Area Overlay District

The development site is located within the Mississippi River Critical Corridor Area (MRCCA) Overlay District. This statutory designation applies to the entire stretch of the Mississippi River through the City of Ramsey. The MN DNR has recently completed a rulemaking process in which revisions to the existing standards have been completed and approved by an Administrative Law Judge. Regarding lot size and other bulk standards, the updated MRCCA rules for non-riparian lots no longer contain more restrictive standards. In fact, they simply defer to the underlying zoning district standards per the local zoning code.

While the rulemaking process is complete, the MN DNR has not yet provided municipalities with the required guidance on how to update our local zoning code. Until guidance is received, the City cannot move forward with updating our zoning code. Furthermore, it is our desire, if feasible, to address those updates as part of the City's broader Comprehensive Plan Update process and implementation, which will not be completed until sometime in 2018.

Zoning Designation

The project is being generally reviewed under the standards of the existing MRCCA Overlay District and the R-1 Residential District (this district implements the Low Density Residential (LDR) designation of the Comprehensive Plan). The intent of the R-1 Residential District is to accommodate single-family dwellings at a density up to three (3) dwelling units per acre. Through a PUD, deviation from certain standards is possible, including the use of private utilities rather than municipal services. This is consistent and compatible with the existing Bowers Drive neighborhood.

R-1 Residential (MUSA) Bulk Standards

Miscellaneous Standards	Existing MRRCA Standards	New MRRCA Standards	MUSA	Proposed (via PUD)
Lot size	2.5 acres	Underlying Zoning District	10,800 square feet	43,560 square feet (1 acre)
Density (net)	Not Addressed	Not Addressed	Up to 3.0 units per acre	1.3 units per acre
Lot width	200 feet	Underlying Zoning District	80 feet (measured at front yard setback)	80 feet*
Front yard setback	40 feet	Underlying Zoning District	30 feet	40 feet

Miscellaneous Standards	Existing MRRCA Standards	New MRRCA Standards	MUSA	Proposed (via PUD)
Side yard setback (uninhabitable)	10 feet	Underlying Zoning District	6 feet	10 feet
Side yard setback (habitable)	10 feet	Underlying Zoning District	10 feet	10 feet
Side yard setback for corner lots**	Not Addressed	Underlying Zoning District	30 feet	40 feet
Rear yard setback	35 feet	Underlying Zoning District	30 feet	30 feet
Maximum lot coverage	30%	Underlying Zoning District	35%	Not shown
Maximum building height (measured from mean ground level to mean gable)	35 feet	Underlying Zoning District	35 feet	Not shown

* Lot 1 Block 1 shows 57 feet at the front lot line, but exceeds the standard of 80 feet at the building setback line.
** Will apply to Lot 1 Block 1 and Lot 1 Block 2 as the intent of Outlot C is for a future road.

As has been noted already, the development site is located within the 2020 MUSA boundary and thus, is required to be serviced with municipal sewer and water. However, the requested Zoning Amendment to designate the site as a PUD is a legal zoning tool that allows for the deviation to utilize private utilities (if approved by City Council). Please note that as configured, the future home owners will have limited use of the rear yards due to the locations of the primary and alternate septic systems. It would be helpful if that message could be conveyed to the buyers of these parcels.

Wetlands and Floodplains

The project site does not appear to contain any floodplain areas or wetlands.

Grading and Drainage

The project will be subject to the Lower Rum River Watershed Management Organization standards for managing stormwater, including both quantity and quality. Please see additional comments within the Engineering Review Memo regarding the grading and drainage plans.

Streets and Access

The new lots will be accessed via Bowers Drive. The Sketch Plan does include a sixty (60) foot wide outlot that can provide future access to the land north of the development site. This will eventually create a second point of access to Bowers Drive, which will assist with public safety response in the future. Will the current property owner retain ownership of Outlot C? *Please provide clarification of who ultimately will own Outlot C*.

Residents along Bowers Drive raised concerns about construction traffic and possible damage to the existing street at a public workshop in 2016. This is a topic that will require continued discussions and exploration of how to mitigate these concerns. Ultimately, this matter will be addressed within the Development Agreement.

Tree Preservation and Landscaping

A Tree Preservation and Landscape Plan has been submitted. All significant trees, defined as oaks and evergreens with a Diameter at Breast Height (DBH) of four (4) inches and all other deciduous trees with a DBH of eight (8) inches or greater, have been identified. That plan should include a table that identifies each significant tree, the species, DBH, condition, status (preserved or removed), and reason for removal (e.g. stormwater pond, note that certain removals do not count toward the allowable removal threshold, which is why we ask for this information).

Each lot is required to have two (2) front yard trees planted. Being within the MRCCA, Staff would strongly encourage the use of native trees to satisfy this requirement. Note that existing trees in the front yard(s), if included in the Tree Inventory and Preservation Plan and are identified in the Ramsey Tree Book as being either Acceptable or Preferred, can be used to satisfy the landscape requirements.

Development Fees and Agreement

Development Fees will be due with the Plat including, but not limited to, Park Dedication, Trail Development, and Stormwater Management. These fees are collected at the time the Final Plat is recorded and at the rate in effect when the plat is recorded. An executed Development Agreement will also be required prior to releasing the plat for recording.

CITY OF RAMSEY LAND USE APPLICATION
TECHNICAL REVIEW FILE

DATE	06-30-17	**PROJECT ADDRESS**	Preliminary Plat for Pearson Place
PROJECT. TITLE	Pearson Place		
ESCROW #			
DEPARTMENT:	Fire Dept.		
TECHNICAL REVIEWER:	Name: Carey Schiferli Phone: 763-433-9832 Email: cschiferli@ci.ramsey.mn.us		

General:

The Fire Department feels that reserving OUTLOT C for future expansion is an important part of this plan. Bowers Dr. is the longest cul-de-sac in the city and this creates many challenges for the Fire Department. This area is also not served with City water and therefore, there are no fire hydrants in this are area. This requires tankering water in and out and with the long cul-de=sac, that becomes difficult. OUTLOT C would serve as another inlet/outlet for this neighborhood in the future if/when additional development occurs.

CITY OF RAMSEY LAND USE APPLICATION
TECHNICAL REVIEW FILE

DATE	JUNE 30, 2017	**PROJECT ADDRESS**	SOUTH END OF BOWERS DRIVE
PROJECT. TITLE	PEARSON PLACE		
ESCROW #	115701		
DEPARTMENT:	Engineering		
TECHNICAL REVIEWER:	Name: Leonard Linton Phone: 763 433-9834 Email: llinton@ci.ramsey.mn.us		

We offer the following comments regarding the Preliminary Plat submittal for Pearson Place. The submittal consists of 4 sheets prepared by Otto Associates dated May 24, 2017, received June 9, 2017. The submittal also included Soil Observation Logs for the proposed drain field areas and stormwater summary and calculations.

We offer the following comments on these sheets:

Preliminary Plat Sheet 1:

1. No comments.

Preliminary Plat Sheet 2:

1. The soil boring labels must be darker.
2. The legend is not complete.
3. There are soil borings labeled "By others". Logs for these borings must be provided.

Preliminary Grading Plan:

1. Silt Fence is required down slope of all disturbed areas.
2. Construction limit fence must be installed along the east side of the plat.
3. A note must be added to the Final Grading Plan "All disturbed areas must be seeded and mulched within 7 days after surface disturbance ceases."
4. The invert elevation for the storm sewer pipe does not match the length and slope listed.
5. The storm sewer pipe size must be enlarged to carry the 100 year storm from the street to the ponding area.
6. Several deep (min. 10 ft.) are needed in the infiltration area to determine groundwater elevation.
7. The overflow elevation of the infiltration basin must be shown.
8. Additional topo must be obtained east of the emergency overflow to show there is an overland flow route. If the area does not have an overland outlet then the infiltration basin must be sized for back to back 100 year storms.

9. Revise the table to show 2% minimum grades on all lots.
10. Provide a minimum of 3 deep borings in the area of the house pads.
11. Minimum basement elevation must be determined using the guidance prepared by Barr Engineering. A copy will be provided with this review letter.
12. Show potential well locations on this plan.
13. Provide roadway ditch profile and cross sections for the east side of Bowers Drive.
14. All runoff from the houses and driveways must be directed to the infiltration basin.
15. Additional sheets will be required: Detail sheet, SWPPP sheets (must conform to the Construction Stormwater Permit requirements including listing the designers training information and erosion control material type and quantity to be used on the project.

Stormwater Summary:

1. The infiltration basin receives runoff from all storms. It must be designed to empty within 48 hours after the 100 year storm. Our calculations indicate the basin does not drain in 48 hours. Revision is required.
2. The proposed drainage map must be revised to show the drainage area boundaries in a different line style from the project boundaries.
3. Drainage area P2 should be revised to include the front and driveway of all houses.
4. The summary table states there is a reduction in flow to the south east.
5. This project is adjacent to a plat that was approved in 1949, prior to any stormwater regulations. Runoff from the project must be attenuated prior to reaching the existing street. This project will need to meet the Lower Rum River Watershed Management Organization requirements for volume control, water quality and rate control. The volume reduction requirement is infiltration of the first 1 inch of runoff from new impervious surfaces. The infiltration basin must be enlarged to account for existing impervious areas that drain to the new basin. Required rate control is limiting developed runoff rates to the existing rates for the 2, 10 and 100 year storms. Water quality standards are met by providing wet detention equal to the 2.5 inch storm and removing 60% total phosphorus and 90% total suspended solids from the discharge.

Appendix 4A

Low Floor Elevation Guidance

Overview of Lowest Floor Issue

There seems to be two reasons for establishing a minimum lowest floor elevation in the vicinity of a pond – to prevent flooding of the structure by surface water and to prevent seepage or damage from uplift pressures that could result from a rise in the water table elevation. The first reason (direct flooding) can easily be established with knowledge of the maximum flood elevation of a pond (or the 100-year elevation, if this is used) and ground surface topography. The second reason (a rise in the water table due to increased pond elevations) is not so straight forward. This second area is the subject of this memo.

When a formerly dry pond becomes wet (or when a wet pond's water elevation increases) due to a storm event, downward seepage of the ponded water begins. The rate of seepage through the bottom of the pond is dependent upon:

1) The elevation of the water surface above the pond bottom
2) The soil type at the bottom of the pond (i.e. the pond bottom's thickness and permeability)
3) The type of soil underneath the pond (e.g., clay, silt, sand, gravel)
4) The degree of saturation of the soils beneath the pond
5) The depth to the water table

In general, higher seepage through the bottom of the pond will occur when the water surface elevation is high, the pond's bottom sediments are thin and/or sandy, the soils underneath the pond are permeable (such as sand or gravel), the soils underneath the pond have a high moisture content (i.e, they are at field capacity or higher), and the water table is well below the bottom of the pond (i.e. the soils are freely draining).

Higher seepage rates through the bottom of the pond will cause the water table elevation to rise by creating a "mounding condition" below the pond. How high and how widespread the water table mound becomes are contributing factors to whether or not basements will be affected. *However, the single most important factor that will determine if seepage from a pond will cause wet basement problems is the depth to the water table, below the basement.*

The magnitude and extent of the groundwater mounding conditions is also contingent upon the aquifer's transmissivity (aquifer permeability multiplied by aquifer thickness), the specific yield of the aquifer materials, and the duration of the high water levels in the pond. In general, thicker aquifers with higher permeability will experience less mounding than thinner aquifers of lower permeability. Perched aquifers (i.e. groundwater zones less than about 10 feet that overlie extensive clay layers) typically experience the greatest amount of mounding.

Overview of Variance Evaluation Method

All of the combinations of settings, pond configurations, aquifer parameters, and distances from ponds cannot be anticipated before hand in coming up with a method to quickly evaluate whether or not a variance to the minimum floor elevation ordinance should be considered. However, by making some generalities, the most commonly encountered situations can be evaluated. This is the approach taken here.

A groundwater flow model of a "typical" pond and aquifer setting was developed. Aquifer parameters and pond elevations were varied and the resulting water table mounding conditions were simulated. The following conditions were evaluated:

1. Pond elevation increases of 2 feet, 4 feet, and 6 feet above normal or dry conditions
2. Depth to the water table (before flooding) of 3 feet (to represent conditions of 3 feet or less) and 10 feet (to represent conditions where the depth to the water table is greater than 3 feet). The purpose of simulating these two conditions is that with shallow water tables, the rate of infiltration is substantially reduced as the groundwater mound rises into the pond. For deeper aquifer conditions, the pond bottom is always above the water table and the depth to the water table has no bearing on the seepage rate.
3. Three aquifer conditions: clay or perched aquifers (transmissivities of 7 ft^2/day and specific yield values of 0.1); silt aquifers (transmissivity of 70 ft^2/day and specific yield values of 0.2) and sand and gravel aquifers (transmissivities of 2000 ft^2/day and specific yield values of 0.2).
4. Pond bottom sediment thickness of 1 feet and bottom sediment hydraulic conductivity of 1 ft/day.
5. Instantaneous occurrence of a flood condition in the pond, which lasts for 25 days, followed by instantaneous reduction to normal conditions. The purpose of using this condition is that

the effects of aquifer storage (specific yield) are taken into account. A duration of 25 days was selected as being a reasonable time period of flood conditions.

6. Increases in the water table elevation were recorded at several distances between 5 feet and 200 feet from the pond. The maximum rise during the modeled period was selected for plotting.

The U.S. Geological Survey's groundwater modeling code, MODFLOW, was used for this analysis.

How to Determine if a Variance is Warranted

In order to determine if a proposed lowest floor elevation is acceptable, the following need to be known:

1. Depth to the water table and an estimation of the water table's seasonally high elevation.
2. Type of aquifer materials – e.g., clay, silt, sand, gravel
3. Information as to whether or not the water table is perched or is part of a deeper, thicker aquifer system.
4. An estimate of the flood elevation of the pond.
5. The distance of the proposed floor to the pond.

Depth to the water table and the type of aquifer material needs to be determined through the installation of soil borings. The other information should be estimated from other sources.

Once this information is obtained, the minimum depth to the water table from the bottom of the proposed floor slab can be determined from one of six plots, attached to this memorandum. Which of the six plots to use depends on the depth of the water table with respect to the pond's bottom and the type of aquifer material (e.g., clay, silt, sand, gravel). The following steps should be used:

1. Determine the closest distance of the proposed floor to the pond (if the pond size increases during flooding, the distance should be from the flooded perimeter of the pond to the proposed floor).
2. Using Plot 1, determine the minimum permissible depth to the water table for the specified distance from the pond. If the actual depth to the water table (see discussion below for determining this) is greater than the value on Plot 1, no further evaluation is necessary – the floor is sufficiently high with respect to the water table that the water table will not reach the

bottom of the slab, regardless of the soil type or transmissivity. If the depth to the water table is less than the value from Plot 1, further evaluation is necessary.

3. If the soil type of the aquifer, below the water table, is mostly clay OR if the aquifer is perched (a continuous clay layer is less than 5 feet below the water table), Plot 2 must be used. The appropriate pond level increase (2, 4, or 6 feet) for flood conditions must be used in Plot 2 to find the minimum permissible depth to the water table. If the depth to the water table from Plot 2 is less than the actual depth to the water table, the proposed floor elevation is too low and must be raised to equal the value from Plot 2.
4. If the soil type of the aquifer is mostly silt AND the pond bottom is 3 feet or less above the water table, Plot 3 should be used.
5. If the soil type of the aquifer is mostly sand or gravel AND the pond bottom is 3 feet or less above the water table, Plot 4 should be used.
6. If the soil type of the aquifer is mostly silt AND the pond bottom is 3 feet or more above the water table, Plot 5 should be used.
7. If the soil type of the aquifer is mostly sand or gravel AND the pond bottom is 3 feet or more above the water table, Plot 5 should be used.

The values from the plots are guidelines, based on typical conditions. If the plots indicate the proposed floor elevation is too low, additional analyses and data collection could be pursued by the applicant. These additional analyses could include additional soil borings, long-term monitoring of piezometers, or more sophisticated modeling.

Determining Depth to the Water Table

If a variance to a lowest floor elevation ordinance is to be considered, the depth to the water table at the location in question must be known. Without this knowledge, there cannot be a technical basis for approving a variance. Furthermore, the applicant should demonstrate that the measured water-table elevation is both representative of conditions over the entire floor area and is representative of values typical for seasonally high conditions (e.g. spring conditions). A suggested requirement for collecting this information is the following:

1) A minimum of two soil borings shall be installed at or near the perimeter of the lowest floor. At least one of these borings shall be where the floor is closest to the nearest pond.

2) Soil borings shall extend to a depth of at least 7 feet below the water table. The borings shall be left open for a time sufficient to determine the stabilized water level in the borehole. The water level shall be measured with reference to a known bench mark that can relate the water table elevation to the proposed floor elevation. Soils at or immediately below the water table shall be sampled and texturally classified using an approved classification method.

Water levels measured during dry summer months or during the winter may be lower than water levels during the spring. The applicant should be required to make an effort to determine the likely amount of seasonal fluctuation in the water table in the area. Water level records from wells completed in the area could be used. If information is unavailable, the applicant should be required to add a value to the measured water table elevation. One suggestion would be to assume 25% of the total annual precipitation (29 inches), divided by the average effective porosity for non-cohesive soils (0.3), which is:

(29 inches/4) x (1 foot/12 inches)/0.3 = 2 feet

If the seasonally adjusted maximum water-table elevation is eight (8) feet or below the bottom of the slab of the lowest floor, it is unlikely that temporary flood conditions in the pond will cause the water table to rise to the level of the floor.[1]

Determining Soil Type at the Water Table

The textural classification from the soil borings will be necessary for determining the expected rise in the water table caused by an increase in pond elevation. At a minimum, the soil should be classified as one of the following:

1) Sandy or gravely soils – consisting of predominantly sand or gravel, with minor amounts of silt and clay
2) Silty soils – consisting predominantly of silt
3) Clayey soils – consisting predominantly of clay

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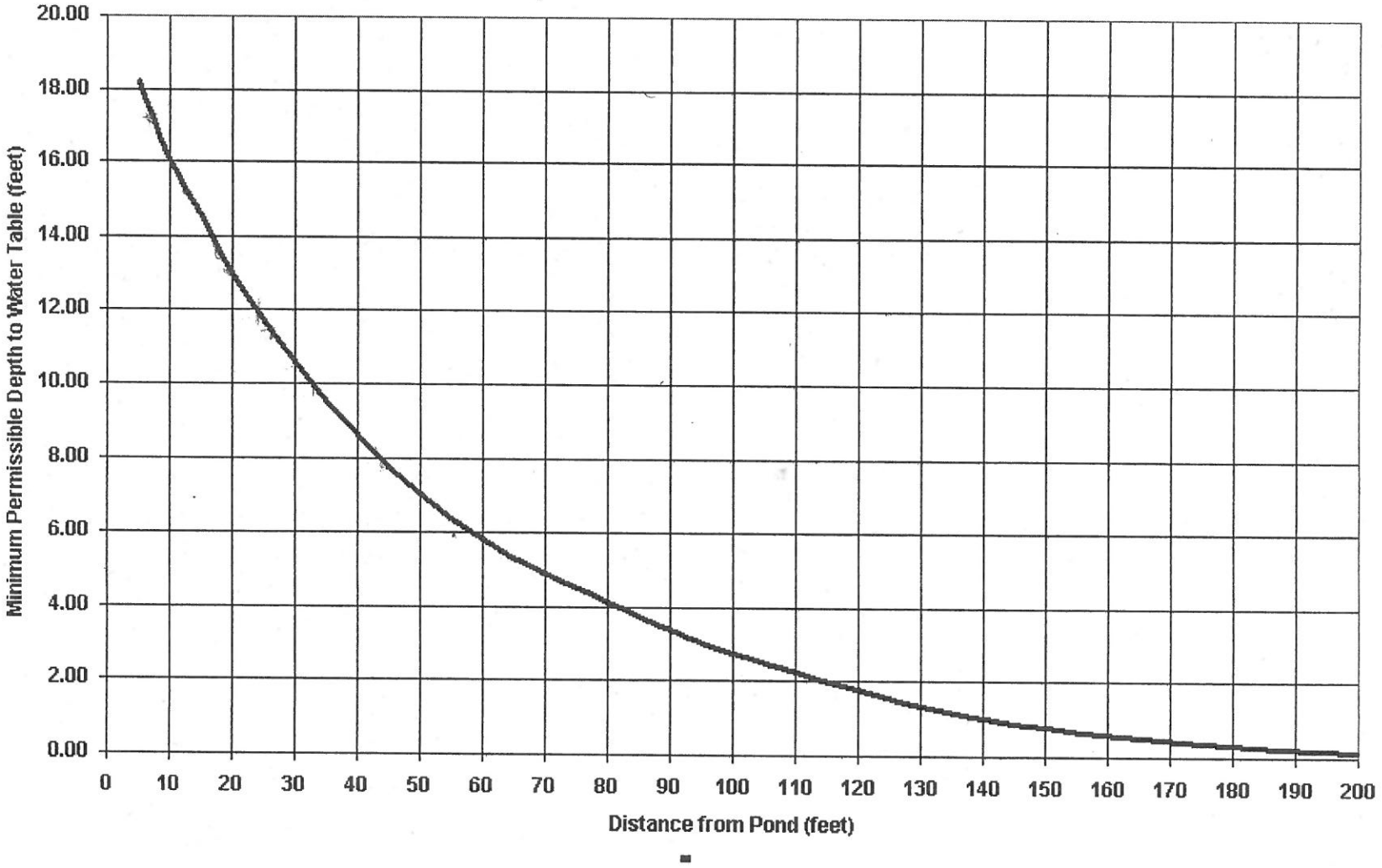
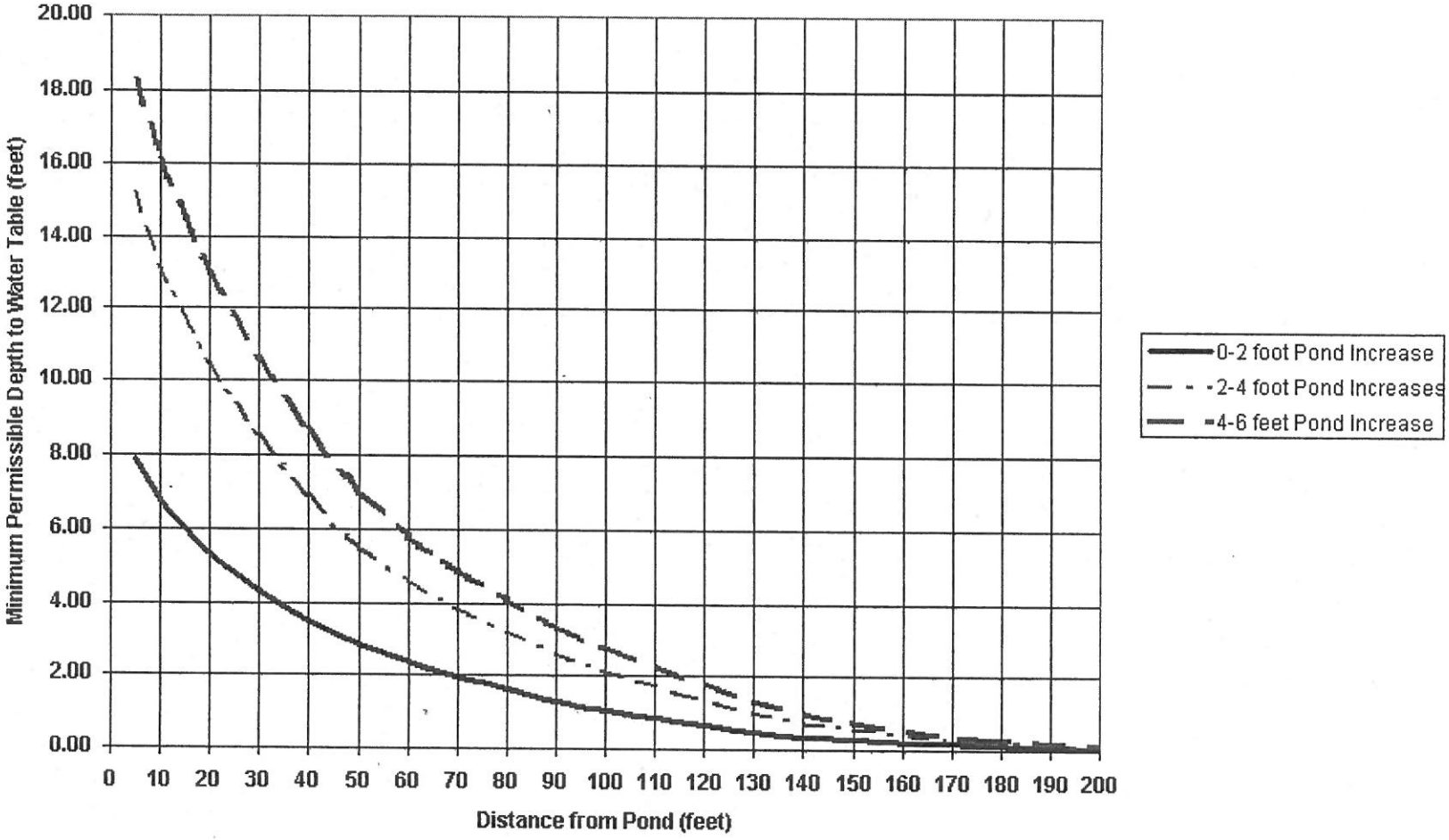
[1] This assumes that the pond level begins to return to normal within about 30 days and the pond level's increase is not greater than 6 feet.

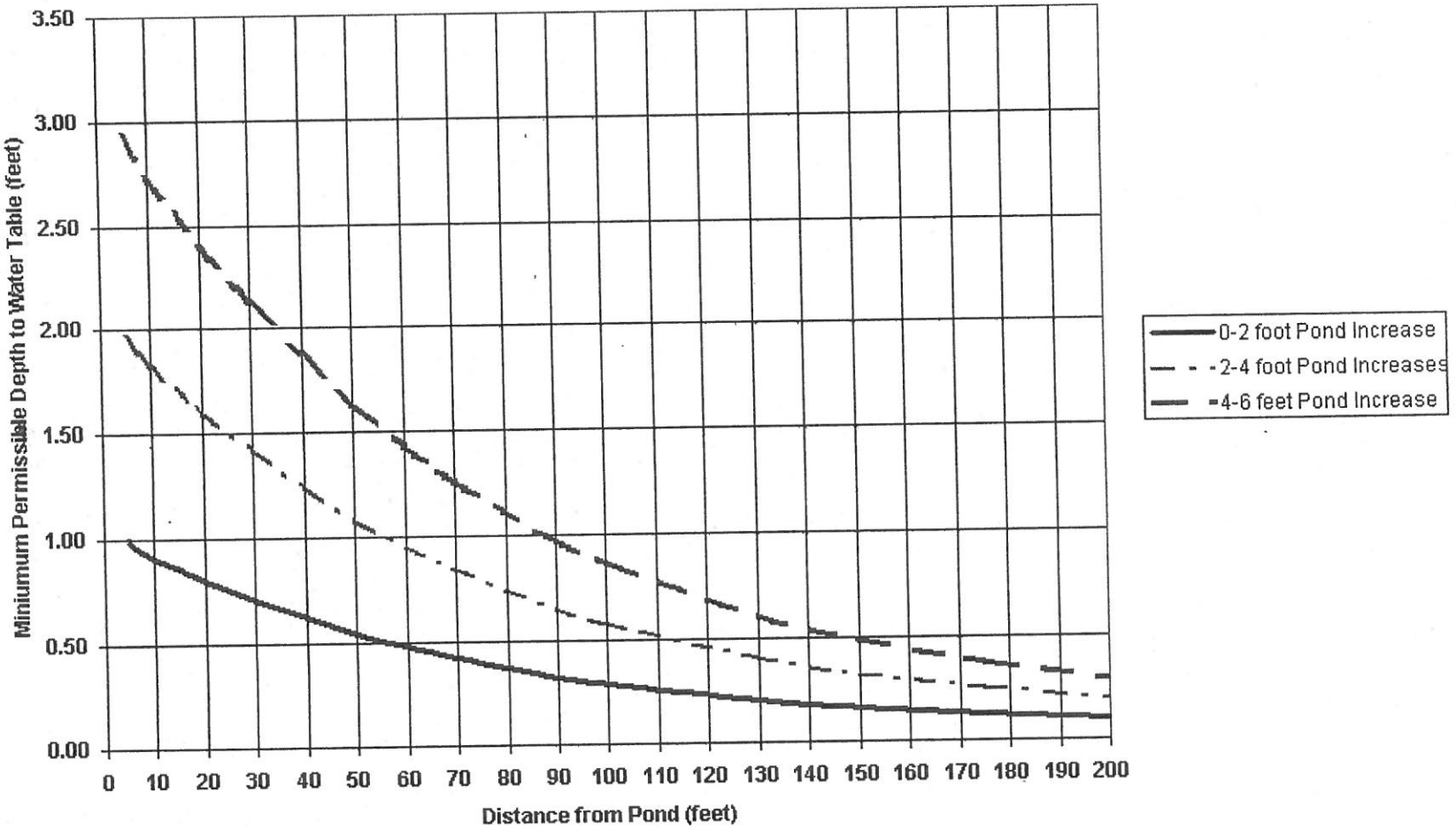
PLOT 1: Minimum Depth to Water Table for No Further Evaluation



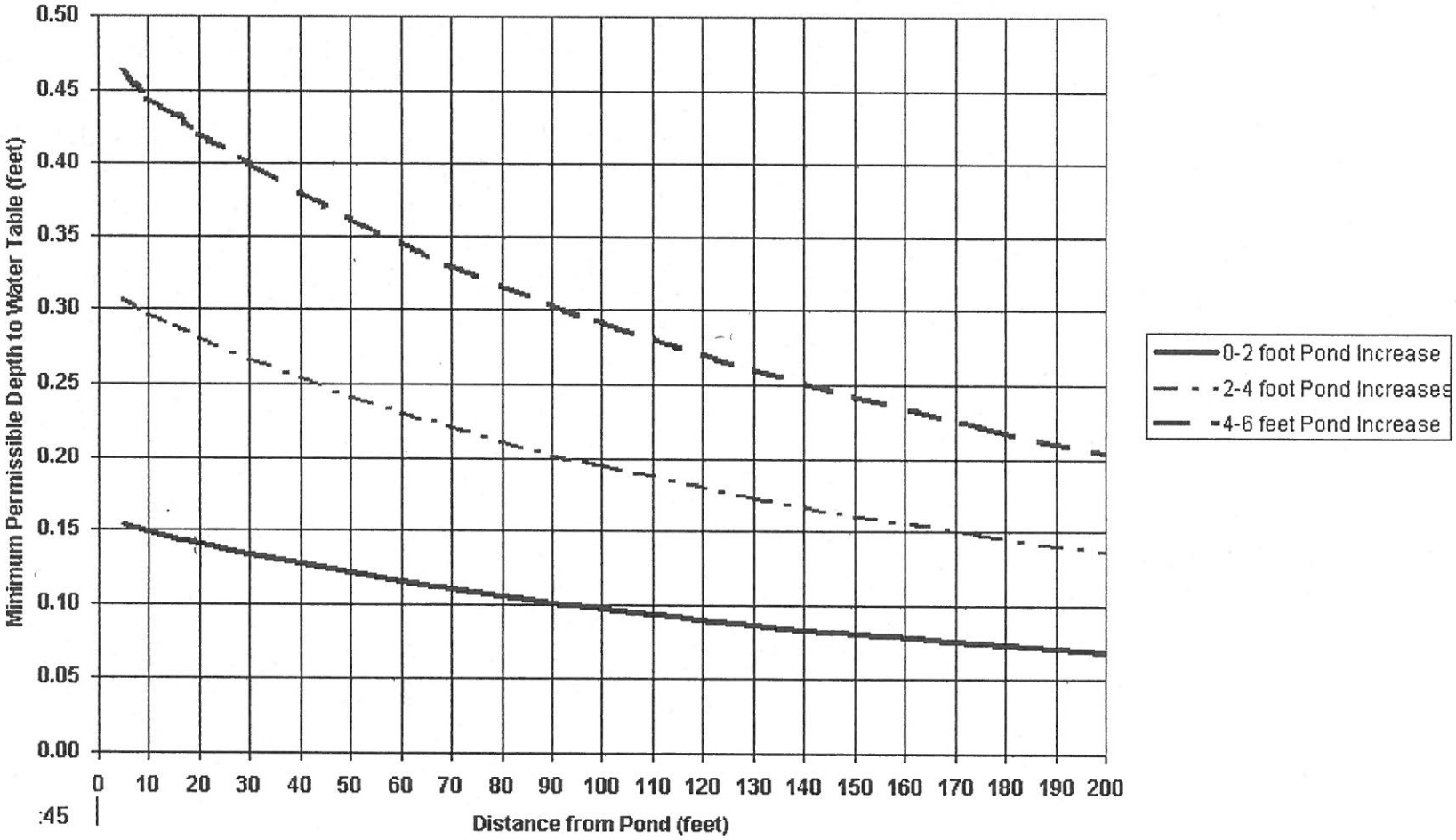
PLOT 2: Minimum Permissible Depth to Water Table - Clay or Perched Conditons
(Perched Conditions = Water Table <5 feet above a continuous clay layer)



PLOT 3: Minimum Permissible Depth to Water Table - Silt - Pond Bottom <3 feet above Ambient Water Table



PLOT 4: Minimum Permissible Depth to Water Table - Sand & Gravel - Pond Bottom <3 feet above Ambient Water Table



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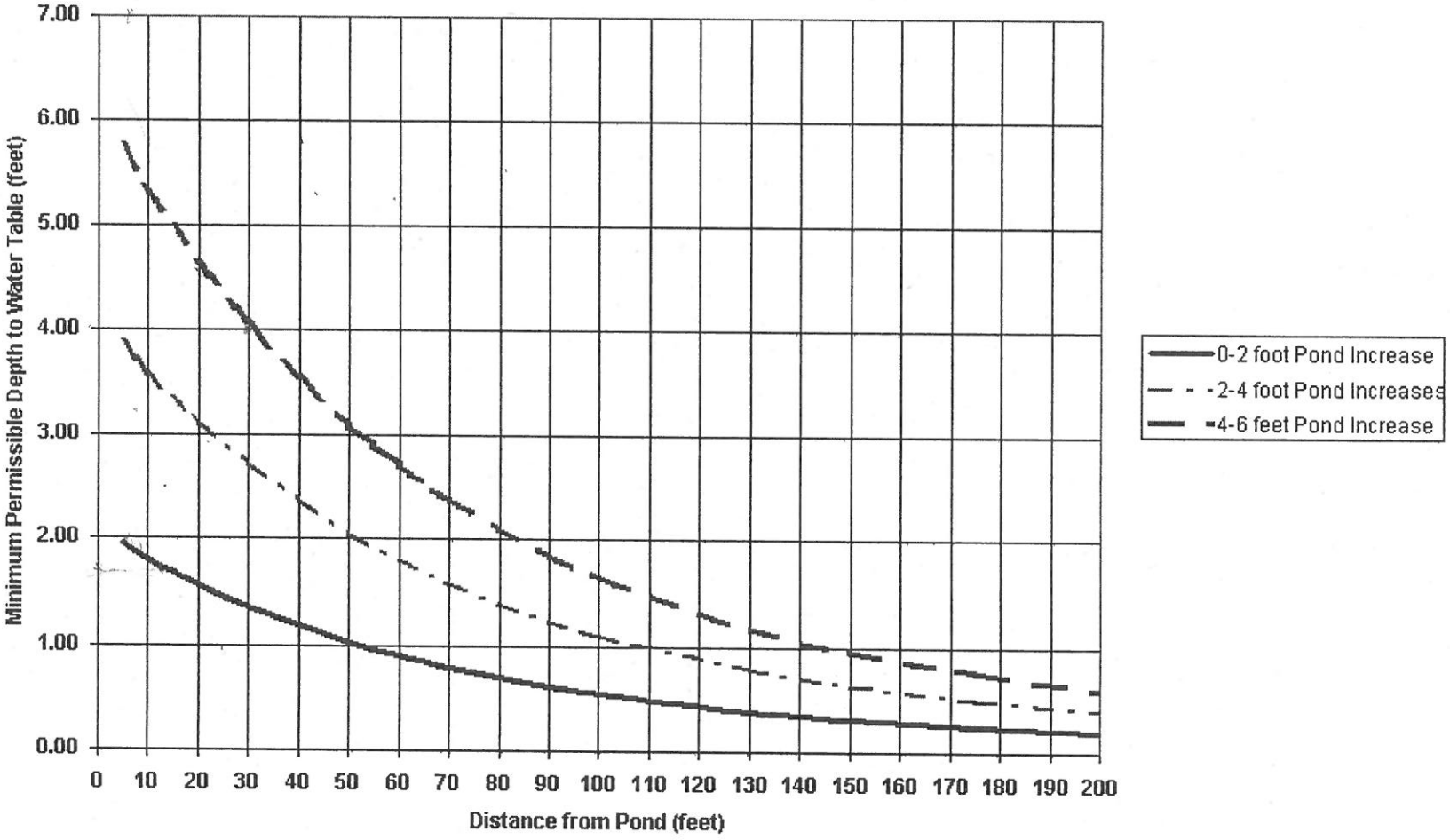
PLOT 5: Minimum Permissible Depth to Water Table - Silt - Pond Bottom >3 feet above Ambient Water Table



PLOT 6: Minimum Permissible Depth to Water Table - Sand & Gravel - Pond Bottom >3 feet above Ambient Water Table