

**Borough of Ho-Ho-Kus
Bergen County, New Jersey
Planning Board Minutes
June 26, 2014
Special Meeting**

Meeting Called to Order at: 7:30PM

Open Public Meetings Statement: Read into the record by the Board Secretary.

Roll Call: Messrs. Berardo, Corrison (absent), Pierson (absent), Reade, Cirulli, Newman, Iannelli, Councilman Rorty (absent), Chairman Hanlon, Mayor Randall

Also in Attendance: Mr. Gary Cucchiara, Board Attorney; Mr. David Hals, Borough/ Board Engineer; Mr. Ed Snieckus, Borough Planner; Ms. JoAnn Carroll, Board Secretary.

Ongoing Business:

Hollows at Ho-Ho-Kus, Chamberlain Developers, W. Saddle River Road/Van Dyke Drive, Block 802, Lots 1, 2, 3, 4 and 10: major subdivision application; the applicant proposes to construct and market single family dwelling units on each of the properties; major soil movement application.

Chairman Hanlon: asked the Board to open up their plans at this time; discussed evacuation procedures in case of an emergency; named the Borough's employees and volunteers who were on hand this evening to help in that event; stated the Planning Board has a very strict set of guidelines which they work with through the courts and the State; the Planning Board members are made up of residents with the exception of Mr. David Hals who is the Borough Engineer, Mr. Ed Snieckus who is the Borough Planner; neither of which vote on the Board; the Borough Administrator, Mr. Don Cirulli, is on the Board and does vote; the rest of the members are fully employed; not retired and donate their time; the Board normally meets on the second and third Thursday of the month; the Board tries to protect the Borough the residents and Board; reviewed the meeting process for the audience; all cell phones should be shut off; no video recording devices or recording devices are allowed; there is one stenographer taking notes and the Board Secretary makes an audio tape of the meeting as well as types minutes for the meeting; the Bergen County Bar Association states the Board can ask the audience to shut off all devices; this is a public meeting; meeting will end at 11PM tonight; will not go beyond this time regardless of where the testimony is at the time; all discussions take place in front of the microphone to keep a legal

record of the proceedings; if someone is not able to approach the dais, arrangements will be made to have the microphone brought to their seat; 200' list residents are given first priority to speak; residents need to be truthful in their testimony; they will be sworn in; perjury if false information is given to the Board; there are special guidelines and rules that are followed by the Board; explained voting procedure and resolution; Mr. Cucchiara is back from his injury and is in attendance this evening; the applicant's attorney had announced the presentation was complete for the major subdivision application.

Mr. Newman has listened to the disc of May 15, 2014 and has signed an absent member certification stating this and has submitted the certification to the Board Secretary.

Mr. Reade has listened to the disc of June 19, 2014 and has signed an absent member certification stating this and has submitted the certification to the Board Secretary.

Mayor Randall has listened to the discs of June 12, 2014 and June 19, 2014 and has signed absent member certifications for both stating this and has submitted the certifications to the Board Secretary.

Chairman Hanlon: started there are possible meetings to be held on July 24, 2014 and July 31, 2014; discussion took place at the last meeting; asked Mr. Whitaker which date the soil movement part of the application will be presented.

Mr. Whitaker: stated on July 24, 2014 Mr. Steck is going to continue and be present for cross examination; it looks like the soil movement application will begin on July 31, 2014.

Chairman Hanlon: stated, for the public in attendance this evening, the residents within the 200' list have received a document stating there is a soil movement application coming before the Board and it is published for tonight; counsel at the last meeting worked it out that that part of the hearing process will be at the end of July.

Mr. Cucchiara: addressed the audience and stated if anyone was in attendance for only the soil movement portion of these proceedings, it will take place on July 31, 2014 in this room at 7:30PM; it may not even be heard that night; it might be carried or started and continued; there will be no further notice; if a member of the audience is interested in the soil movement portion or if interested in all the portions, that is when the Board anticipates the soil movement application to begin.

Chairman Hanlon: stated the Borough Planner has reviewed some of the document already; report has sent to the Board; that has been available to the public; both Mr. Whitaker and Mr. Inglima have copies of the report as well.

Mr. Inglima and Mr. Emerson discussed: Mr. Emerson is still under oath; Mr. Emerson was in attendance two weeks earlier and testified; exhibit introduced at that time; marked as exhibit O19; cross section drawing; Mr. Emerson wanted to clarify that the cross section shown in the top form has an additional dash line drawn at elevation 105; the purpose is to show, relevant to the base elevation, the existing and proposed features; the reference line does not indicate the existing or the proposed contours; it is simply just 105; no other features of the exhibit that he would like to bring to the Board's attention; changes in topography and the identification of them by using O19; Mr. Emerson brought another exhibit that indicates other features of the site; 2 page exhibit shown; Mr. Emerson described the first page of the exhibit; the first page is a section of the plans, A2, sheet 4 of 11; the addition to this piece of the plan is the coloration of all elevations under existing conditions that are below elevation 105; depicted in blue; the second page is the same snippet from 4 of 11; however the coloration is in orange; it is reserved for the same 105 elevation under the proposed conditions; referring to elevations shown on sheet 4 of 11 of the applicant's plan; Mr. Emerson simply identified those locations on the plan and put the color at elevations below those lines; **Exhibit O22** marked; (no objection by Mr. Whitaker); the first page shows the existing conditions below elevation 105 and the second page shows if the application is approved and built as shown on the subdivision plan, the elevations that will be below 105 in the built condition; the purpose of the exhibit is to show the significant difference in topography especially in this portion of the site; on sheet 1 of A22, there is a much larger area that is below that 105 elevation; existing closed depression/low point which he has visited under existing conditions as the site exists today; the difference between sheets 1 and 2 show exactly how much fill will be placed and how much of that existing storage in that SE corner of the site will be effectively eliminated; the elevations at the SE corner of that adjacent lot is proposed at an elevation of 100 where existing topography is approximately 104; 6 ft. fill; that increases up in the NE corner to an elevation of 112 where existing topography is only at 106; first floor of building is at 114; maximum contour under proposed conditions is 111; where existing elevations are in the order of 102, possibly lower; which is 9 ft. of fill in that location; the lowest area of the closed depression would have 9 ft. of fill; Mr. Emerson testified during his prior appearance regarding the conditions of run off that would be found at the site in the easterly portions of the property and along WSRR under both existing and proposed conditions; Mr. Emerson has brought with him an exhibit

that indicates those conditions; **Exhibit O23 marked;** copies will be obtained for the Board, Mr. Whitaker and the application file; (Mr. Whitaker has no objection); (placed on easel); sheet 5 of 11 of exhibit A2; what is indicated in orange is the area of proposed impervious surface that will be directly connected to the proposed stormwater detention system; this consists of primarily the driveways and the entire cul-de-sac, and roadway down to the point where the two inlets are proposed; the western portion of WSRR from the intersection existing inlet at the north down past the proposed entrance to the site and the existing entrance to the property has been colored in yellow; that is the western side to the west of the crown; roughly center line of the road; the significance of this area is that under proposed conditions that is impervious cover that will not flow into the stormwater detention system but will flow into the proposed inlet on the west side of WSRR; there is a portion that is impervious at this time; the portion of the actual roadway of WSRR does exist today, however, a large portion of that to the west of the roadway will be expanded and curbed under proposed conditions; in addition to the actual apron entrance to the property itself which will be additional impervious surface not captured by the proposed stormwater detention system; the other areas in yellow do not go to an off site collection structure; under existing conditions that is run off that flows in a SW direction onto the property in question into the closed depression that was previously discussed; water that is running off the surface of the pavement west of the crown of the road is going into the site; the area in yellow, with the exception of the roadway expansion, is the area that currently runs into the site; if the improvements were constructed as shown on the plan, none of the areas in yellow would go into the applicant's on site detention basin; it would not go into the applicant's site; all of the additional area would know bypass the site and go into the proposed and ultimately into the existing 18 inch pipe on the east side of WSRR; there are two collection structures that are proposed on the applicant's plan on the new cul-de-sac; they are catch basins near the easterly terminus of the cul-de-sac stem; Mr. Emerson has looked at the grading plan for the applicant's site and the contours that are indicated in the area of the catch basins on the proposed cul-de-sac stem; has also looked at the profiles for that system; noted the proposed roadway, to get access to the site, is noticeably steep and as a result, there would be high velocity and a potential tendency for the capacity of the inlets to be exceeded; there is also a possibility for the water to bypass those two collection points if they became clogged; after it bypassed WSRR the water would then flow in a southerly direction and flow into the proposed inlet on the west side of WSRR and across the street and then ultimately into the 18 inch existing pipe which meets up with the 24 inch pipe to the south; there is no curbing on the east side of WSRR presently; there is no curbing proposed along the east side of the cartway of WSRR; the proposed grading has a low point in the center of

the access; the potential for the inlets to be overwhelmed exists; the crown of the roadway at that point is not particularly near as strong further downstream or upstream; it wouldn't be unrealistic that that possibility would exist especially how flat that proposed contour and intersection are; water could possibly cross the cartway of WSRR and run off of the east edge of the pavement; with the contours shown that is not a particularly strong crown to the road; there is a steep roadway that is coming down straight towards that intersection with just two single inlets on either side; it is usually advantageous to design a system where the water would be collected at a midpoint in the stem; you would then eliminate the possibility of bypass because currently the inlets are located on the slope of the road; they are not at a local low point like the existing inlet on the other side of WSRR; water converges from both directions as was discussed previously; unlike the existing inlet, these inlets are on the slope of the road; if water is able to bypass it, it gets one shot then it is gone; it is not able to pond over the inlet to provide access capacity to get into the inlet; if the road were slightly lower than WSRR it would also be able to continue to take in the runoff that was just described; it would serve two purposes; if this type of design was used, there would not be an increase in the off site system depending on how they were arranged; referred to O23; (sheet on easel); the orange area include areas outside the paved portion of the cul-de-sac; all the driveways around the cul-de-sac are sloped down towards the roadway; the calculations to determine the runoff volume and the size of detention facility take those areas into account; there would be a better design rather than to have the driveways be a part of the collection system for the detention; non-structural measures; RSIS; BPM; described alternative measures; there are much better ways to accomplish stormwater management and it deals with handling the runoff in a more distributive fashion instead of at a single point on the property; the runoff from the gutters were not included in the calculations; could foresee an area with deciduous trees the possibility of gutter overflowing; not uncommon; gutters in the front of the proposed homes, if they were to clog would flow into the driveways which would directly flow into the roadway and the detention system was not sized to assume that possibility; performed an analysis of the seepage pit calculations, sizing and design; reviewed for both east and western portion of the site; in regards to the western section, A2 used; sheet 6 of 11; west side of the site; proposed lots 1,2,3 and 4; stormwater management report states the seepage pits on the western portion of the site are sized to handle close to full volume of runoff from the 100 year storm event; reviewed the calculations for these seepage pits and found the seepage pits on the west side are designed to have 620 cubic ft. of storage which includes the volume within what will be a pre-cast dry well structure; encased in stone; the combined storage is 620 cubic ft.; the drywell will hold 2.77 inches of rainfall; the 100 year storm, as defined by the borough

ordinance, is a 24 hour storm; the 24 hour storm is not a storm in which 2.77 inches would fall, but 8.52 inches would fall; disagree that the drywells are sized to contain the entire volume of the 100 year storm; 2.77 inches of rainfall in HHK would be the equivalent of a one year storm event; the discrepancy arises because the applicant used the modified rational method, specifically for volume calculation; he has assumed that the 100 year storm is only a storm of a 2 hour duration, not a 24 hour duration; the Borough ordinance defines a 100 year storm to be one of 24 hours, therefore the seepage pits on the west side are not sized for the 100 year storm and similar calculations for the eastern side of the property exist; regarding the four proposed lots on the west side; these lots have been designed with a trench drain crossing the driveway about 75% of the way down the driveway; that trench drain will be connected to the seepage pits; the details are not provided in the plans/report; problem with this approach is 2 fold; there is no proposed pre-treatment for runoff; soil on the ground level of the driveways will wash into the seepage pits which are prone to clog; referring to the most northerly lot; the proposed seepage pits, proposed grading in that area is on the order of 124 that intersects the tops of the seepage pits; the trench drain according to the proposed contours is a little above 123; the downspouts will be directly connected to these systems; the rooftops being 2 stories above ground level; when that seepage pit gets full, water from the roof has that elevation/energy, when that capacity is full or that system becomes clogged, that water will not infiltrate with the inflow and the water will come up and out of the trench drains; the potential exists for all four lots to actually have runoff from the rooftop coming out of the trench drain; the water which comes out of the trench drain would flow towards the edge of pavement along Van Dyke and flow in a southerly direction; lot 4 is the most southern lot; to accommodate the seepage pit, the most southern corner of this lot, has approximately 2-3 ft. of fill to accommodate that which would change the local drainage characteristics in that corner of the property to some extent; the seepage pit would be above the surface in some areas of the property directly to the south; referred to sheet 10 of 11; shows detail of seepage pits; detail doesn't specifically state what the cover of the system is, nor does it state whether the detail is to scale; it appears if it were to scale that the top of the systems would be close to the finished ground surface elevation; referred to sheet 6 of 11; part of the seepage pit would be 3 ft. above the adjacent grade on the next property; referred to sheet 5 which shows lots on the easterly portion of the site; Mr. Emerson described his findings with respect to the seepage pits which are indicated on the lots that are identified as proposed lots 7, 6 and 5; regarding lot 7; the seepage pits are located to the west of the proposed dwelling; seepage pits are designed to collect runoff from the downspouts; downspouts will be underground at a slope into the seepage pits; described problem with this design; discussed elevation and contour; gravity flow; regarding lot

5; seepage pits are shown to the south and east; discussed surface elevation and adjacent grades; measured the scale from the seepage pit to the top retaining wall; the shortest distance to the first of two retaining walls is approximately 15 ft. directly south; described problems with this design; Mr. Emerson does not have any soil analysis that was submitted for the seepage pits to know if they will work; further analysis needs to be done regarding the potential impact of the seepage pit location on the stability of the proposed retaining wall; Mr. Emerson is not aware of any studies or calculations with respect to the design and construction of the proposed retaining wall; feels the detention system is deficient; found the design plans and supporting calculations were not consistent with each other; dimensions different; referred to Exhibit A2; on sheet 6 is a detailed labeled outlet control wall; the portion of the proposed detention system on the structure represents three methods of outflow from the system; water that comes into the detention system will instantly leave the detention system; orifice can not keep up with the additional runoff; that is how it is designed to work; discussed water surface elevation; second stage orifice which is 4 inches; the third stage/overflow is a 2 ft. wide weir; the stormwater calculations show the second stage orifice at a different diameter; a 2 year storm event would reach 2 ft. 5 inches in the detention pipes; relatively frequent storm event in the engineering world; Mr. Inglima asked if a 2 year storm event occurs with general frequency of 2 years or whether the characteristic of a 2 year storm reflects something that occurs either more or less frequently.

Mr. Whitaker: objected; no foundation for this question; a 2 year storm event is a 2 year storm event as defined by the RSIS.

Mr. Inglima: asked if Mr. Emerson had any statistical data that indicates the frequency of different storm events.

Mr. Emerson: stated the government/NOAH, publishes data, which he referenced earlier.

Mr. Inglima: asked if it would be possible to find out how many two year storms have occurred in the past two years.

Mr. Emerson: stated yes; analyze from a rain gauge.

Mr. Inglima: asked if it was true that there have been several 100 year storms in the past 20 years.

Mr. Whitaker: objected; testimony is outside the scope of the standards that the applicant has to comply with; the concept that the standards of the RSIS are being challenged is irrelevant; the obligation of an applicant is to meet the standards of the RSIS.

Mr. Inglima: stated he disagrees with Mr. Whitaker; believes it is the duty of the Board to investigate the different types of storms that have occurred and their frequency; referred to the Master Plan which speaks of storms and flooding; wishes for the witness to testify on this topic.

Mr. Whitaker: stated the duty of the Board is to apply the RSIS standards; conjecture of the RSIS standards being improper or unreliable are not before this Board nor can it be before this Board; the RSIS trump local ordinances; has heard testimony this evening that if a gutter/drain clogs there will be a problem; as homeowners this is known; that is irrelevant as well; it has to be designed per the RSIS procedures/manual; that is what the applicant has to comply with; days and evenings could be spent on the conjecture part; it is irrelevant.

Mr. Inglima: stated on one hand Mr. Whitaker mentions best practices and on the other he states we should look at how leaders and gutters are connected, and that driveways are isolated from detention systems.

Mr. Whitaker: stated he did not state that; he did state that he has listened to testimony about a gutter becoming clogged; which is also irrelevant.

Mr. Cucchiara: asked Mr. Inglima if the questions related to Ho-Ho-Kus alone; it was not indicated what the area is that he is requesting information regarding the frequency of storms; asked if Mr. Inglima was asking Mr. Emerson to let him know if 2 year storms are more frequent in recent years; does Mr. Emerson have facts to support his opinion; certainly Mr. Inglima is doing fine but he is not sure what it is confined to; helpful to the Board in making a determination and also for the members of the public.

Mr. Inglima: stated he asked a simple question of Mr. Emerson which was if a 2 year storm occurs more frequently than once every two years, and there was an objection.

Mr. Cucchiara: stated he is aware of that, but what area is Mr. Inglima referring to; all of New Jersey, all of the eastern coast, Ho-Ho-Kus alone.

Mr. Inglima: stated Mr. Emerson will state his opinion of where he is aware of it.

Mr. Cucchiara: stated Mr. Emerson has yet to state where.

Mr. Inglima: stated he hasn't been able to ask the question yet.

Mr. Cucchiara: stated the question did not go to that; the question asked if it is more frequent and he did not indicate what area and whether he has any facts to support it; that would be helpful to the Board and to the public.

Mr. Inglima: asked Mr. Emerson if he had information that would reflect upon his opinion as to the frequency of a 2 year storm.

Mr. Emerson: stated each type of storm event typically generates local flooding; he has not done a thorough analysis of historic rainfall data; Mr. Emerson started to speak of his observations.

Mr. Whitaker: objected; Mr. Emerson has no information of local conditions; pure conjecture.

Mr. Inglima and Mr. Emerson discussed: the design of the detention system; how the water will leave the system and run into an existing off site system through catch basins on WSRR; the detention basin would flow out into a proposed 15 inch pipe across WSRR and into an existing inlet on the east side of WSRR which then flows south from the 18 inch pipe which was discussed earlier; discussed previously the condition of the structure; potential capacity of the inlet and the 18 inch pipe; Mr. Emerson reviewed the DAB survey; Exhibit O3 placed on easel which is the applicant's control survey; described the system into which the applicant's detention system would connect; Mr. Emerson located the 24 inch pipe on the plan; SE corner of the exhibit; flows in a NE direction; off of extent of survey; the length of pipe between the junction manhole then flows to the river to the east; the end of the pipe is labeled as "daylight" and "clogged"; Mr. Emerson has not inspected the pipe himself; the 24 inch pipe does not get bigger before or after the manhole; Mr. Emerson reviewed information in regards to the location from which the water is collected and transported to the 24 inch pipe; that area extends to the southwest and encompasses a large portion of the neighborhood; includes portions of Pitcairn, Marion, Prescott, majority of Washington Avenue; Sleepy Hollow and Valley Forge; Mr. Emerson has driven the entire drainage network and identified the locations of each inlet and manhole; this is coming from a visual inspection of this drainage area; Mr. Emerson received information from Mr. Hals which was consistent with his own inspection of catch basins and manhole locations in that neighborhood; Mr. Emerson spoke with Mr. Hals; wanted to confirm his observations; there are indications on the plan of the elevations of the catch basins on Brandywine Road; the survey shows the existing grate on the catch basin of ESRR; applicant's plan indicates there will be an additional catch basin installed on the west side of WSRR; there is a difference in grate elevations between WSRR existing and proposed catch basins and the ones in Brandywine; vertical

difference of approximately 6 ft. from one location to another; Mr. Emerson feels there is more water that is finding its way into the inlet under existing conditions; discussed 2nd stage orifice; discharging water from the applicant's site into the off site system; plus the water that is collected from WSRR and the water that is currently going into the catch basin on the east side of WSRR from the east side of the street; additional drainage area will include a larger portion; include the entire eastern portion of the site; routed through detention basin; all additional contributory drainage area to the existing stormwater system that it currently does not see; all combines at one manhole on the east side of WSRR; water that cannot be discharged to the 24 inch pipe will emerge from the two inlets on either side of Brandywine Road; there could be back pressure; discussed slopes of the pipes; there is a potential for interaction between the 18 inch pipe flowing to the 24 inch pipe at the manhole; the only information Mr. Emerson has obtained is the elevations of the pipes themselves from this exhibit; he does not know the actual elevations of the pipes further to SW; there is a flat section of pipe which is indicated by the standing water that was observed long after storms had taken place; flooding report in the lower areas of the neighborhood to the south and west indicate there is a problem with water leaving the neighborhood; water will not necessarily back up into the applicant's site or in the applicant's detention basin but it may back up on Brandywine; an analysis should be done of the entire drainage system that discharges into the 24 inch pipe to determine whether or not the existing system has any capacity at all for the additional runoff that would be created by the applicant's new street; if the system is already over capacity, it would not be wise to add additional stormwater; the design of the applicant's detention and drainage system does not replicate existing conditions; referred to last testimony when he discussed the closed depression on the SE corner of the site; topography; discussed his field inspection; unique condition on the site; no runoff leaving the eastern portion of the site; there is water coming from the street into the site; referred to the area in orange on Exhibit O23, no water collected from this area will be recharged into ground water; Mr. Steck discussed subdividing the property along the three frontages without the creation of a new street and that this would eliminate the problems Mr. Emerson described; seepage pits could be positioned throughout the property differently than what is shown on the plan if the lots were aligned differently; there would be opportunities for a much more distributed stormwater management system; the site would be able to be developed to retain as much as possible the existing characteristics of the closed depression in the SE corner; the RSIS, DEP regulations, BPM and the municipal ordinance all favor non structural solutions; non structural methods of retention are advantageous for all the reasons Mr. Emerson has stated; it helps meet the criteria outlined in RSIS which include peak flow reduction, water quality control and ground water

recharge; there is no reason why a non structural method could not be used in this instance; no topographical reason not use a non structural method; no soil conditions that would be a reason not to use a non structural method; there would possibly not be a need for pipes that extend across the right of way line of WSRR; it would eliminate the need for an embankment; eliminate the need for any structures along WSRR that would create an obstacle; Mr. Emerson gave his recommendation as to the manner in which the stormwater management of this particular site should be undertaken; Mr. Emerson feels the applicant's plan should use non structural methods of managing stormwater created by the site.

Please note: a 15 minute break was taken at this time of the meeting, 9:05PM.

Meeting called to order at 9:20PM.

Roll Call: Messrs. Berardo, Corrison (absent), Pierson (absent), Reade, Cirulli, Newman, Iannelli, Councilman Rorty (absent), Chairman Hanlon, Mayor Randall

A discussion was had at this point of the meeting regarding scheduling and meeting dates; notices had already been sent regarding meetings to be held on July 24th and July 31st; Board Secretary to send copy of notices to Mr. Whitaker.

Mr. Inglima: stated he reserves the right to recall and rebut.

Mr. Whitaker: asked Mr. Emerson when he was engaged by the people he is representing.

Mr. Emerson: stated April or May.

Mr. Whitaker: asked who contacted him.

Mr. Emerson: stated Mr. Inglima.

Mr. Whitaker: asked if Mr. Emerson started to review this application after he was retained.

Mr. Emerson: stated he did; sometime in April or May.

Mr. Whitaker: asked if Mr. Emerson attended any of the hearings before the hearing where he testified.

Mr. Emerson: stated no.

Mr. Whitaker: asked, in connection with that, if Mr. Emerson had the opportunity to review any of the testimony that has been provided by David Hals.

Mr. Emerson: stated no he had not.

Mr. Whitaker: asked if Mr. Emerson had reviewed the testimony on multiple meetings that was provided by Mr. Palus.

Mr. Emerson: stated he had not.

Mr. Whitaker: asked, in Mr. Emerson's career as an engineer, has he prepared site plans and drainage plans.

Mr. Emerson: stated he had.

Mr. Whitaker: asked how many Mr. Emerson had signed and sealed as a licensed engineer and submitted to a land use Board in the State of NJ.

Mr. Emerson: stated he has not signed and sealed any in the State of NJ.

Mr. Whitaker: stated that Mr. Emerson had testified that his company is a consultant to municipalities in NJ and PA; asked if Mr. Emerson himself serves as a consultant for any municipal Boards in NJ as a licensed engineer.

Mr. Emerson: stated not as a licensed engineer.

Mr. Whitaker: stated a request has been made from Mr. Emerson's counsel for copies of all reports and calculations, technical data, which was used as a basis for Mr. Emerson's presentation; asked if Mr. Emerson was aware of this request.

Mr. Emerson: stated he was aware of that request.

Mr. Whitaker: asked if Mr. Emerson was aware of Mr. Inglima's response to this request.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if it was correct to say that Mr. Inglima advised Mr. Whitaker that Mr. Emerson does not have any documents that were responsive to that request.

Mr. Emerson: stated that was correct.

Mr. Whitaker: stated a request was made to Mr. Inglima to provide him with all drainage studies and calculations that Mr. Emerson would have performed to serve as the basis for his testimony and presentation; asked if Mr. Emerson was aware of that request.

Mr. Emerson: stated he was aware of that request.

Mr. Whitaker: stated that he received a response from Mr. Inglima this same day and was Mr. Emerson aware of that response.

Mr. Emerson: stated he was.

Mr. Whitaker: asked if it would be correct to say that there are no studies or any type of work that Mr. Emerson has done in written form as a basis or foundation for the information he supplied to the Board.

Mr. Emerson: stated, with the exception of what was discussed in the testimony, that was correct.

Mr. Whitaker: asked if it would be correct to say that Mr. Emerson did not prepare any written report in connection with the analysis that he has done.

Mr. Emerson: stated he has not submitted a written report.

Mr. Whitaker: asked if Mr. Emerson had done any independent calculations in regards to the drainage study for this project.

Mr. Emerson: stated yes.

Mr. Whitaker: asked what calculations were done.

Mr. Emerson: stated he discussed the sizing of the seepage pits.

Mr. Whitaker: asked if Mr. Emerson had prepared any reports in connection with those calculations.

Mr. Emerson: stated no he had not.

Mr. Whitaker: asked if Mr. Emerson was familiar with the HydroCAD system.

Mr. Emerson: stated very much so.

Mr. Whitaker: asked if Mr. Emerson used that system in connection with his review of this project.

Mr. Emerson: stated he used it on a limited basis to check the calculations that were submitted in the drainage report.

Mr. Whitaker: asked, when Mr. Emerson does an analysis of a project from a drainage perspective, understands that Mr. Emerson is presenting himself as an expert in that field.

Mr. Emerson: stated that was correct.

Mr. Whitaker: continued to ask if Mr. Emerson analyzes the actual physical property that would be involved in such an analysis.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if it was Mr. Emerson's procedure to go to a particular property.

Mr. Emerson: asked what type of property.

Mr. Whitaker: stated a property that would be the subject of the application.

Mr. Emerson: stated yes of course.

Mr. Whitaker: asked, on this instance, did Mr. Emerson go out to the property itself.

Mr. Emerson: stated he did not; he was on the perimeter of the property but he did not actually go on the property itself.

Mr. Whitaker: stated Mr. Emerson had testified that he had done a visual by standing on the road.

Mr. Emerson: stated that was correct.

Mr. Whitaker: stated Mr. Emerson had testified previously that he considered this project to be a major development.

Mr. Emerson: stated he had.

Mr. Whitaker: stated Mr. Emerson had testified that he had done consulting work on major developments.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if Mr. Emerson or his firm designed drainage plans for a major development.

Mr. Emerson: stated yes, in the State of NJ, under the direction of other professional engineers within his office.

Mr. Whitaker: asked if during the course of such a development, would it be Mr. Emerson's practice to go onto the property itself.

Mr. Emerson: stated absolutely.

Mr. Whitaker: asked, in the course of designing drainage systems, has Mr. Emerson employed or used a manufacturing treatment device that is known as the MTD.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if that type of structure is a structure that is permitted in the stormwater management regulation.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if Mr. Emerson was aware of any such structures like that in the Borough of Ho-Ho-Kus.

Mr. Emerson: stated none in particular, no.

Mr. Whitaker: stated, in Mr. Emerson's testimony, he spoke in terms of the RSIS, connection with ordinances in the Borough of Ho-Ho-Kus; professed that he understood the RSIS and their requirements; recognized those are the standards that basically trump any local ordinances.

Mr. Emerson: stated he understood.

Mr. Whitaker: stated at that point an applicant is charged to comply with the RSIS.

Mr. Emerson: stated that was correct.

Mr. Whitaker: stated that Mr. Emerson as a consultant, is familiar with them and when he is doing a plan, he relies on them.

Mr. Emerson: stated if it falls under the jurisdiction of the RSIS.

Mr. Whitaker: stated in connection with doing that work, has Mr. Emerson's employed the Modified Rational Method.

Mr. Emerson: stated no; does not use it at all.

Mr. Whitaker: asked in connection with the RSIS, there is a section which speaks in terms of the drainage requirements for stormwater management.

Mr. Emerson: stated yes.

Mr. Whitaker: stated, under those provisions, Mr. Emerson had spoke regarding a requirement to look at non structural aspects for such drainage facilities.

Mr. Emerson: stated that was correct.

Mr. Whitaker: asked Mr. Emerson to view the page in question; stated it is not a hard fast requirement; "to the maximum extent practicable."

Mr. Emerson: stated that was correct.

Mr. Whitaker: asked if there was a series of reasons in developing a plan to look at the feasibility of a structural vs. a non structural.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if Mr. Emerson, in this instance, looked to see the feasibility from an engineering perspective.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if Mr. Emerson had developed any type of plan that would work for this.

Mr. Emerson: stated no; he was not asked to.

Mr. Whitaker: asked if Mr. Emerson had done any type of study to show the feasibility from an engineering standpoint.

Mr. Emerson: stated no; he was not asked to.

Mr. Whitaker: stated that Mr. Emerson based his opinion basically on what he thinks can be done but he has no basis in the form of any type of alternative plan.

Mr. Emerson: stated no; he described his alternative plan; he has basis because he visited the site; familiar with the soil mapping in the area; reviewed the calculations for the plan as it is.

Mr. Whitaker: stated he did not develop a feasible solution.

Mr. Emerson: stated no.

Mr. Whitaker: asked if Mr. Emerson did any type of environmental study to see if the structural vs. non structural aspect would be feasible.

Mr. Emerson: stated no; he didn't understand the question.

Mr. Whitaker: asked if Mr. Emerson looked at any safety reasons in reviewing this aspect; safety reasons that are set forth in the section 7:8-5.3.

Mr. Emerson: stated no; he was not aware of any safety aspects.

Mr. Whitaker: asked if it was correct that in certain instances creating basins near public right of ways, etc., there is a safety aspect that has to be considered regarding non structural aspects of a drainage system.

Mr. Emerson: stated that goes into any design of any system.

Mr. Whitaker: stated Mr. Emerson's testimony a meeting ago raised a concern about treatment flow that with a very "strong" storm some of the treatment flow that is proposed for the applicant's system could be exceeded and suspended solids could pass the system.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if that type of situation could also occur with a non manufactured system if there is a strong storm.

Mr. Emerson: stated if a structure is improperly designed, certainly.

Mr. Whitaker: asked if, with a non structured system, there could be an overflow problem with a very strong storm.

Mr. Emerson: stated any system can be designed improperly that could fail whether structural or non structural.

Mr. Whitaker: asked when Mr. Emerson was on the perimeter of the property.

Mr. Emerson: stated he was there the day of his previous testimony and this afternoon.

Mr. Whitaker: stated Mr. Emerson had not gone to the site, even though retained, until the day before he testified 2-3 weeks ago.

Mr. Emerson: stated prior to his testimony yes.

Mr. Whitaker: asked if Mr. Emerson made any notations when he was at the site.

Mr. Emerson: stated no.

Mr. Whitaker: asked how long he was at the site.

Mr. Emerson: stated about 45 minutes.

Mr. Whitaker: asked when Mr. Emerson visited the site a second time.

Mr. Emerson: stated that was this same day.

Mr. Whitaker: asked how long he was at the site today.

Mr. Emerson: stated possibly a half an hour.

Mr. Whitaker: asked, since the time Mr. Emerson had been retained in April, is it correct to say that he has never been at or around the site during the course of a rain storm.

Mr. Emerson: stated that was correct.

Mr. Whitaker: stated Mr. Emerson opined that he believed there is some water existing in certain piping that exists there now and he also opined it could be because of the flatness of existing pipes.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if it could also be because existing pipes are clogged.

Mr. Emerson: stated certainly.

Mr. Whitaker: asked if Mr. Emerson had done any analysis or review as to how old the current drainage system is.

Mr. Emerson: stated he does not know the age of the current drainage system.

Mr. Whitaker: asked, in Mr. Emerson's experience as a drainage consultant in doing this type of work, were there times that Mr. Emerson goes to a site during a rain event.

Mr. Emerson: stated yes.

Mr. Whitaker: asked why Mr. Emerson did not visit the site during a rain event in this particular instance.

Mr. Emerson: stated sometimes it is difficult to schedule a site visit during a downpour.

Mr. Whitaker: asked if it would be correct to say that he was on the properties of his clients.

Mr. Emerson: stated on the same two occasions he mentioned previously.

Mr. Whitaker: asked, at the time that he went there, did he look at their particular properties.

Mr. Emerson: stated some of them.

Mr. Whitaker: asked which ones.

Mr. Emerson: stated he visited the entire perimeter of the property which includes lots 9, 8, 7, 6 and he believed 5.

Mr. Whitaker: asked if Mr. Emerson made any observations pertaining to the properties that he was on.

Mr. Emerson: stated yes, he observed those properties; did not take any notes.

Mr. Whitaker: asked, in Mr. Emerson's opinion, if those properties meet the current stormwater management regulations.

Mr. Emerson: stated he didn't know.

Mr. Whitaker: asked if Mr. Emerson looked to see if any of the properties had dry wells for roof runoff.

Mr. Emerson: stated he had not looked to see.

Mr. Whitaker: asked if Mr. Emerson looked to see if there were any types of drainage facilities at any of those properties that the owners have for runoff.

Mr. Emerson: stated he did not inspect those properties to that level of detail.

Mr. Whitaker: asked if Mr. Emerson looked to determine if any of those properties have any types of retaining walls or berms, etc. that might divert water in any particular way.

Mr. Emerson: stated no; he did not see any retaining walls or berms on those properties; stated there could be different hardscaping at the properties that he did not see.

Mr. Whitaker: asked if it was correct that he was only present for 45 minutes at the site.

Mr. Emerson: stated that was true.

Mr. Whitaker: asked what time of the day he visited the site 2 weeks ago.

Mr. Emerson: stated around 6PM.

Mr. Whitaker: asked if it was a rainy day.

Mr. Emerson: stated it was not a rainy day; there had been rain within 48 hours prior.

Mr. Whitaker: asked if it was correct to say that Mr. Emerson never witnessed actual water flow caused by a rainstorm at this location.

Mr. Emerson: stated no.

Mr. Whitaker: stated, in fact, at this point, Mr. Emerson's site review consists of the 45 minute visit and a visit today.

Mr. Emerson: stated that was correct and that it was the perimeter of the site.

Mr. Whitaker: stated Mr. Emerson had talked extensively about the location of the manufactured device that the applicant proposes; asked if it was correct to say that it is being proposed in the area that he also testified to as having a bit of a depression.

Mr. Emerson: stated yes; that is in the currently existing down slope from the road into the property.

Mr. Whitaker: asked if it is in an area that he would say retains some water now.

Mr. Emerson: stated no; on Exhibit A22 it is outside of the colored contour of 105; at an existing elevation of roughly 106-107.

Mr. Whitaker: stated the physical location is still in the same corner of the property.

Mr. Emerson: stated it is in the SE corner of the property, but not in the closed depression area that Mr. Whitaker referred to.

Mr. Whitaker: stated Mr. Emerson spoke in terms of his concern about the drywells on each of the proposed lots; asked if Mr. Emerson recognized from a subdivision standpoint the applicant is not required to show the exact dwelling being built.

Mr. Emerson: stated he understood.

Mr. Whitaker: asked if Mr. Emerson had the opportunity to review the map and plans.

Mr. Emerson: stated yes, Exhibit A3.

Mr. Whitaker: referred to paragraph 9 on the front page; asked for Mr. Emerson to read aloud.

Mr. Emerson: “the proposed dwellings are shown for conceptual purposes only. Individual plot plans with soil moving are to be submitted for each proposed building lot; building permits for these properties are to include applications to any necessary environmental agencies”.

Mr. Whitaker: asked what Mr. Emerson believed this meant from a design standpoint.

Mr. Emerson: stated that the dwelling may or not be exactly where it is shown on the sheet.

Mr. Whitaker: asked if Mr. Emerson understood that during the course of construction of an individual dwelling that the final design plans for the dwelling itself is then submitted for review by the Borough Engineer.

Mr. Emerson: stated yes.

Mr. Whitaker: asked if it was correct, and in Mr. Emerson's experience, that at that time, finalizing drywell location, finalizing of those types of improvements are approved on a lot by lot basis.

Mr. Inglima: objected; Mr. Whitaker is asking Mr. Emerson as to a specific practice followed by a specific official of the Borough of Ho-Ho-Kus; does not know how he can draw a conclusion in advance of what that might be.

Mr. Whitaker: stated his question is a generalized question; if Mr. Emerson has been doing this type of design it would be his experience in municipalities that the final design plans are done on a lot by lot basis and are not part of a subdivision application; Mr. Emerson knows or doesn't know.

Mr. Emerson: stated the locations of the dwellings can't be just anywhere; there are certain limits.

Mr. Whitaker: stated that each time a proposed lot has a proposed dwelling, in Mr. Emerson's experience, has he seen final design plans being done at that point; exact locations.

Mr. Emerson: stated no.

Mr. Whitaker: stated, for example, if a home is being built in a certain area within that building envelope that is shown on the plan, and that would warrant the movement of a drywell, that is something that has the potential of being accomplished.

Mr. Emerson: stated yes.

Mr. Whitaker: stated it is understood that where the location of the drywells are, at this point, is part of the whole conceptual aspect.

Mr. Emerson: stated no; water has to flow downhill so there are limitations.

Mr. Whitaker: stated so if the engineer doing a review of an individual plan requires/requests a modification to them, and it meets the criteria Mr. Emerson described, it could be relocated.

Mr. Emerson: stated yes, depending on the topography of the lot.

Mr. Whitaker: asked if Mr. Emerson had reviewed Mr. Hals' report dated March 13, 2014.

Mr. Emerson: stated yes, he had seen the letter.

Mr. Whitaker: directed Mr. Emerson to page 4, paragraph 4; storm drainage system; (Mr. Emerson read this portion aloud.)

Mr. Whitaker: asked if Mr. Emerson disagrees with the Borough Engineer's analysis.

Mr. Emerson: stated he does.

Mr. Whitaker: stated he disagrees with him but he did not hear his testimony.

Mr. Emerson: stated that was correct.

Mr. Whitaker: stated, on this basis, that Mr. Emerson's analysis of this project, he hasn't been on the property.

Mr. Emerson: stated that was correct.

Mr. Whitaker: stated Mr. Emerson has not been there on a rainy day.

Mr. Emerson: stated that was correct.

Mr. Whitaker: stated he has no notes or calculations pertaining to any observations he made.

Mr. Emerson: stated that was correct.

Mr. Whitaker: stated Mr. Emerson did not hear the testimony of the applicant's engineer.

Mr. Emerson: stated he did hear some but not the entirety.

Mr. Whitaker: stated, on the basis of that, that is what constitutes what Mr. Emerson's analysis is; without the benefits of the items just listed.

Mr. Emerson: stated absolutely.

Mr. Inglima: asked if Mr. Emerson felt that anyone had enough information at this time to make conclusions about the applicant's engineering design.

Mr. Emerson: stated everyone has the same information that he was presented.

Mr. Inglima: stated that Mr. Emerson truly believes there are deficiencies.

Mr. Whitaker: objected; stated that is truly leading the witness.

Mr. Inglima: (rephrased his question.)

Mr. Emerson: stated he testified that there were serious deficiencies in the analysis.

Mr. Inglima: asked if Mr. Emerson feels his opinion in respect to this issue would have been enhanced by setting foot on the applicant's site.

Mr. Emerson: stated no.

Mr. Inglima: asked if Mr. Emerson was able to make visual observations of the conditions of the site during the times he visited the property.

Mr. Emerson: stated absolutely.

Mr. Inglima: asked if there were any daylight conditions that were inadequate for him to visually observe all the aspects of the site that he felt were important to his testimony.

Mr. Emerson: stated no.

Mr. Inglima: stated Mr. Emerson was not present for Mr. Hals' testimony; asked if Mr. Emerson was present for the cross examination of Mr. Hals.

Mr. Emerson: stated no.

Mr. Inglima: asked if Mr. Emerson was present for any cross examination of the applicant's witness.

Mr. Emerson: stated yes, for the engineer; two weeks ago.

Mr. Inglima: stated Mr. Emerson indicated there was a safety issue.

Mr. Emerson: stated the safety issue was discussed two weeks ago with the location of the proposed underground detention structure actually being in the right of way; elevation of which would extend above the

ground surface elevation within approximately 3 ft. within the proposed edge of pavement.

Mr. Inglima: asked if Mr. Emerson observed from reviewing the plans that there are any safety issues that would affect the use of non structural stormwater management techniques of the site.

Mr. Whitaker: objected; asked and answered.

Mr. Cucchiara: stated we are not bond by the court rules; asked Mr. Inglima to define for the record; stated he is advising the Board to allow Mr. Inglima to proceed.

Mr. Emerson: stated he is not aware of any safety issues that would preclude the use of a non structural approach on this property.

Mr. Inglima: asked if Mr. Emerson was present during cross examination of the applicant's witness with respect to why the applicant did not use a non structural method of stormwater management.

Mr. Emerson: stated he doesn't recall if it was discussed; believes the applicant's engineer referred to concerns over the use of a surface detention system in that location; there may have been safety or nuisance concerns; does not recall the reasons for those concerns.

Mr. Inglima: stated in regards to Mr. Emerson's difference of opinion with Mr. Hals, asked if Mr. Emerson had been supplied with any information from Mr. Hals that would address the issue of whether or not he considered there to have been an examination performed of the existing drainage characteristics of the area; in particular, the areas that contribute runoff to the 24 inch pipe to which the applicant wishes to connect.

Mr. Emerson: stated yes; summary of drainage areas and the drainage system that contributes to the 24 inch pipe which was discussed.

Mr. Inglima: asked if Mr. Emerson changed his opinion as to whether or not a thorough examination had been performed as to those conditions.

Mr. Emerson: stated his initial observations/opinion on the drainage characteristics of the entire neighborhood were confirmed by that information and discussion with Mr. Hals; still feels it is an issue.

Chairman Hanlon: referred to lots 1, 2, 3 and 4; Mr. Emerson mentioned the seepage pits are not adequate; asked how much water should it contain based on Mr. Emerson's understanding.

Mr. Emerson: stated the seepage pits are not adequate; the drainage calculations state the structures are sized to contain the entire volume of a 100 year storm; that is critical; in the rest of the analysis the applicant essentially removes all the drainage area to those seepage pits; on both sides of property, specifically Van Dyke, the drainage area to those seepage pits are removed from the calculations.

Chairman Hanlon: stated Mr. Emerson had mentioned pits that were approximately 620 cubic ft.; slightly less than 5,000 gallons.

Mr. Emerson: stated that was the calculated storage volume.

Chairman Hanlon: asked if the 5,000 gallon storage was not adequate for the four homes based on Mr. Emerson's calculations.

Mr. Emerson: referred to the west side of the property; a 24 hour 100 year storm; 8.54 inches of rainfall would result in 1,922 cubic feet which would be approximately equal to 14,000 gallons.

Chairman Hanlon: stated Mr. Emerson had mentioned the seepage pits were not very low to the ground; answer that Mr. Emerson gave was that the applicant is putting top soil on top of it; Chairman Hanlon's experience is that seepage pits are a lot lower than that.

Mr. Emerson: stated he was referring to the top of the seepage pit; the detail shows a depth of the proposed system at least 8 ft. below the ground surface; explained in detail.

Mr. Emerson: stated no soil analysis has been done; no infiltration testing to suggest they will even work; when a structure is 6 ft. in the ground you want to ensure there is adequate separation from the groundwater table; that information has not been provided.

Chairman Hanlon: stated Mr. Emerson had mentioned putting a detention system in and then filling the area up with backfill doesn't work.

Mr. Emerson: stated he didn't say that it wouldn't necessarily work; water would flow into it more than it would flow out of it.

Chairman Hanlon: stated Mr. Emerson had indicated that putting a detention system in, surrounding it with top soil and building on top of that, and then filling in the land, that type of system doesn't work.

Mr. Emerson: stated the lot in the southeastern corner has a seepage pit that is proposed with 9 ft. of fill; the DMP manual may make reference to that; refers to the soil investigation infiltration testing which was not done; installing a structure like a seepage pit in an area of compacted fill is not a good design practice because the soil that is put there is likely not to have the same infiltration capabilities as a native soil profile would have.

Chairman Hanlon: asked if Mr. Emerson had been to a site where it had been done.

Mr. Emerson: stated not with fill.

Mr. Reade: asked Mr. Emerson to clarify the RSIS requirements in regards to water retention systems and remediation design, etc.; there are objectives and requirements cited; asked if those are mandatory or recommended for engineers.

Mr. Emerson: stated they are mandatory; discussed specifics.

Mr. Reade: asked if engineers had any latitude in non structural vs. structural approaches.

Mr. Emerson: stated engineers are required to meet requirements one way or another; some sites have different situations.

Mr. Reade: asked if there would be different opinions with different engineers.

Mr. Emerson: stated he looks at the existence of the unique topography as a black and white issue; it exists; need to account for the volume and peak flow rate control; ordinance has language to preserving those types of features; recognizes the important role they can play.

Mr. Iannelli: asked for clarification; Mr. Emerson spoke regarding if the proposed project where to be constructed, there would be a significant amount of impervious surface which would create a drainage issue which would create overflow into the off site system which is on the east side of WSRR going into an 18 inch pipe that is now either clogged or broken.

Mr. Emerson: stated he reviewed a video inspection of the 18 inch pipe; it is aged but it is generally functional; everything stated by Mr. Iannelli before that is correct; that is the area that is indicated by the different colors on Exhibit 23.

Mr. Iannelli: asked what the concern is if it was to take on additional water flow.

Mr. Inglima: stated Mr. Iannelli had referred to the 18 inch pipe; is it possible that Mr. Iannelli was referring to the 24 inch pipe.

Mr. Emerson: stated the 18 inch pipe has an adequate, steep slope; then it ties into a manhole, then it is connected to the 24 inch pipe which is, according to the control survey, damaged and has a much flatter slope.

Mr. Iannelli: asked if it was functional now.

Mr. Emerson: stated water definitely flows from one end to the other; the capacity of the pipe may not be adequate; it may be clogged with sediment or debris; it is apparently damaged in some way; the bigger issue from his inspection is that it is too small in diameter and too flat in slope to have the capacity for the existing condition much less any other additional runoff.

Mayor Randall: stated Mr. Emerson indicated on cross why he couldn't think of a reason why an open detention system might not be preferable for safety issues; believed Mr. Emerson indicated further that the conversation he had with the Borough Engineer raised the issue about safety or potential nuisance which might have been a reason not to go in that direction; asked if Mr. Emerson had any further recollection of that conversation and the rationale.

Mr. Emerson: stated it was the applicant's engineer; stated he did not; to that point you can design a surface water basin that is dangerous or you can design one that is safe.

Mayor Randall: stated, given the natural topography, that would still be located in closest proximity to the neighbors to the south.

Mr. Emerson: stated they could be located throughout the site; that is the site's low point; that is where you would look first; each of the lots, or combination of lots, have low points that could be made use of in a non structural approach.

Mayor Randall: referred to the advantage of the natural soils and the rate at which it percolates at the bottom of the hill; is there such a system that is preferable that would make sense that is not a closed system but is a combination that would drain but would also have an overflow into the storm system.

Mr. Emerson: stated judging from the topography; a system that would be designed to infiltrate stormwater; then during larger storms, when its capacity is exceeded, then overflow; a system like that could easily be designed.

Mr. Cirulli: stated Mr. Emerson made reference to one of the Borough's ordinances that define the 100 year flood event; asked which ordinance this was.

Mr. Emerson: stated it is Section 66-2(b); definition section; read aloud.

Mr. Newman: asked if the blue area on page 1 of Mr. Emerson's exhibit is the existing area at the low point that acts as a natural seepage.

Mr. Emerson: stated that is correct.

Mr. Newman: asked if page 2, the orange area is what Mr. Emerson shows as remaining as natural seepage on the applicant's proposal.

Mr. Emerson: stated yes.

Mr. Newman: stated the applicant is eliminating some of this natural seepage area; asked if there is any way to calculate how much has been lost.

Mr. Emerson: stated it is more than is displayed by the two figures; more drastic; the reason is the eastern portion of the property can flow to this point and potentially infiltrate; there is no evidence overtopping the property and flowing to the south towards Brandywine; under proposed conditions all the impervious cover doesn't have a chance to get there and come in contact with the soil.

Mr. Berardo: referred to O23; the orange/yellow areas; asked if the impervious section is draining down to WSRR into two catch basins.

Mr. Emerson: stated that was correct; under proposed conditions the area indicated in orange on O23 is intended to flow into the two proposed inlets which are up on the slope coming down from the proposed road towards WSRR.

Mr. Berardo: asked if the water draining south from WSRR is also going to the same catch basins.

Mr. Emerson: stated no it is not; that is a key point; that existing impervious cover that exists today on WSRR, currently flows onto the property and is infiltrated; no other positive relief of that water; under

proposed conditions, the area that is hatched will have additional impervious area; the road will be widened in that section; existing run off being shunted from entering the site by proposed curbing, there is also additional impervious cover proposed in that area that will not get into those inlets; by design, will flow down into a proposed inlet that is downstream of the detention system; all the area in yellow, nothing is being done for; area created by creating the curb; ensuring that water has no chance to infiltrate but is required to flow into the inlet and into the 24 inch pipe which was discussed.

Mr. Berardo: asked what the size of the storm drain pipes were.

Mr. Emerson: stated, working downstream up, pipe coming up WSRR on the east side is an 18 inch existing pipe; the proposed pipe crossing the road he believes is a 15 inch pipe.

Mr. Berardo: stated Mr. Emerson had spoken about trench drains along the driveway; specifically on the west side of the proposed project; lot 4; trench drain going along the driveway that is connected to the seepage pit.

Mr. Emerson: stated specifically the trench drain was located about $\frac{3}{4}$ down the driveway; there is a portion of the driveway that it will not collect; trench drain is on the plan view; details not given; is proposed to connect to the seepage pit; the trench drain topographically, in most lots if not all, is located at a lower elevation than the current location of the seepage pit; when the capacity of the seepage pit is exceeded, incoming runoff has no where to go; it will find the lowest outlet; the drainage system will also be connected to the downspouts which are potentially two stories above; potential to develop a specific amount of head pressure so that water entering the seepage pit when full, that water will rise up and out of the trench drains.

Mr. Berardo: asked if the trench drains can be moved; discussed during Mr. Whitaker's cross examination.

Mr. Emerson: stated Mr. Whitaker's point was not to the trench drains themselves but to the location of the dwelling and the driveway and the seepage pit; it doesn't guarantee that there is a location that would necessarily be functional; trench drains appear to be located right along the edge of the right of way; the idea is to capture as much of the driveway as they can before it gets on the roadway; sole stormwater management approach on the western side.

Mr. Berardo: stated Mr. Emerson spoke about a 3 inch and 4 inch orifice; on another section it said 5 inches instead of 4 inches; asked about the significance.

Mr. Emerson: stated the plans say 4 inch; calculations reference 5 inch; can be substantial; affects the outflow contingent; what is shown on the plans is not what is shown in the calculations.

Chairman Hanlon: referred to Van Dyke; Mr. Emerson explained the driveway and the drainage situation which is causing concern; spoke regarding the driveways being Belgian block.

Mr. Emerson: stated it would depend on how they were constructed; Belgian block is a non structural stormwater management approach.

Chairman Hanlon: stated Mr. Emerson had mentioned that on Van Dyke he had witnessed erosion of soil which had taken place for some time.

Mr. Emerson: stated in a southerly direction along the edge of pavement he observed the soil was washed away and you are left with rocks and gravel, etc.; wasn't sure if he witnessed it on the west side of Van Dyke; knows from the topography that there is concentrated flow over there as well; that is up against probably some more maintained lawns where the runoff may be kept in the pavement.

Chairman Hanlon: stated a lot of those homes do not have natural detention systems; they have pipes that go into the driveway into the street.

Mr. Emerson: stated they may; stated he did not observe the homes on the west side of Van Dyke; it is unlikely that all four corners of the downspouts are directed to the front driveway from a practical manner; it is plausible.

Chairman Hanlon: stated he has observed pretty much what Mr. Emerson has observed but he has seen it on both sides of Van Dyke; referred to the edge of lot 5 and to where the existing homes are; asked, in Mr. Emerson's opinion, what the chances are if storm drains are installed they could catch the water.

Mr. Emerson: stated the potential problem with adding more storm drains is the water needs a place to go; only place now is the 24 inch pipe; two issues; areas with nuisance ponding; or other situations with the inlets that are there are under water because the downstream pipe

system doesn't have the capacity; there needs to be a way to move the water.

Chairman Hanlon: asked if it would provide some relief for the residents at the end of Brandywine.

Mr. Inglima: stated he wanted to know if Chairman Hanlon had any additional information regarding the drainage system; asked for additional information regarding the hypothetical question asked.

Chairman Hanlon: stated the hypothetical question is does the possibility of a drainage system at the top section of Van Dyke help alleviate problems down at the other end.

Mr. Inglima: objected; not enough information.

Mr. Cucchiara: stated Mr. Emerson can testify to that; if he can answer it then he should if he can't then he should just state so.

Mr. Emerson: stated adding additional inlets alone may not always suffice; need an ultimate discharge location; doesn't know what that is and doesn't know if it exists in this neighborhood.

Chairman Hanlon: asked if Mr. Emerson agreed that Belgian block would help the situation of the water going out onto Van Dyke.

Mr. Emerson: stated yes.

Chairman Hanlon: asked if it is a possibility that what Mr. Emerson is suggesting can be followed.

Mr. Emerson: stated yes.

Chairman Hanlon: asked how many homes did Mr. Emerson observe when he walked the area actually had pipes leading to streets vs. pipes leading to a detention system in the ground.

Mr. Inglima: objected; well beyond the scope of the witness.

Chairman Hanlon: stated Mr. Emerson walked the area looked at homes and he looked at the pipes on the homes.

Mr. Inglima: stated he is objecting that two wrongs don't make a right; other areas not in compliance with the RSIS would not relieve the applicant of burden; objected.

Chairman Hanlon: stated he is interested as a hydrologist if he has observed these homes; water is going to the street; approximately how many homes are not contributing water to the street.

Mr. Cucchiara: stated Mr. Emerson can answer if he knows.

Mr. Emerson: stated his focus is on the property in question; not specifically on the homes; walked on properties of these homes and along the frontage of all of them; doesn't know which ones have downspouts that are either connected to the lawn or to their driveways or their street; he would suspect that the rear downspouts along the rear of all the homes are likely diverted to the lawn area.

Mr. Cucchiara: asked Mr. Emerson to testify to what he knows; speculation does not help the Board.

Chairman Hanlon: confirmed that Mr. Emerson did not view the area with that type of thought process.

Mr. Emerson: stated that was correct.

Chairman Hanlon: asked if Mr. Emerson noticed the two storm drains in the middle of the street on Brandywine and if he observed anything inside the drains.

Mr. Emerson: stated yes; he did not observe anything inside the drains.

Chairman Hanlon: asked this because Mr. Emerson mentioned that if people have debris on their roofs it would go into the drain and it would clog their various seepage pits; asked if Mr. Emerson had any experience with people plugging up their drains in 5-10 years because of this type of contamination.

Mr. Emerson: stated yes, on a personal level he has to clean downspouts; stated that people that move into these types of developments do not understand seepage pits and they don't know how to maintain them.

Mr. Whitaker: objected; asked where this line of questioning is going.

Chairman Hanlon: stated Mr. Emerson had made a statement that seepage pits get clogged.

Mr. Emerson: stated the BPM has specific design detail that require pretreatment for runoff flowing into them; has studied clogged seepage pits.

Mr. Steve Shell, 885 Hollywood Avenue: asked questions regarding seepage pits; detention system; clogging.

Mr. Emerson: stated he couldn't quantify specifically; there is a trash rack proposed in the system; it would require routine inspections; grate is proposed; the largest opening will be larger than a 3 inch diameter of the low flow orifice; implying that the debris that is greater than 3 inches could easily gain access to the system and potentially clog either the trash rack or the orifice itself.

Mr. Shell: asked who would be responsible for this proposed unit.

Mr. Whitaker: objected; only if the witness has the knowledge.

Mr. Emerson: stated the outlet structure is within the town right of way it is his assumption that it would be the town's responsibility.

Chairman Hanlon: stated that based on previous testimony the Borough would be maintaining it; the Borough has a program for maintaining detention systems.

Mr. Edward Solinski, 56 Brandywine: (did not ask questions of what Mr. Emerson had testified to.)

Mr. Stanley Kober, 919 Washington Avenue: asked questions of Mr. Emerson.

Mr. Steve Reilly, 26 Sleepy Hollow Drive: asked questions of Mr. Emerson.

Public Portion Closed.

Public hearings will be held on July 24, 2014 and July 31, 2014; Mr. Inlgima confirmed that his planner, Mr. Steck, would be back on July 24, 2014.

Motion to Adjourn: Berardo, Cirulli
All Board Members present approve Motion to Adjourn

Meeting adjourned at 10:50PM

Respectfully submitted by:
JoAnn Carroll
Planning Board Secretary
September 26, 2014