Harford County Public Schools

Harford Academy
at Campus Hills

Feasibility Study

October 2022

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Creative Collaboration
Sustainable Solutions
Engaging Environments

HCPS

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Bel Air, Maryland

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section 1

executive summary

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Executive Summary

Project Background

Harford County Public Schools is committed to providing all students with physical and cognitive challenges with a comprehensive public education in the least restrictive environment and to ensure that a full spectrum of services are available to all students enrolled in the school system. The original Harford Academy facility was built in 1971 on the Harford Technical High School campus that is also shared with Prospect Mill Elementary School. The increase in enrollment justified the need to build an addition in 1979 to expand the facility with a current enrollment of 136.

The existing Harford Academy does not sufficiently support the needs severely challenged student population. The existing building does not provide for accessibility for disabled students and needs to meet current ADA standards. There is no emergency generator except for select emergency lights throughout the building. Back-up power is critical for uninterrupted utility services required for HVAC, air conditioning and other power outlets that provide medically necessary equipment to students. The HVAC system has air quality concerns due to insufficient ventilation; temperature control for both heating and air conditioning, and the building does not have sufficient windows for air exchange.

Programmatically, the existing facility does not provide the spatial considerations necessary to adequately provide medical and other supervisory needs to the severely challenged student population. Further, there is no space to allow for growing educational opportunities or increasing administrative, instructional, and volunteer support.

Reusing the existing Harford Academy site presented many challenges. Not only is there limited area for additions due to physical and septic constraints, but all construction would have been phased-occupied due to the lack of swing space. The project would have required costly portable units and supporting utilities which is especially prohibitive given the fragility of this unique student population. Ultimately, it was decided that creating a new facility would provide many enhanced opportunities to support the Harford Academy community.

Harford County Public Schools plans to seek a waiver to maintain the existing building for a future purpose while seeking a new site for development of the replacement school.

Campus Hills Site

Harford County Public Schools engaged several stakeholders to evaluate seven sites in the county for the new Harford Academy. After an extensive search, Campus Hills Site was selected for a myriad of benefits including:

- Centralized location within the county to offer county-wise services.
- Current transportation routing can remain in place.
- Adjacent Parks and Recreation development of Shucks Regional Park, including “Miracle Field” and “Sensory Trail” for use students.
- Proximity to Harford Technical High School and Harford Community College for partnership opportunities.

Executive Summary

A Combined Facility

HCPS sought to develop a new campus on the Campus Hills site that accommodates Harford Academy, a new elementary school to help balance the enrollment needs of the Bel Air district, and a Lab School component to support the county's professional development and retention. This approach provides new opportunities to leverage unique educational experiences for students, teachers, and families and create a cohesive whole that is greater than the sum of its parts.

Multiple stakeholders were engaged throughout the feasibility study process to develop priorities and spatial requirements. The new school will include new and improved program space requirements to meet the needs of the current Harford Academy students, new elementary school capacity, lab school components, and shared program spaces to provide an enriched, single school community experience.

Working with stakeholders, Grimm + Parker Architects, Inc. explored several concepts that resulted in the three (3) site options.

Option 1
"Bridge"

- All shared spaces, and program-specific specialty spaces which could potentially be shared, are centralized in plan to maximize inclusion opportunities.

Details	
Square Footage	202,000 gsf
Total Estimated Project Cost	$123,050,137
40-year Life Cycle Cost	$289,696,148

Option 2
"Loop"

- Main shared spaces are centralized in plan to maximize inclusion opportunities.
- Program-specific specialty spaces are separated, located within Elementary and Harford Academy academic zones.

Details	
Square Footage	196,000 gsf
Total Estimated Project Cost	$118,434,136
40-year Life Cycle Cost	$279,366,053

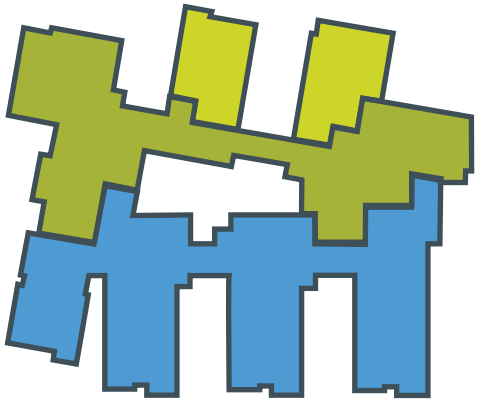
Option 3
"Cluster"

- Main shared spaces are centralized in plan to maximize inclusion opportunities.
- Program-specific specialty spaces are separated, located within Elementary and Harford Academy academic zones.
- Cluster organization creates smaller learning communities within Elementary and Harford Academy academic zones.

Details	
Square Footage	201,000 gsf
Total Estimated Project Cost	$124,262,749
40-year Life Cycle Cost	$292,245,192

Executive Summary

Option 3
"Cluster"



HARFORD ACADEMY (HA)
SHARED PROGRAM
ELEMENTARY SCHOOL (ES)

The Superintendent of Schools recommends that the Board of Education approve Option #3, with a gross square footage of 201,000.

This option would build a new school, Harford Academy at Campus Hills, in a cluster configuration to replace the current Harford Academy public separate day school and add new elementary school capacity (598 state rated capacity) within Harford County Public Schools.

section **2**

summary of educational specifications

Introduction

Proposed School Organization

Proposed Enrollment Data

Proposed Program Summary

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Introduction

Program School Organization

The goal for Harford Academy at Campus Hills is to fully recognize synergies between all programs and students, including: the existing Harford Academy population, a comprehensive elementary school, and Lab School. While each of the programs will have a distinct identity, their immediate proximity introduces a desirable overlap for new experiences.

Multiple stakeholders were engaged throughout the feasibility study process to develop priorities and spatial requirements for the ongoing education specification for the facility. A series of guiding principles were developed to create the program summary - with an intent to develop spatial requirements for each separate community and potential shared spaces for instruction, play, and engagement. This approach allowed the leadership team to not only review program location and adjacencies, but evaluate potential operational challenges and opportunities as part of each scheme.

Proposed Enrollment Data

School Name	SRC
Harford Academy	150
New Elementary School	567
Total	**717**

Program Summary

SCHOOL	PROGRAM SPACE	ED SPEC TS	#	UNIT SF	TOTAL SF
	ADMINISTRATION				
	Administrative Suite				
HA					**3,130**
	Secure Lobby	0	1	400	400
	General Office and Reception Area	0	1	800	800
	Principal Office	0	1	300	300
	Assistant Principal Office	0	2	200	400
	Education Evaluator Office	0	1	150	150
	IEP Meeting Room (Corridor Access)	0	1	600	600
	Unisex Restroom	0	1	80	80
	Secure Storage	0	1	150	150
	Records Room	0	1	250	250
ES					**2,550**
	Secure Lobby	0	1	250	250
	General Office and Reception Area	0	1	650	650
	Principal	0	1	300	300
	Assistant Principal	0	2	200	400
	Large Conference Room *(IEP)*	0	1	600	600
	Unisex Restroom	0	1	50	50
	Secure Storage	0	1	150	150
	Records Room	0	1	150	150
SHARED					**1,050**
	Work Room/Mail Room	0	1	450	450
	Conference Room	0	2	300	600
	NSF				6,730
	Instructional Support				
HA					**1350**
	Paraeducator Office	0	1	250	250
	Teacher Work Room	0	4	250	1000
	Storage	0	1	100	100
ES					**1000**
	Teacher Work Room	0	4	250	1000
SHARED					**1640**
	Unisex Toilets	0	2	80	160
	Privacy Room	0	1	80	80
	Volunteer Work Room/PTA Storage	0	1	600	600
	Faculty Lounge/Staff Lavatory	0	1	800	800
	NSF				**3,990**
	STUDENT SERVICES				
	Guidance + Counseling				
HA					**550**
	Counseling Office	0	1	200	200
	Behavior Specialist Office	0	1	150	150
	Behavior Resource Suite	0	1	200	200
ES					**550**
	School Counseling Office	0	2	200	400
	School-based Mental Health Office	0	1	150	150
SHARED					**1,170**
	Testing Suites	0	2	90	180
	Testing Storage Closet	0	1	90	90
	Psychologist Office	0	1	150	150
	Itinerant Office	0	1	250	250
	Small Conference Room	0	1	200	200
	Large Conference Room	0	1	300	300
	NSF				**2,270**

SCHOOL	PROGRAM SPACE	ED SPEC TS	#	UNIT SF	TOTAL SF
	Health Suite				
HA					**1,610**
	Office	0	1	250	250
	Rest Area	0	1	600	600
	Waiting Area	0	1	250	250
	Exam/Isolation Room	0	1	100	100
	Storage / Supplies Room	0	1	150	150
	Unisex Toilet	0	1	100	100
	Unisex Toilets (Shower in Toilet)	0	1	160	160
ES					**925**
	Reception, Waiting, Treatment Area	0	1	200	200
	Isolation Room	0	1	100	100
	Nurse's Office	0	1	200	200
	Rest Area	0	1	200	200
	Unisex Toilet	0	1	50	50
	Unisex Toilet - shower	0	1	75	75
	Storage Closet	0	1	100	100
	NSF				**2,535**
	Speech				
SHARED					**1,700**
	Speech Pathologist Office	0	4	150	600
	ADL Classroom	2	1	500	500
	Unisex Toilet	0	1	100	100
	Speech Therapy Rooms	0	2	200	400
	Storage	0	1	100	100
	NSF				**1700**
	OT/PT				
HA					**1,900**
	OT/PT Activity Room	1	1	1200	1200
	OT/PT Office	0	1	400	400
	OT/PT Storage	0	1	300	300
	NSF				**1,900**
	Related Services				
SHARED					**1,000**
	Vision Services	0	1	250	250
	Hearing Services	0	1	250	250
	Audiology	0	1	250	250
	Assistive Technology	0	1	250	250
	NSF				**1000**
	Partnership Suites				
SHARED					**800**
	Dental Suite				
	Health Specialist				
	Cosmotology Specialist				
	NSF				**800**
	ACADEMIC AREAS				
	Classrooms				
HA					**25,000**
	STRIVE	3	3	1000	3000
	Pre Primary	3	3	1000	3000

Program Summary

SCHOOL	PROGRAM SPACE	ED SPEC TS	#	UNIT SF	TOTAL SF
	Elementary + Middle	11	11	1000	11000
	High School	7	7	1000	7000
	Flex	1	1	1000	1000
ES					**22,000**
	Pre-K – including a toilet	1	1	1000	1000
	Kindergarten – including a toilet	4	4	1000	4000
	Primary Grades 1-2 - including Toilet	8	8	850	6800
	Intermediate Grades 3-4-5	12	12	850	10200
	NSF				**47,000**
	ACADEMIC SUPPORT				
HA					**8,400**
	Lavatories	0	25	160	4000
	Storage	0	4	400	1600
	Equipment Parking Lot	*0*	*10*	*200*	*2000*
	Multi-Sensory Room Area	0	2	400	800
ES					**5,400**
	Enrichment	0	1	500	500
	Reading Resource	0	1	600	600
	Reading Storage	0	1	200	200
	Math Resource	0	1	600	600
	Resource/Pull Out	0	7	500	3500
	Storage				
	NSF				**13,800**
	SPECIAL EDUCATION / PROGRAMS				
	Independent Living				
HA					**1,300**
	Life Skills Lab	*1*		*1200*	*0*
	Home Ec Room	1	1	1200	1200
	Storage	0		200	0
	Unisex Toilet	0	1	100	100
	NSF				**1,300**
	Regional Special Education				
ES					**3,900**
	Early Intervention: Early Learners Classroom	0	1	1000	1000
	Early Intervention: Learning Together Classroom	0	1	1000	1000
	Early Intervention: Co-taught Pre-K	0	1	1000	1000
	Regional Program Workroom	0	1	400	400
	Sensory Room	0	1	400	400
	Calming Space	0	1	100	100
	NSF				**3,900**
	LAB SCHOOL				
HA					**1,200**
	Observation	0	6	200	1200
ES					**1,600**
	Observation	0	8	200	1600
SHARED					**1,200**
	Welcome Center	0	1	1200	1200
	NSF				**4,000**

SCHOOL	PROGRAM SPACE	ED SPEC TS	#	UNIT SF	TOTAL SF
	MEDIA CENTER				
	Media Center				
HA					**1,150**
	Media Center - Harford Academy	0	1	1000	1000
	Circulation Desk	0	1	150	150
ES					**1,150**
	Maker Space	0	1	700	700
	Television Studio	0	1	450	450
SHARED					**5,250**
	Media Office	0	1	750	750
	Media Storage	0	1	450	450
	Circulation Desk	0	1	150	150
	Stacks + Collection	0	1	2200	2200
	Storytelling	0	1	850	850
	Instructional Area	0	1	850	850
	NSF				**7,550**
	SPECIALS				
	Horticulture Area				
HA					**1850**
	Classroom Lab	*1*	*1*	*800*	*800*
	Greenhouse	0	1	950	950
	Storage	0	1	100	100
	Technical Education				
HA					**1700**
	Classroom	1	1	600	600
	Lab	0	1	900	900
	Finishing Room	0	1	100	100
	Storage	0	1	100	100
	Career/Vocational Area				
HA					**1350**
	Laboratory	1	1	1000	1000
	Storage Room	0	1	150	150
	Recycling Room	0	1	120	120
	Office	0	1	80	80
	NSF				**4,900**
	FINE ARTS				
	Arts				
HA					**2000**
	Art Classroom	2	2	1000	2000
ES					**1000**
	Art Classrooms	1	1	1000	1000
SHARED					**400**
	Kiln Room		1	100	100
	Storage/Teacher Planning		1	300	300
	NSF				**3,400**
	Music				
HA					**1500**
	Music Classroom	2	2	700	1400
	Music Storage	0	1	100	100
ES					**1800**
	Vocal Music	1	1	800	800
	Instrumental Music	1	1	1000	1000

Program Summary

SCHOOL	PROGRAM SPACE	ED SPEC TS	#	UNIT SF	TOTAL SF
	NSF				**3300**
	PHYSICAL EDUCATION				
	Gymnasium				
HA					**3450**
	Fitness Lab / Physical Therapy	1	1	1300	1300
	Fitness Lab / Physical Therapy Storage	0	1	250	250
	Adaptive Gymnasium	1	1	1600	1600
	Adaptive Gynmasium Storage	0	1	300	300
SHARED					**9,450**
	Gymnasium		1	6000	6000
	PE Indoor Storage		1	300	300
	PE Outdoor Storage		1	500	500
	Chair Storage		1	200	200
	PE Office		1	200	200
	PE Office Toilet + Shower Room		1	100	100
	P+R Storage		1	400	400
	Group Restrooms		2	300	600
	Performance Platform		1	1000	1000
	Platform Storage		1	150	150
	NSF				**12,900**
	Aquatics				
HA					**6500**
	Therapy Pool	1	1	3400	3400
	Locker + Shower Rooms	0	2	950	1900
	Pool Office	0	1	120	120
	Pool Unisex Toilet Room	0	1	100	100
	Pool Storage HA	0	1	200	200
	Pool Storage P+R	0	1	200	200
	Laundry	0	1	80	80
	Chemical Storage	0	1	100	100
	Mechanical Pump Room for Pool	0	1	400	400
	NSF				**6,500**
	FOOD SERVICES				
	Cafeteria				
HA					**2950**
	Dining Commons	0	1	2400	2400
	Furniture Storage	0	1	150	150
	Serving Line	0	2	200	400
ES					**3550**
	Dining Commons		1	3000	3000
	Serving Line		2	200	400
	After School Storage		1	150	150
	NSF				**6500**
	Kitchen				
HA					**350**
	Puree Food Prep	0	1	100	100
	Dishwashing	0	1	150	150
	Office	0	1	100	100
ES					**2730**
	Office		1	100	100
	Kitchen		1	1600	1600
	Freezer		1	150	150
	Refrigerator		1	150	150
	Dry Kitchen Storage		1	250	250
	Toilet + Locker Area		1	180	180
	Trash		1	100	100
	Dishwashing		1	150	150
	Custodial Closet		1	50	50
	NSF				**3080**
	BUILDING SERVICES				
	Building Services				1900
	Service Closet / Equip. Storage		8	50	400
	Mechanical Area		1	1200	1200
	Communications Distribution Room		1	300	300
	Custodial Services				930
	Office		1	150	150
	Locker/Lavatory Area		1	180	180
	Grounds Equipment Storage		1	250	250
	Receiving Areas		1	100	100
	General Storage Area		1	250	250
	NSF				**2830**
	TOTAL NSF				**141,885**
	EFFICIENCY FACTOR				**42,566**
	TOTAL GSF				**184,451**

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section 3

specific project data

Project Budget
Project Timeline

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Project Data

Proposed Project Budget

Current Anticipated Budget: $161,541,000

Proposed Project Timeline

2022	September 19	Feasibility Study to BOE
	September 22	Annual LEA meeting with the State at current Harford Academy
	October 5	Request Local Planning Approval from the State with CIP request
	October - December	Ed Spec Meetings
2023	January - April	Ed Spec Meetings
	May 22	Ed Spec to BOE
	June	Design Contract
	July - September	Schematic Design (SD)
	September – November	Design Development Documents (DD)
	November - December	Construction Documents (CD)
2024	January - February	Construction Documents (CD)
	March / April	Bid for construction
	Summer	Construction Begins
2025	Spring	Elementary Redistricting Process Begins
2026	February	Elementary Redistricting Process Concludes
	September	Harford Academy at Campus Hills opens
		New elementary boundaries implemented

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section 4

existing facility inventory data

Existing Facility Feasibility Waiver Request

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Existing Facility Feasibility - Waiver Request

HARFORD COUNTY
PUBLIC SCHOOLS
Inspire • Prepare • Achieve

Sean W. Bulson, Ed.D., Superintendent of Schools
102 S. Hickory Avenue, Bel Air, Maryland 21014
Office: 410-838-7300 • www.hcps.org • fax: 410-893-2478

October 7, 2022

Alex Donahue, JD
Acting Executive Director
Interagency Commission on School Construction
200 West Baltimore Street
Baltimore, Maryland 21201

RE: Harford Academy Feasibly Waiver

Dear Mr. Donahue:

Harford County Public Schools respectfully requests that the Interagency Commission on School Construction, approve a waiver of the requirement to evaluate a renovation/ addition option for the feasibility study for the Harford Academy Project due to the medically fragile students at the school and the existing site limitations. On June 13, 2022, the Board of Education (BOE) voted to change the name of the John Archer School to the Harford Academy (HA); for clarity throughout this letter, the school will be referred to by the current name as HA.

Built in 1971, the HA is the only Public Separate Day School serving students ages three to twenty-one with severe and profound disabilities within Harford County. In 2009, Smolen & Emr Associates completed a scope study to assess the current building condition, safety, and educational program efficiency of the HA facility. It was determined that the existing building had reached a point where components and systems needed to be replaced. The scope study also concluded that the instructional needs, as well as the support service requirements of the students attending the school, have changed since the construction of the original building. Due to the medical fragile nature of the students attending HA, modernizing the facility through a phased occupied renovation is not an option.

The HA currently shares an 80.33-acre site with Harford Technical High School and Prospect Mill Elementary School. This site is not served by public utilities. While the site is adequate for the current facilities, it is limited to potential location and size to build a new facility. At the time of the original scope study, it was determined that the Bel Air campus was the most feasible site for the relocation and placement of the HA.

Due to fiscal constraints, the HA project was deferred. Thirteen years have passed since the original scope study, and the HA Project is now the highest major capital priority. On August 10, 2020, the BOE approved a contract with FLO Analytics for the Balancing Enrollment project and an update of the site location study for HA. FLO Analytics partnered with Banta Campbell Architects to conduct a site location study as part of the overall Balancing Enrollment project.

The HA serves our most medically fragile and severely disabled students countywide; therefore, determining the best location for a replacement school is crucial for travel times and student's access to services and programs. The site location study considered seven sites for the relocation of HA. Three of the sites do not currently have an existing building.

Four of the sites are existing school facility properties. Data was gathered for each of the sites considering proximity to the Town of Bel Air, Upper Chesapeake Medical Center, and travel distances from edge points of Harford County like White Hall, Whiteford, and Havre de Grace. At the BOE business meeting on August 16, 2021, the BOE voted in favor of completely replacing the school and build the replacement school on the Campus Hills site, located at 301 Schuck's Road. Please find the final site study report attached.

At the business meeting on February 14, 2022; the BOE of Harford County approved a Balancing Enrollment plan for HCPS that included adding an elementary school to the HA project to increase elementary capacity within the County's growth envelope and help meet the needs related to expansion of Pre-Kindergarten and Special Education programs. Building a combined special education and elementary school facility would:

- assist with addressing current and future capacity issues within elementary schools.
- keep HCPS in line with the current county administration funding trends of completing one major capital project at a time.
- prevent the current major capital priorities from being deferred.
- provide HA students direct access to learning opportunities with their typical developing peers.
- potential lab school for current HCPS students aspiring to be teachers.

Due to the nature of the medically fragile conditions of the student's attending HA and the current site limitations, HCPS respectfully requests a waiver of the requirement to evaluate a renovation/addition option for the feasibility study for the Harford Academy Project. Please advise us if additional information is needed to evaluate this request.

Sincerely,

Christopher L. Morton
Supervisor of Facilities Management

cc: Mr. Sean W. Bulson, Ed.D., Superintendent of Schools, HCPS
Mr. Eric Davis, Chief of Administration, HCPS
Mr. Cornell S. Brown, Assistant Superintendent for Operations, HCPS
Ms. Patti Jo Beard, Executive Directive of Facilities Management, HCPS
Mr. Harry Miller, Assistant Supervisor of Planning & Construction, HCPS
Mr. Jaime Bridges, Regional Facilities Manager, IAC
Ms. Arabia Davis, Funding Program Manager, IAC
Ms. Eileen Gladd, P.E., Regional Facilities Manager, IAC

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section 5

preliminary design

Campus Hills Site Analysis
Civil Narrative
Site Program Requirements
Stakeholder Engagement
Visioning Process + Guiding Principles
Summary of Options
Option One: Bridge
Option Two: Loop
Option Three: Cluster

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Vicinity Map

Site Analysis

Site Analysis

N

Civil Narrative

Figure 1–SITE AREA AERIAL PHOTOGRAPH.png

1.1 Site Description

The existing Harford Academy is located at 100 Thomas Run Road in Bel Air, Maryland. The proposed school will be relocated to a site located at 119 Schucks Road in Bel Air, Maryland and combined with a proposed new elementary school. The 31.15± acre site is owned by the Harford County Board of Education (BOE) and is currently leased to a farmer to be used agriculturally. The site is located just south of the intersection of East Churchville Road (Maryland Route 22) and Schucks Road in central Harford County. Per recorded Maryland Real Property data, the site is Parcel 43 located on Tax Map 42 and is recorded among the land records of Harford County, Maryland Liber 8255 at Folio 281. The site is bounded by Schucks Regional Park to the south and east, Schucks Road to the west, and commercial developments to the north.

1.2 Site Circulation and Parking

On the southern side of the site, a 36 foot paved driveway serves as the main vehicular access point to the property from Schucks Road. This driveway is shared with the neighboring Schucks Regional Park via an Access and Sign Easement. There is also an existing 25 foot paved driveway that is shared with the commercial developments to the north via a Common Driveway Easement. This driveway could potentially serve as a secondary vehicular access point to the property; however, the existing Easement Agreement and Declaration of Covenants will require revision. Harford County Board of Education would need to involve an attorney to amend this agreement, which would require the adjoining property owners' consent. Harford County may require acceleration and deceleration lanes and/or a dedicated left turn lanes be provided in Schucks Road for any additional entrances added for access to the school property due to the increased traffic demands. Widening Schucks Road for a secondary entrance located along the common driveway would likely require the acquisition of a portion of one of the adjoining property owner's land and would likely also require the relocation of several existing utility poles.

Fire truck Access will be feasible for the site and reviewed with Harford County Fire Marshall's office early on in the design process to confirm requirements.

The design team will need to coordinate with the existing Harford Academy school staff to confirm what special site accommodations are required for the new Harford Academy in relation to site circulation, separate drop-off areas or designated play areas. Additional ADA spaces and site circulation will likely be required in addition to minimum requirements.

Civil Narrative

Adjacent to the site is the existing Schucks Regional Park. The existing park is equipped with multiple baseball/softball fields, multi-purpose play field areas, playgrounds, pavilion, Miracle League adaptive baseball field and audio/visual sensory stations along the parks circulation path. The student population of both the new Harford Academy and the new elementary school will benefit from having direct access to Schucks Regional Park. The Miracle Leagues adaptive baseball field was designed specifically to allow children and adults with disabilities the chance to play baseball on the specially designed rubberized fields. Access to the park could be provided via a pedestrian bridge crossing of Broad Run at the northwest corner of the existing park. A joint permit application through MDE and Army Corps of Engineers would be required for these improvements to receive approval during the design phase.

1.3 Site Traffic

Harford Academy School Existing Traffic Conditions

Harford Academy is located at 100 Thomas Run Road in the Bel Air section of Harford County. Specifically, the site is situated on the west side of the roadway, north of MD 22 (Churchville Road). The property features two points of access to Thomas Run Road. To the north, there is an inbound only movement to serve all vehicular and bus traffic. The southern access is situated approximately 400 ft north of Thomas Run Road and facilitates both inbound and outbound movements. There are also available connections to Harford Technical High School to the north and Oak Grove Baptist Church to the south. The single point of egress to Thomas Run Road currently operates under stop control. Figure 1 includes an aerial photograph depicting the current location of the site.

The current Harford Academy facility opened in 1971 with additions and renovations occurring in 1981. The HCPS website lists capacity as 210 with a 2020 enrollment of 136 students. Fifty-eight classroom teachers worked at the school as of 2019. Some of the existing signing and pavement markings have severely deteriorated and are no longer functional. Consideration should be given to providing minor short-term enhancements to signing and pavement markings to ensure safe traffic operations on site.

Harford Academy serves a unique population of students within Harford County. Grades Pre Kindergarten through 12th attend the school, and generally all students are provided bus transportation to the facility. Students attend from throughout Harford County. In addition, the faculty staff ratio to students is very low at this facility due to the needs of the students.

Harford Academy - Future Location

The purpose of this feasibility study is to review the potential relocation of Harford Academy to a parcel within Schucks Regional Park, which is situated on the east side of Schucks Road south of MD 22, approximately one-half mile south of the current facility. Additional photographs from the proposed site location can be found in Appendix B.

In addition to Harford Academy, a new Elementary School is being considered for the same site. It would feature a capacity of approximately 628 students.

Schucks Regional Park features one access point to Schucks Road, which is situated approximately 1,900 ft south of MD 22. The access point features a separate left turn lane in the southbound direction of Schucks Road. The site access approach facilitates separate left and right turn lanes. Currently, access is provided exclusively to Schucks Regional Park, which is owned by Harford County Department of Parks and Recreation.

Harford County owns and maintains Schucks Road. It is classified as a Minor Rural Collector extending from MD 22 southward for a distance of approximately 3.09 miles to MD 136. In the vicinity of this site, Schucks Road generally features one travel lane in each direction divided by a double yellow line. The posted speed limit is 30 mph. There are no existing pedestrian facilities along the length of Schucks Road.

Civil Narrative

Figure 3 contains a summary of the existing lane use at the Schucks Regional Park access at Schucks Road.

For the purpose of reviewing the feasibility of this site, turning movement counts were collected in May 2022 at the Schucks Road/Schucks Regional Park access. The AM and PM peak hour data is summarized in Figure 4. As expected, the AM volume into and out of the regional park is minimal. During the PM peak hour, the volumes are slightly higher. Details on the traffic volumes summarized in 15-minute intervals can be found in Appendix C.

Thru traffic along Schucks Road is relatively low during both peak periods, which is consistent with the roadway's classification.

Figure 3. Existing Lane Use and Traffic Control

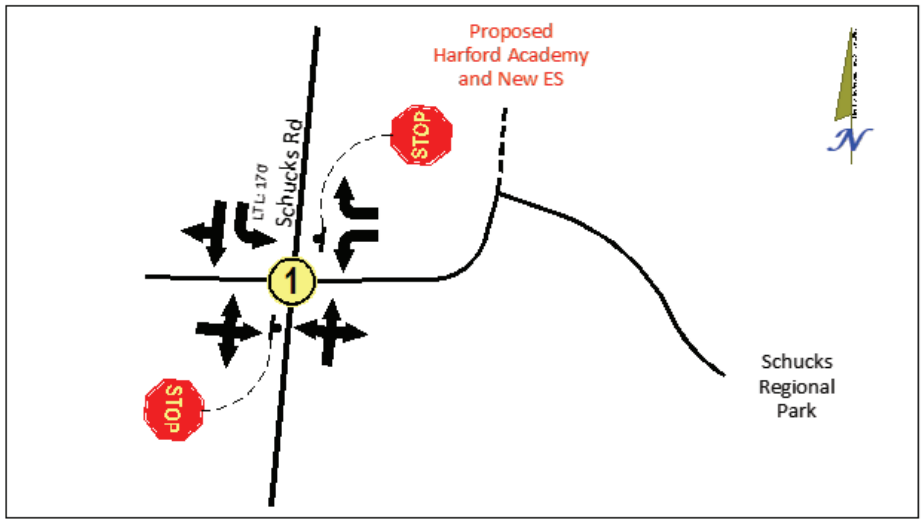
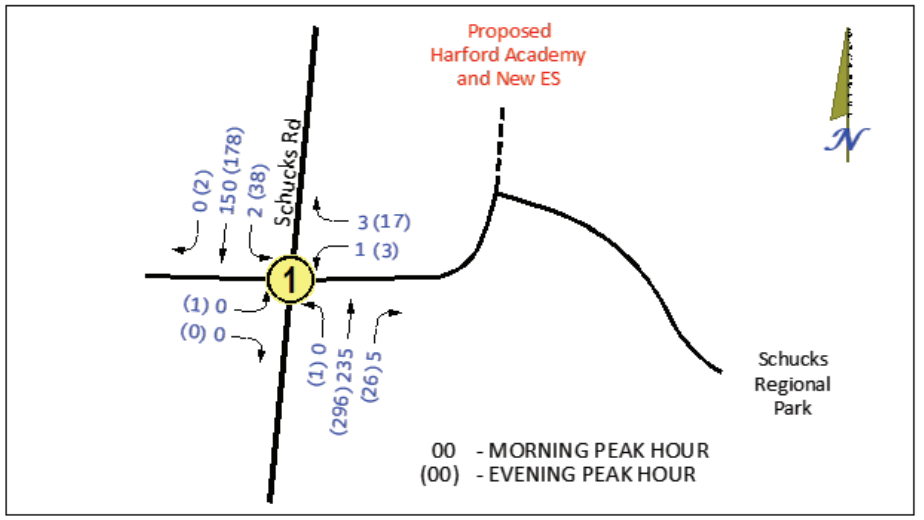


Figure 4. Existing Peak Hour Traffic Volumes



Civil Narrative

Schucks Road Planning

HarfordNEXT A Master Plan for the Next Generation was reviewed to determine if Harford County has any future plans for Schucks Road. The roadway is identified within HarfordNEXT as a Rural Minor Collector, as mentioned above. There is no further mention of the roadway within the plan, which indicates that no future widening or other projects are currently being contemplated by Harford County.

The Harford County Bicycle and Pedestrian Master Plan was also reviewed for the Schucks Road corridor. As shown in Figure 5, there are no proposed projects for bicycles or pedestrians along the Schucks Road corridor.

While the subject site does not have direct frontage to MD 22, the MDOT SHA Project Portal and MDOT Consolidated Transportation Plan (CTP) were both reviewed to determine if any projects are planned in the area. A review of both resources shows no current funded projects are planned or under construction for MD 22.

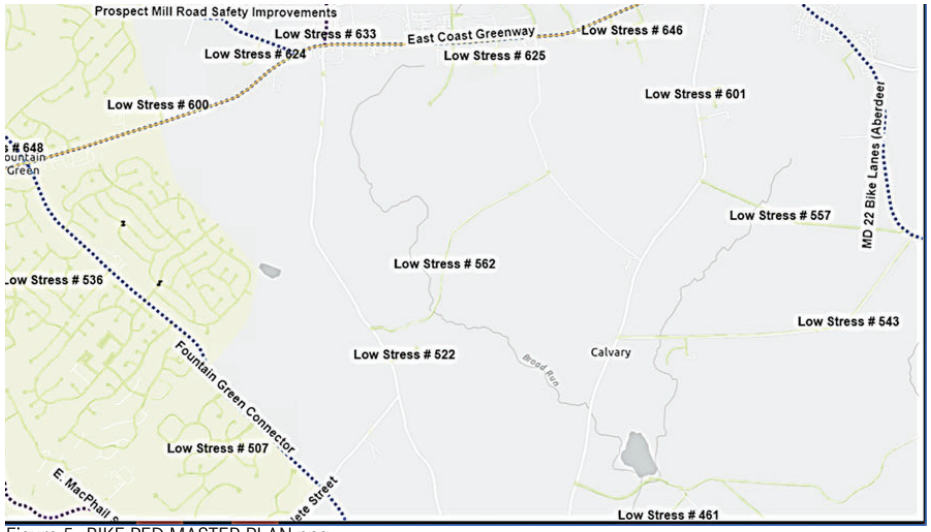


Figure 5–BIKE PED MASTER PLAN.png

Civil Narrative

Proposed Use

Figure 6 shows only one potential schematic sketch plan option of the potential site and is sufficient for a standard feasibility study traffic analysis. For the new Elementary School, Figure 6 shows a potential bus loop off of the access drive in magenta and a separate car drop off with direct access to Schucks Road. Due to the high volume of vehicle traffic during arrival and dismissal periods at the ES car drop off, police control or signalization will be required at the ES car drop off Schucks Road entrance. However, this would likely not be the case if the locations of the ES car drop off and the ES Bus drop off were interchanged. The proposed roundabout and queuing along the existing access drive would help alleviate stop control concerns for vehicular access to the site during peak hours. Therefore, the following narrative is based on the assumption and recommendation that the ES bus drop off be moved to a right in/ right out entrance along Schucks Road and the ES car drop off be moved so it is along the main access drive.

The main access point to the new school will be from the existing Schucks Regional Park, with the intention of facilitating a one way loop to the new elementary school during arrival and dismissal periods. Vehicular traffic would access the site to the east and exit to the west, providing additional space for queued vehicles picking up and dropping off children. A roundabout is proposed for the access point at Schucks Road.

Bus traffic to the site would utilize a right-in/right-out to Schucks Road, or an auxiliary driveway within the park access. An additional access point for Harford Academy vehicular traffic is proposed to the north along Schucks Road.

For the purpose of the Traffic Analysis several different options were considered. They include:

- Option 1 –Main Access, 2nd Full Access for Harford Academy and Right-in/Right-out for Buses
- Option 2 – Main Access Only and Right-in/Right-out for Buses

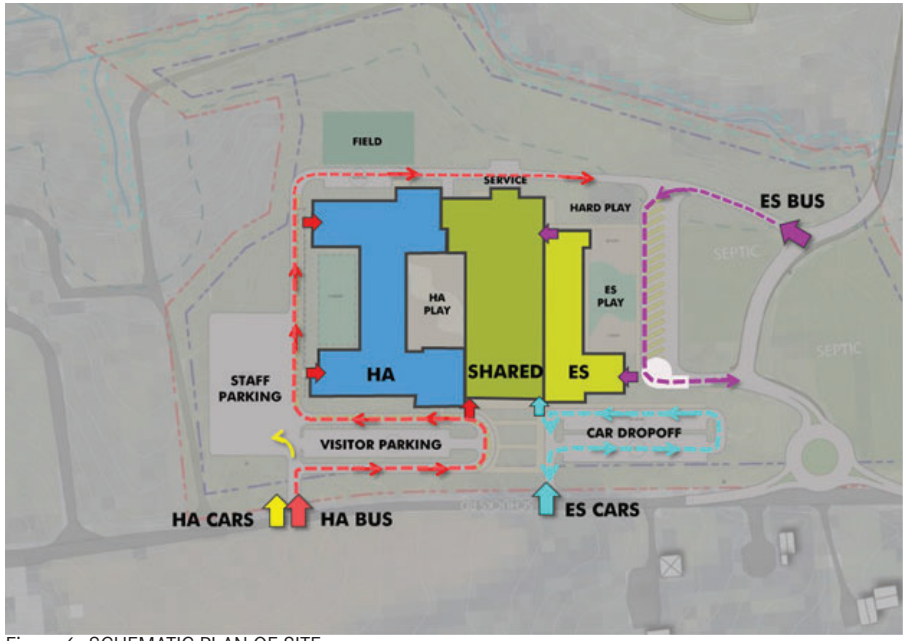


Figure 6–SCHEMATIC PLAN OF SITE.png

Civil Narrative

Future Traffic

Historic traffic volumes along Schucks Road from 2011 through 2020 were reviewed. The results are shown in Figure 7. The 2020 volume is a significant decrease from 2019 because of the COVID-19 pandemic. As a result, the volumes from 2020 were not used in the calculation of the average growth. The resulting average growth from 2011 to 2019 is 2.49%. To present a conservative estimate for future traffic, a 3% annual growth rate was applied for 3 years. Figure 8 shows the 2025 base peak hour traffic volumes.

As previously stated, the current population for Harford Academy is unique. Most students arrive by buses. In the future, 15 school buses are projected for the site. One hundred staff members will use the facility. To project AM and PM peak hour trips, the number of school buses and staff members was considered. Specifically, it is projected conservatively that 90% of the staff members will arrive during the peak period. In addition, 20% miscellaneous trips were also accounted for during the peak hour, which could account for deliveries, service trips, or parents arriving at the school. As shown in Table 1, a total of 156 AM and 156 PM trips are projected for the site.

To account for the new elementary school, the Institute of Transportation Engineers (ITE) Trip Generation (11th Edition) was utilized. Land Use Code 520 (Elementary School) provides a trip rate of 0.75 trips per student during the AM peak hour and 0.45 trips per student during the PM peak hour. This data, collected at similar sites throughout the country, incorporates the fact that bus transportation is available and carpools will occur. A total of 489 AM trips and 289 PM trips are projected.

Figure 7. Historical Traffic for Schucks Rd

Average Growth: 2.49%

Mathematical Growth: 2.4%

Year	ADT Volume	Vol. increase	% increase	Average %
2011	5,620			
2012	5,571	-49	-0.87%	-0.87%
2013	5,592	21	0.38%	-0.25%
2014	5,523	-69	-1.23%	-0.58%
2015	5,684	161	2.92%	0.30%
2016	5,805	121	2.13%	0.66%
2017	6,600	795	13.70%	2.84%
2018	6,541	-59	-0.89%	2.30%
2019	6,792	251	3.84%	2.49%
2020	5,642	-1,150	-16.93%	Not to Use

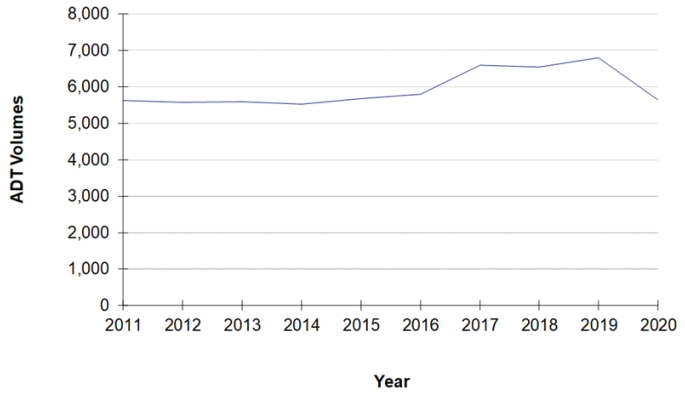
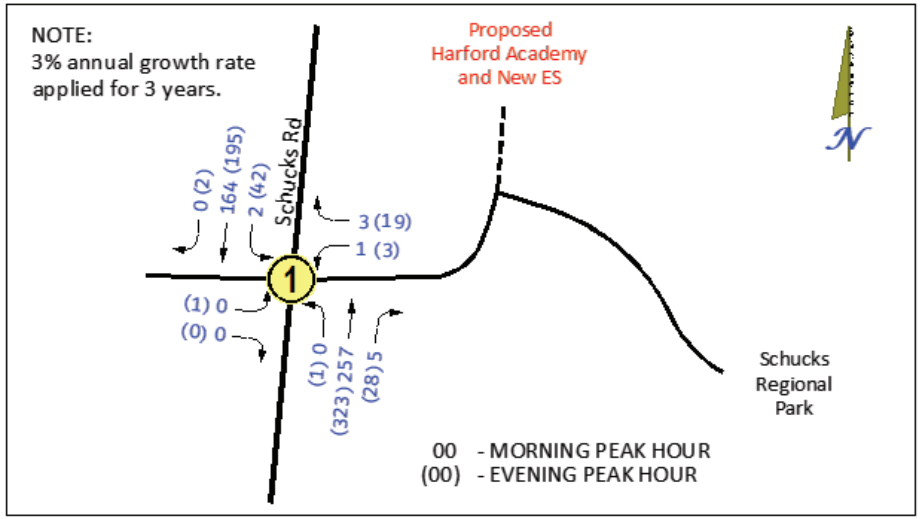


Figure 8. 2025 Base Peak Hour Traffic Volumes



Civil Narrative

The site trips were distributed and assigned to the road network as shown in Figures 9A to 9F below. Recall, Option 1 accounts for two full-movement access points to Schucks Road in addition to a right-in/right-out for buses. Option 2 eliminates the northern full-movement access.

Figure 9A details the projected trip assignment associated with Harford Academy – Option 1, whereas Figure 9B shows Harford Academy – Option 2's trip assignment. Similarly, the trip assignment for the new elementary school is detailed in Figures 9C and 9D for Options 1 and 2, respectively. Figures 9E and 9F provide the combined trip assignment for Options 1 and 2.

Table 1. Trip Generation for Proposed Schools

Total Trips	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Harford Academy (HA)						
15 School Buses						
Assuming All Buses in Use	15	15	30	15	15	30
100 Staff Members						
90% Come in Peak Hour	90	10	100	10	90	100
138 Students						
Assuming All Come by Buses	0	0	0	0	0	0
Miscellaneous Trips						
Assuming 20% More	21	5	26	5	21	26
Total Proposed HA Trips	**126**	**30**	**156**	**30**	**126**	**156**
New Elementary School (ES)						
Elementary School (students, ITE-520) - School Peak Hours				**NOTE: ITE Trip Generation 11th Edition**		
AM School Peak Hour Trips = 0.75 x Students				In/Out: 54/46		
PM School Peak Hour Trips = 0.45 x Students				In/Out: 46/54		
ITE Total ES Trips (ITE-520)				NOTE: ITE Trip Generation 11th Edition		
700 students	283	242	525	145	170	315
18 School Buses						
Assuming All Buses in Use	18	18	36	18	18	36
Non-Bus ES Trips	265	224	489	127	152	279

Civil Narrative

Figure 9A. Trip Assignment for proposed HA - Option 1

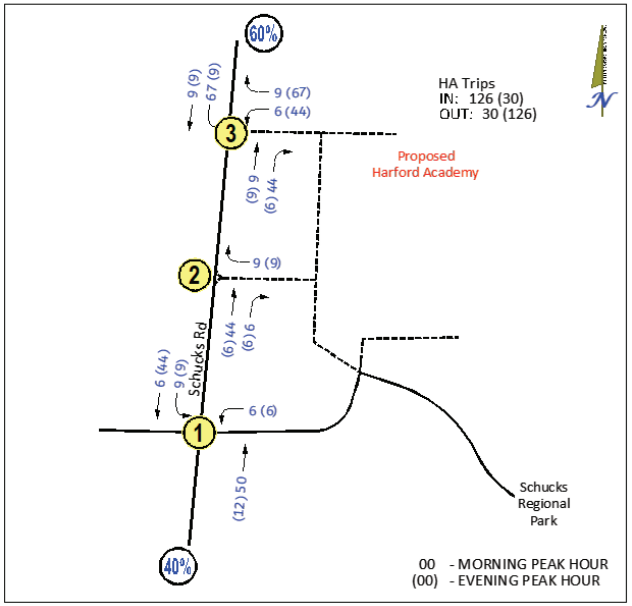


Figure 9B. Trip Assignment for proposed HA - Option 2

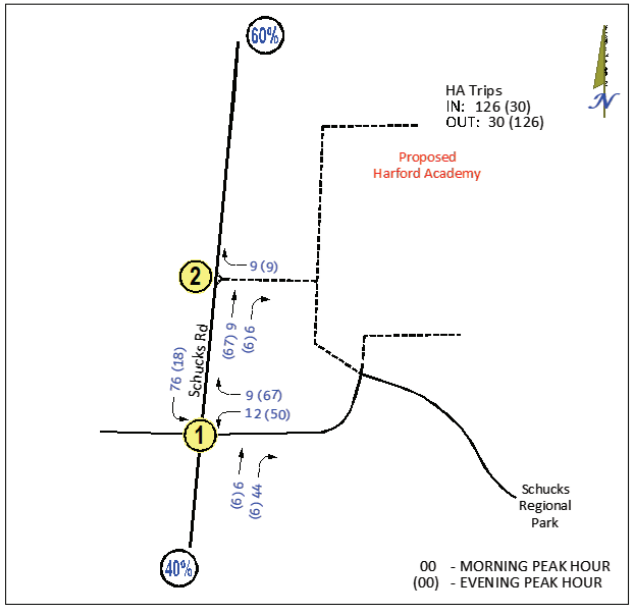


Figure 9C. Trip Assignment for proposed ES - Option 1

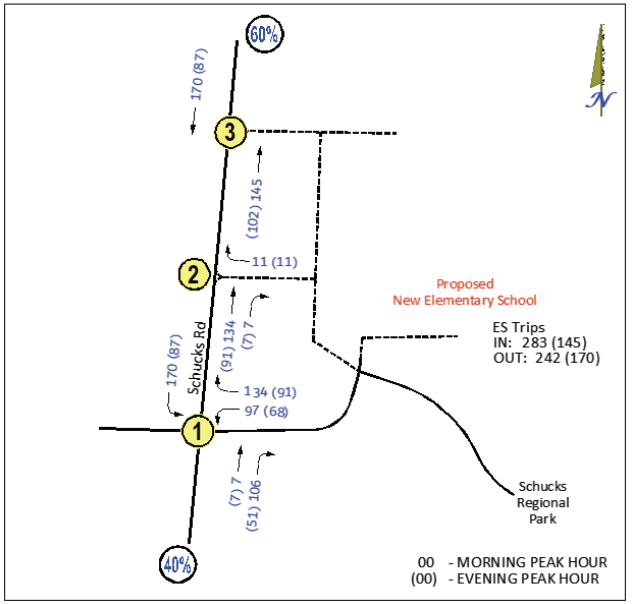


Figure 9D. Trip Assignment for proposed ES - Option 2

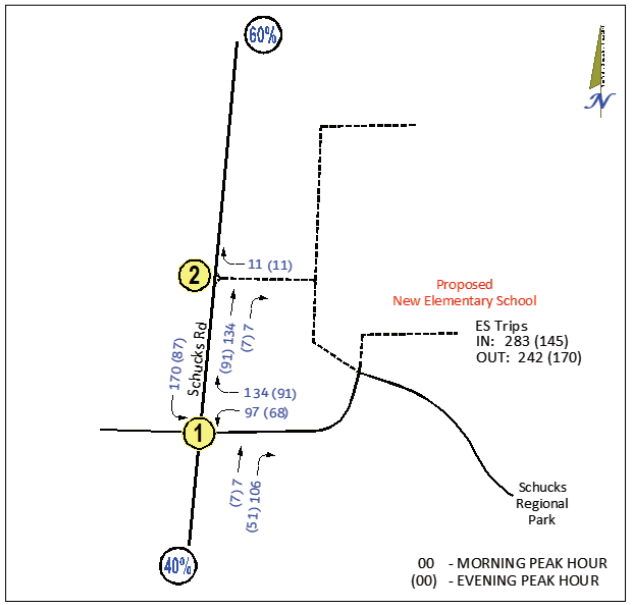


Figure 9E. Combined Trip Assignment for HA & ES - Option 1

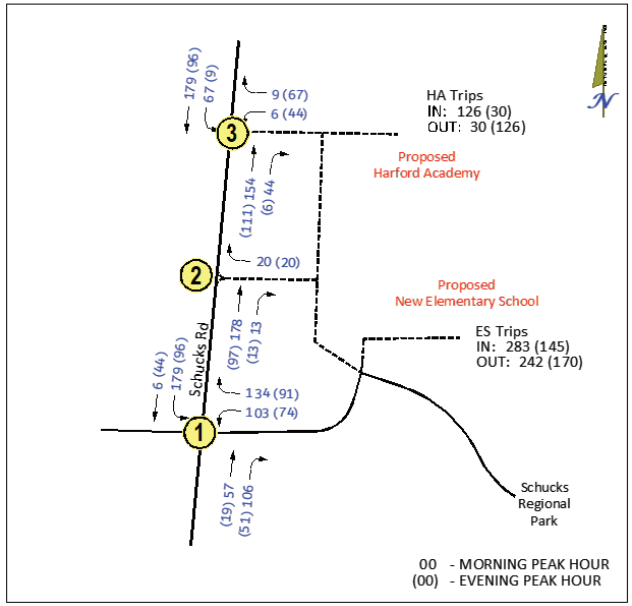
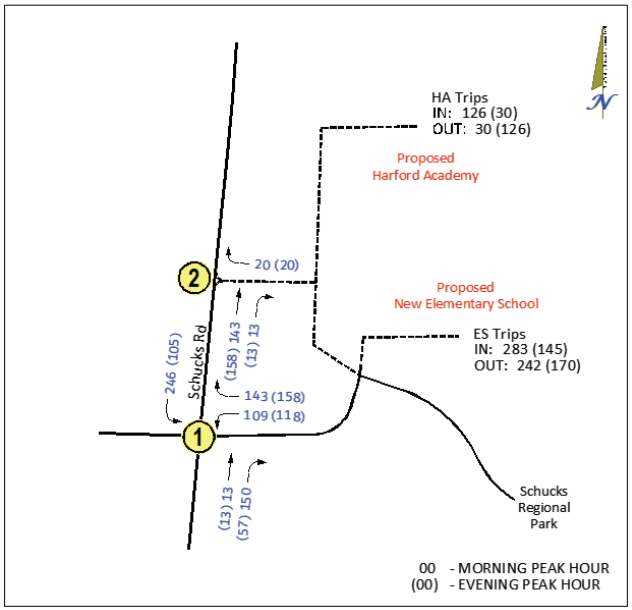


Figure 9F. Combined Trip Assignment for HA & ES - Option 2



Civil Narrative

Figure 10A. 2025 Total Peak Hour Traffic Volumes - Option 1

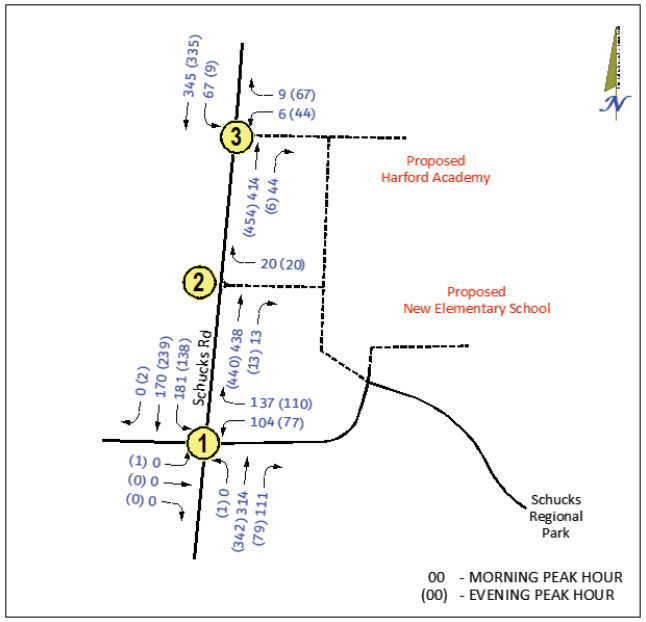
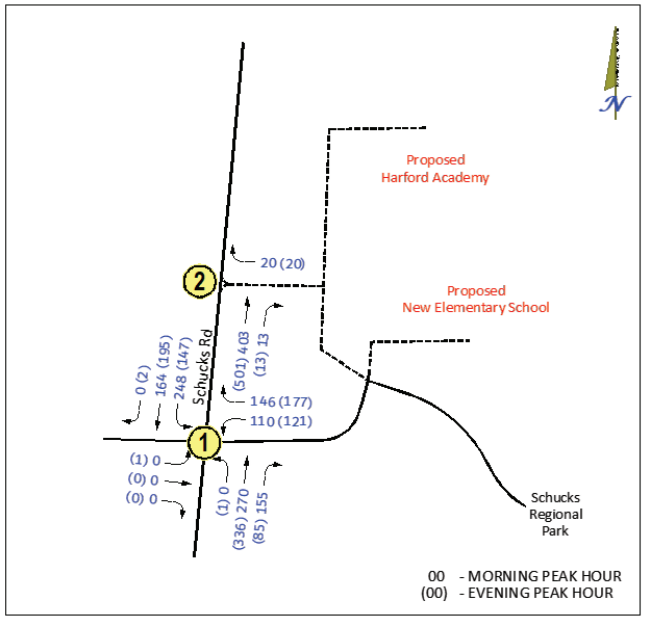


Figure 10B. 2025 Total Peak Hour Traffic Volumes - Option 2



Adding the site trips to the base peak hour traffic volumes results in the 2025 peak hour traffic volumes as shown in Figure 10A for Option 1 and Figure 10B for Option 2.

Intersection Capacity Analysis

Highway Capacity Manual (HCM) analysis was reviewed for the site access point for the existing condition and for all proposed access points for the total condition. The results are shown in Table 2. When considering the existing stop control, the site currently operates at Level of Service "B." Details on all analysis can be found in Appendix D.

It is important to recognize the stop control level of service is a report of the minor approach delay only. Since mainline Schucks Road would operate under free-flow conditions, no delay would be experienced.

For the total condition, both Option 1 and Option 2 were assessed using HCM. In both cases, acceptable levels of service were found at all intersections, with the exception of the main site access point. The addition of the site traffic results in unacceptable delay during both peak periods. To mitigate site impact, a roundabout was considered as a geometric improvement. Level of Service "A" could be achieved under both existing and total conditions using the HCM methodology. A Conceptual Plan detailing potential dimensions for the roundabout is included as Figure 11.

The introduction of a roundabout would be beneficial in that both safety and operations would be improved. Existing driveways on the west side of Schucks Road are shown to be modified to permit access to the roadway in advance of the roundabout which would maintain the ability of residents to turn left or right into and out of the driveway in the future.

The proposed north access for Harford Academy was reviewed with a southbound left turn lane along Schucks Road. A left turn lane is recommended to eliminate queuing and backing that could occur in the southbound direction as vehicles queue to enter the site. A lane shift may be required to accommodate the left turn lane and right-of-way should be investigated to ensure constructability.

Bus access via the proposed right-in/right-out does not have a significant impact on traffic operations. Levels of service at the bus access and other access locations are acceptable as described above with or without the access. If the bus access is constructed, sight distance must be evaluated to ensure adequate spacing from the roundabout.

Civil Narrative

Table 2. Results of Intersection Capacity Analysis

	AM PEAK HOUR	PM PEAK HOUR
2022 Existing		
1. Schucks Rd & Schucks Regional Park (Stop Control)	B/12.2	B/14.9
2025 Total Option 1 [1/]		
1. Schucks Rd & South Access (Stop Control)	F/76.8	E/48.6
Schucks Rd & South Access (Roundabout)	*A/8.7*	*A/7.9*
2. Schucks Rd & Bus Access (Stop Control)	B/11.3	B/11.4
3. Schucks Rd & North Access (Stop Control)	B/14.8	C/16.5
2025 Total Option 2 [2/]		
1. Schucks Rd & South Access (Stop Control)	F/172.1	F/78.8
Schucks Rd & South Access (Roundabout)	*A/10.0*	*A/8.8*
2. Schucks Rd & Bus Access (Stop Control)	B/11.0	B/12.0

NOTE:

1. Option 1 has 3 access points on Schucks Rd (south access, bus access and north access).

2. Option 2 has 2 access points on Schucks Rd (south access and bus access).

3. Reported are HCM LOS/worst movement delays in seconds for stop control and HCM LOS/Worst Approach Delays in Seconds for roundabout.

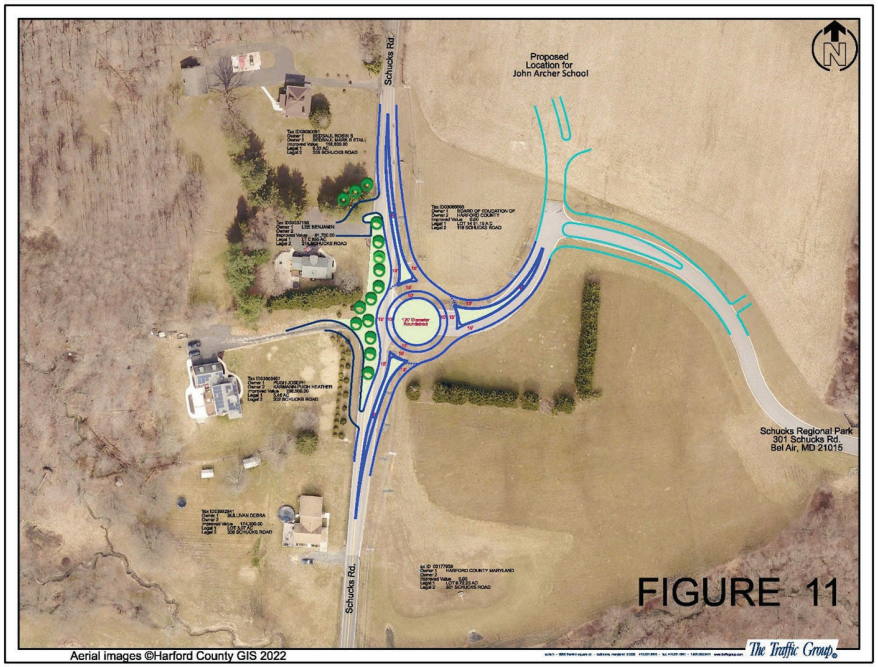


FIGURE 11

Summary and Conclusions

Traffic along Schucks Road is relatively light during both peak periods. Similarly, traffic accessing existing Schucks Regional Park is also minimal. The addition of Harford Academy and a new elementary school to this site would have minimal impact on traffic operations. The introduction of a roundabout is recommended to mitigate site impact and provide an acceptable level of service. A separate left turn lane is recommended if a northern access is pursued for Harford Academy.

Civil Narrative

1.4 Zoning Information and Permit Processing

The parcel is located in Harford County and is zoned AG, Agriculture.

Bulk Zoning Regulations	
Maximum Lot size	2 acres
Maximum Height	3 stories
Maximum lot width at building line	100 feet
Minimum setback from adjacent residential lot	50 feet
Minimum setbacks for principal structures:	
Front lot line	50 feet
Rear lot line	80 feet
Side lot lines	40 feet

Parking Requirements

- Vehicular Parking: 5 per classroom, plus 1 per 8 seats in assembly hall
- The maximum parking spaces permitted shall not exceed 130% of the minimum number of spaces required. Accessible parking space requirements will be determined from the Code of Maryland Regulations and the Americans with Disability Act Accessibility Guidelines based on the total parking provided. Additional accessible parking spaces may be required to meet the program requirements of the school due to the nature of the students in attendance at Harford Academy. The vehicular parking spaces required shown above are per the Harford County Zoning Standards for a high school to be more conservative, however, the elementary / middle school requirements may be more appropriate.
- Bicycle Parking: Bicycle parking is recommended for the project if desired by HCPS. It is recommended that thoughtful connections be made to Schucks Road Regional Park and adjacent properties to the extent practical. Bicycle parking spaces may also support LEED design criteria goals.

For school uses located within the AG district a Special Exception pursuant to Article IX of the Harford County Zoning Code is required; however, Harford County Public Schools appears exempt from this requirement and Board of Appeals approval may not be required.

Because this project is expected to generate more than 250 traffic trips per day, the below standard Harford County processes will be required in order to receive permits for construction:

- Community Input Meeting (CIM): Comments made by the public are not required to be addressed by the developer / design team
- Preliminary site plan sent to the Harford County Planning & Zoning to serve as official notice of the proposed project
- Traffic Impact Analysis (TIA): Any negative impact the proposed project has on existing intersections identified by Harford County Planning and Zoning must be identified and mitigated such that it meets industry standards and must be approved by traffic professionals in both local and state agencies. The initial concept traffic analysis performed for this feasibility study will help develop the TIA; however, the County will dictate specific requirements during the initial scoping meeting that will determine TIA scope.
- Stormwater Management and forestation plans must be reviewed and approved by the appropriate agencies
- Development Advisory Committee (DAC): DAC is comprised of county, state, federal, and utility agencies and will advise the director of planning for large-scale developments such as these. DAC will provide oral or written comments expressing the agency's recommendation or opinion of the development plan. The general public will also be allowed a time during the meeting to express input on the development plan. In order to apply for DAC review, the following items must be submitted to DAC at least four weeks prior to the DAC meeting, which is held on the first and third Wednesdays of each month:
  - DAC Site Plan
  - Landscape Plan / Lighting Plan / Buffer Plan and checklist
  - Traffic Impact Analysis (TIA)
  - Declaration of Intent (DOI)
  - Forest Conservation Plan (FCP)
  - Stormwater Management Concept Plan submitted to DPW for review
  - List of adjacent property owners
  - DPW Fee Authorization Letter
  - Appropriate fees

Civil Narrative

Additionally, a sign must be posted on the subject property at least two weeks prior to the DAC meeting providing the date, time, and location of the DAC meeting. Notice must also be published in two publications once a week for two consecutive weeks prior to the DAC meeting.

Following DAC plan approval, Harford County will issue a Preliminary Site Plan Approval letter outlining project specific requirements to be met in order to obtain permits. These approval items typically include stormwater management (SWM), erosion and sediment control (ESC), Landscape and photometric, adjacent public road and offsite road improvements (if required), Forest Conservation, Harford County Health Dept (HCHD), MDE/HCHD approval for well & septic design, MDE/Army Corps of Engineers for stream/wetland impacts etc. Once all of the written requirements in the site plan approval letter are met and final site plan approval is granted, building permits may be applied for and approved. Once building, grading and SWM permits are received, the contractor may begin construction.

1.5 Site Soils

According to information provided by the USDA-NRCS Web Soil Survey, five (5) soil types exist on the property including:

AdB – Aldino Silt Loam, (3-8% slopes), Moderate Erodibility

GcB2 – Glenelg Loam, (3-8% slopes), Moderate Erodibility

CcB2 – Chester Silt Loam (3-8% slopes), Moderate Erodibility

GcC – Glenelg Loam (8-15% slopes), Moderate Erodibility

WaA – Watchung Silt Loam (0-3% slopes), Severely Hydric

Hydrologic soil groups are rated “A” through “D” indicating a range of good to poor infiltration properties. “A” type soils have the best infiltration while soils rated as “D” have the worst. Hydrologic soil group classifications are important variables used when stormwater engineers determine the types of environmentally-sensitive design (ESD) alternatives that are practical for a given site. The majority of this site falls within the “B” and “C” hydrologic soil groups. This means the overall site has moderate to poor infiltration rates and any SWM practice will likely require underdrains pending a geotechnical study. Geotechnical borings are the best technique for documenting existing subsurface conditions because they more precisely identify soil types, infiltration rates, water table levels, and geologic anomalies. A thorough geotechnical study is recommended for any proposed development.

1.6 Site Topography

The Campus Hills property generally drains from northwest to southeast. The topography of the site is fairly consistently sloped towards the southeast at approximately 4%. The elevations range from approximately 337 to 388 feet above sea level. The high point of the site is located in the northwest corner of the site while the low point is located in the southeast corner of the site.

Due to the existing topography onsite, it is anticipated that the site will likely require large quantities of fill in order to construct the new development. Additionally, the proposed development will likely require several large retaining walls in order to meet the existing grades along the perimeter of the site while also providing the required programming requirements of the schools.

Civil Narrative

1.7 Utilities

Well + Septic

The site is located outside Harford County's Development Envelope, meaning public water and sewer utilities are not provided nearby. It is possible that Harford County may expand their development envelope in the future; so the proposed development should be designed to accommodate said future connections. However, expansion of the Development Envelope is not anticipated prior to the construction of this project; therefore, well and septic will be required for the proposed development.

The Harford County Public School System (HCPS) plans to improve the Site with a private non-transient non-community (NTNC) supply well and large groundwater discharge septic system serving the future Harford Academy and new Elementary School. This new combined school building will serve a mainstream student population known formerly as "Campus Hills Elementary School" and serve special needs students presently enrolled at Harford Academy.

Prior Evaluations and Permits

Initial plans to develop the Site as a residential subdivision date back to 2009, at which time the residential housing market no longer supported the developers plan and HCPS purchased the property. HCPS consultants performed evaluations to support developing the Site as "Campus Hills Elementary School," with about 628 mainstream students planned.

In response to the Groundwater Discharge Permit (GDP) application for Campus Hills ES, MDE issued GDP-17-DP-3666 around 2010 for a design flow of 11,500 gallons per day (GPD) and an average daily flow of 5,750 GPD. The GDP permit was met with resistance from the community and a public hearing was held in response, though the permit was issued shortly after. HCPS has maintained the discharge permit through two renewal cycles (See Appendix, Exhibit 2).

In response to an application for Campus Hills ES Groundwater Appropriation Permit (GAP), MDE also issued a Notice of Exemption, dated February 2009, reducing the requested allocation to 8,200 GPD month of maximum use (e.g. average daily use over highest water use month) and 4,600 GPD average daily flow. No permit or renewals were required for the groundwater allocation (See Appendix, Exhibit 3).

Several existing wells are located throughout the site; however, it is likely all of the existing wells will be required to be abandoned in order to make way for the proposed development. Harford Academy will require a therapy pool and showers to meet the school programming requirements, which will increase the demands for both water and sewer services. At least one and possibly two supply wells will be required to meet the estimated demands of the proposed school. A new GAP will be required for the proposed wells due to the increase in supply demand for the new combined school. It is likely that HCPS will need to own or control lands possessing sufficient groundwater recharge to support water demands per MDE policy.

The water system for this project is designated as a NTNC Water System meaning that it is a water system that regularly supplies water to at least 25 of the same people at least six months per year. Non-Transient Non-Community (NTNC) Water Systems must comply with current regulations:

- New impervious surfaces are prohibited within 100' of the new well(s).
- The well(s) and the 100' radii must fall within the limits of the property
- Pervious area buffers are required and their location(s) must be coordinated with Harford County Health Department
- Proposed well locations shall be reviewed and approved by Harford County Health Department

All proposed wells must be located according to the following setback requirements per Code of Maryland Regulations (COMAR) 26.04.04.04 or as a matter of MDE policy:

- 10 feet from property lines
- 15 feet from Right-of-Way
- 30 feet from building foundations
- 100 feet from all septic systems and septic reserve areas including those located on neighboring properties
- At least 200 feet from all septic systems and septic reserve areas if the well is located at a lower elevation than said septic systems and septic reserve areas

Civil Narrative

Similarly, all proposed septic systems and septic reserve areas must be located according to the following setback requirements:

- 15 feet from property lines, Rights-of-Way, and dedicated easements
- 25 feet from steep slopes at 25% grade change or higher
- 100 feet from wells or neighboring supply wells
- 100 feet from any stream or body of water
- Must be located outside of Forest Retention or Critical Areas
- The septic tank must be located at least 20 feet from house connection or permanent structures
- Drain fields and septic reserve areas must be located a minimum of 30 feet from all permanent structures

There are two existing septic field reserve areas associated with the active groundwater discharge permit. The septic reserve areas are located on either side of the main vehicular access drive to Schucks Regional Park. These septic reserves were designed and approved under a previous project to construct a new elementary school on this site known as Campus Hill Elementary School; however, this school was never constructed. These existing septic field reserves in combination with a proposed equalization septic tank and proposed waste water treatment plant will likely not be sufficient for the demand of the proposed school. It is highly likely additional septic field areas, water reuse and low flow or flow reducing plumbing fixtures will be required. However, the full extent of these requirements are pending further hydrogeological testing of the site. This testing is required during the wet weather season months, which is not during the time this feasibility study was conducted. It is recommended this wet weather season testing be performed as soon as possible during the 2023 hydrogeological wet season, typically during the first and second quarters of a given year. Additional soil testing spanning the wet season percolation testing period, typically February 1 through April 30 also may be required.

The wastewater/gray water reclamation/reuse solution would help reduce the MDE required septic field area onsite and maximize available site area for school programming needs. New and efficient low flow plumbing fixtures are required for this project, including sensor-based hand wash sink faucets if possible. Additional solutions for maximizing the available septic reserve areas is to incorporate drip irrigation and thereby increase redundant capacity.

The existing septic reserve areas must remain in place with minimal grading impacts. At a minimum, grading shall not impact the top two feet above the designed percolation layer. A force main will be required to pump the sanitary services from the building to the existing and proposed septic field areas. Similarly, if the owner elects to utilize the wastewater reuse option, a lift station will be required to pump treated wastewater back to the building for reuse.

It is recommended that the existing Harford Academy install daily flow data monitoring equipment to help capture more accurate peak flow data from the existing school. Obtaining this daily flow data may help reduce septic reserve area requirements as it will show more accurate daily demands for the existing school. The data provided for review for this study had inconsistent information that would be clarified with new information. Additionally, it is recommended that the proposed Harford Academy and new school include daily monitoring flow data equipment so HCPS can proactively identify leaks or maintenance issues.

An equalization septic tank and wastewater treatment plant will also be required to treat wastewater before it is discharged to septic field areas. These will require a lift station and force main to pump to all septic field and septic reserve areas. Additional septic reserve areas will be required as a redundant measure in the event that the septic areas malfunction at some point during the lifespan of the building. Redundant areas using drip irrigation will need to set-aside space for 30 days of wastewater storage (e.g. elevated tower plan placeholder). These additional areas will need to be incorporated into the site during the design period. Additionally, at least two or three new discharge permit monitoring wells will be required. An underground fire system suppression tank will also be required to meet fire service requirements for the site.

Overall Well + Septic Findings + Summary

The Site is most limited by hydrologic balance/Darcy's Laws and groundwater mounding (septic discharge) and secondarily limited by the groundwater recharge capacity (supply wells). Please refer to Appendix for the complete detailed analysis and additional information. The hydrologic balance/Darcy's Law and groundwater mounding may be addressed by revising analyses using new site-specific hydrogeologic input parameters via onsite testing, which may then support feasibility to increase the septic capacity. These input parameters would be obtained primarily during wet season hydrogeological testing of the site (via monitoring wells) and secondarily during wet season percolation testing of soils (via excavated test pits) during the project's design phase as previously mentioned.

Civil Narrative

Overall, maximum occupant population goals of approximately 950 for the combined schools does not appear to be supported under the current MDE groundwater discharge permit or by the site constraints. It is highly probable expansion of the current design or reduction in maximum occupant population goals will be required in order for well and septic design to be feasible on this site. However, this cannot be confirmed without the following information.

- Septic Discharge:
    - Further hydrogeological evaluation/soil percolation testing during the wet season (first and second quarter of a given year)
    - Adjusted design flow factors from daily empirical data obtained from existing Harford Academy
    - Meeting with HCHD and MDE to confirm design flow factors and site specific requirements
- Well Supply:
    - Final acres of proposed impervious surfaces
    - Verification of water use and demand
    - Applying for a new MDE groundwater appropriation permit to confirm water demand and site specific requirements

Current available data suggests that the following solutions, at a minimum, are required for the project's proposed well and septic systems.

- Septic
    - Increased septic field areas. Including areas beneath grass play areas where feasible and use of drip irrigation for redundant capacity
    - Implement wastewater reuse methods
    - Use flow equalization septic tank and wastewater treatment
    - Propose low flow and sensor-based plumbing fixtures
    - Educate facility staff on best management practices for septic system and wastewater treatment system maintenance. Some examples below:
    - Handling and use of cleaning and resin chemicals
    - Monitoring daily flows to assess leaks to fix promptly
    - Incorporate discharge of pool backwash water into the stormwater management design or permit discharge separately from the septic
    - Contract a certified wastewater treatment plant operator
- Well
    - Drill new well(s) and demonstrate via testing they have sufficient capacity and water quality
    - Acquire recharge easements from property owners within the same watershed. This process will require BOE land use attorney involvement for recording/ establishing the necessary Deed and covenant restrictions against future development.
    - Contract a certified water treatment plant operator

Storm Drain

Other than at the property entrance and the Broad Run culvert, there is currently no proposed storm drainage systems located onsite. The proposed development will include storm drains necessary for suitable outfalls to onsite SWM facilities and ultimate outfalls to Broad Run.

Gas & Electric

A permanent Drainage and Utility Easement exists along Schucks Road on either side of the existing primary vehicular access drive and along the north side of that drive. Overhead electric lines, utility poles, and telecommunications services exist adjacent to the site along Schucks Road. Existing utilities may need to be relocated or upgraded depending on the proposed layout of the site. Additionally, some low hanging wires may require relocation for construction purposes. BGE will be coordinated with during design to confirm location of proposed power service to the new building.

BGE will also confirm location and extents of proposed gas service if required because there is not an existing gas service to the project site.

Civil Narrative

1.8 Stormwater Management (SWM)

The proposed development of this site will require both quality and quantity management in order to meet the current stormwater management regulations adopted by the State of Maryland in 2009. There are existing SWM facilities onsite that were provided to treat the SWM requirements for the Schucks Regional Park development which was designed and approved in 2011, which means that these existing facilities were likely designed to meet the current SWM regulations. There are three existing grass swales that are located along the existing driveway entrance to Schucks Regional Park and along Schucks Road on either side of the entrance. These three grass swales along with additional bypass area drain to an existing quantity pond located in the southwest corner of the site. This quantity pond collects drainage from approximately six acres of the site including a portion of Schucks Road. The grass swales provide a portion of the quality management that was required for the Schucks Regional Park development. Similarly, the quantity pond provides the quantity management that was required for this particular drainage area of the Schucks Regional Park development. These grass swales will likely be required to be relocated to accommodate the proposed roundabout. If these facilities cannot be relocated and instead require removal for the proposed development, then additional treatment will need to be provided elsewhere onsite in order to maintain the quality credit that was provided within those grass swales.

The entirety of the site drains to the Bush River watershed and drains to one Point of Investigation (POI) located at the southeast corner of the site. Environmental Site Design (ESD) practices must be implemented to the maximum extent practicable (MEP) to provide sufficient water quality and recharge provisions. This ESD methodology encourages the use of small-scale stormwater practices and nonstructural techniques, conserving natural drainage patterns, and minimizing impacts of land development on water resources. Micro-scale practices will be provided as necessary to meet water quality requirements for the proposed development. Management of the 100-year storm event is not required in the Bush River watershed. The site is also not located in a Tier II watershed; therefore, the additional review processes and erosion and sediment control measures necessary for Tier II watersheds are not required for this site.

SWM will be provided onsite to comply with the “Stormwater Management Act of 2007” (Act) and the Maryland Stormwater Management Guidelines for State and Federal Projects, February 2015.

The SWM design must include the following aspects:

- Water quality control (WQv) to limit pollutants in stormwater runoff. Impervious surfaces located within the project site will require treatment
- Groundwater recharge volume to approximate existing hydrologic conditions
- Channel Protection volume storage to prevent deterioration of downstream channels and erosion
- Manage the ten-year peak discharge to pre-developed conditions

All stormwater management practices must be located a minimum of 25 feet from any existing septic areas and a minimum of 30 feet from any supply wells. Additionally, infiltration facilities must be located a minimum of 100 feet from supply wells. In addition to the existing septic fields located on site there is an existing septic field in close proximity to the site on the neighboring property to the north.

In order to meet the minimum SWM quality and quantity requirements for the site, at least 25 micro-scale quality management facilities, green roof, at least two large above or underground quantity management storage devices, and at least two or three large combination quality and quantity pond facilities. The micro-scale facilities provided may include proprietary SWM practices, which require a smaller footprint, but cost significantly more than standard practices. These practices may be necessary in areas where there is limited available site area or site constraints.

1.9 Floodplains, Wetlands, and Waterways

Per FEMA FIRM map 24025C0166E, there are no 100-year floodplains located on the site. There is an existing perennial stream that runs along the property line on the northeastern side of the site, which drains into the main branch of Broad Run along the property line on the southeastern side of the site. Wetlands also exist along these streams. ADA Pedestrian bridges across these streams may be desired to provide pedestrian access to the adjacent Schucks Regional Park and, if so, a floodplain study will likely be required to prove that the bridge and culvert design is sufficient for the 100-year flood elevation levels. Disturbance within stream and wetland areas or buffers will require a joint permit with MDE and the Army Corps of Engineers prior to receive grading and SWM permits.

Civil Narrative

1.10 Landscape, Trees, and Forest Conservation

The existing site is currently used agriculturally as a farm field and subsequently there are few trees located on the site; however, there are wooded areas and forest buffers located along eastern property line adjacent to the stream beds. Mitigation will be required for any impact within the critical root zone of a specimen tree, which is defined by a tree with a diameter at breast height equal to or larger than 30 inches. During design, the design team will need to determine if there are any rare, threatened, or endangered species located on this site per the Maryland Natural Heritage Program report and list appropriate measures that will need to be taken if there are these species onsite here. The proposed development will require a Forest Stand Delineation Plan, Forest Conservation Plan, and an Environmental Impact Assessment Report to be approved by Harford County.

Proposed plantings will be provided to match the existing conditions and those native to the area. A landscape plan will be provided and will meet the current requirements for Harford County for planting counts and screening requirements. Similarly, SWM facilities will have a separate planting plan reviewed and approved by Harford County. In general, plant material will be selected and arranged to augment adjacent native ecosystems and provide aesthetic complement to the building and surrounding campus while maintaining clear open views throughout the campus for security. The design team recommends utilization of plant material to complement education programming such as ecology, pollination, and stormwater management.

1.11 Play Structures / Athletic Fields / Athletic Courts

The proposed school programming will require several play structures, athletic fields, and hard surface athletic courts. A playground consultant should be engaged early in design to ensure that the play structures proposed for this project will be inclusive of all the students who will use them. In order to accommodate the needs of the student population of this school, the play areas may require additional space than that of a typical play area at an ordinary school and it may be necessary to provide fencing of approximately six feet in height around these play areas to ensure the safety of the students.

1.12 Site Security

Site lighting and security cameras are primary security considerations. It is recommended that site lighting and visibly mounted security cameras are provided throughout the site to increase visibility and site security. The design team should coordinate with HCPS during the design phase to determine what additional site security measures will be required for the new Harford Academy.

1.13 Site Signage

There is an existing wooden double post sign for Schucks Regional Park along Schucks Road near the main driveway entrance. This sign will likely need to be removed and relocated or replaced to accommodate the proposed development. There are also several existing signs pointing to existing wells located throughout the site. Some of these signs may need to be removed for the proposed development; however, these signs should remain in place or be replaced as part of this project for any existing wells to remain. Additional signage will be required along Schucks Road to direct traffic towards the school and park entrances. Wayfinding signage will be necessary to inform drivers of the directions of the school and the park once they enter the site. Signage designating the handicapped accessible routes will also be required. Directional wayfinding signage will also be required to direct traffic to separate new Elementary School areas and separate Harford Academy site areas.

Civil Narrative

1.14 Proposed Site Concepts

Option 1: Bridge

The Bridge option features three separate entrances to the site, the first via the proposed roundabout located at the existing entrance to Schucks Regional Park and two additional entrances located along Schucks Road. The first entrance provides access to the proposed bus parking lot for the elementary school, to Schucks Regional Park, and to the access drive that wraps around the east side of the building to connect the other parking lots on site as well as the service area located east of the proposed building. The second entrance is located on Schucks Road and enters directly into a car drop-off loop and parking lot primarily for the elementary school students and their families. The third entrance is also located along Schucks Road and provides access to the proposed bus loop for Harford Academy, visitor and staff parking lots, and the access drive that wraps around the east side of the building. We highly recommend moving bus traffic to the second entrance and having the primary access for students, visitors and their families be at the first entrance noted with the roundabout. Otherwise, significant additional traffic control measures or signalization will likely be required along Schucks road.

This option also features a courtyard within the building to provide a safe play area for Harford Academy students, as well as additional hard and soft surface play areas located on the south side of the building for the elementary school students. In addition to these play areas, a multi-purpose athletic field will be provided on the east side of the building and a garden area will be provided north of the school for outdoor educational purposes.

Option 2: Loop

The Loop option features two separate entrances to the site. The first entrance is in the same location as the bridge option via the proposed roundabout and provides access to a car drop-off and parking lot as well as the bus loop and parking lot serving the elementary school. This entrance also provides access to Schucks Regional Park and an access drive that wraps around the east side of the building. The second entrance to the site is located on the north side of the site from Schucks Road and provides access to the Harford Academy bus drop-off loop, the access drive around the building, and visitor and staff parking lots.

Similar to the Bridge option the Loop option also features a courtyard within the building to provide a safe play area for Harford Academy students and hard and soft surface play areas and a multi-purpose athletic field all located around the building for the elementary school students. There is also a small area within the courtyard dedicated to a garden area.

Option 3: Cluster

The Cluster option features three separate entrances to the site. Similar to the other two options, the first entrance is via the proposed roundabout. This entrance provides access to the car drop-off and parking area and to Schucks Regional Park. The second entrance is located along Schucks Road and provides access to the bus drop-off loop for Harford Academy and small staff parking lot. This bus drop-off also connects to the third entrance which is located further north along Schucks Road. The third entrance provides access to the bus parking lot for the elementary school and the service area. This option does not have the access drive that wraps around the building that the other two options provide due to site grading constraints.

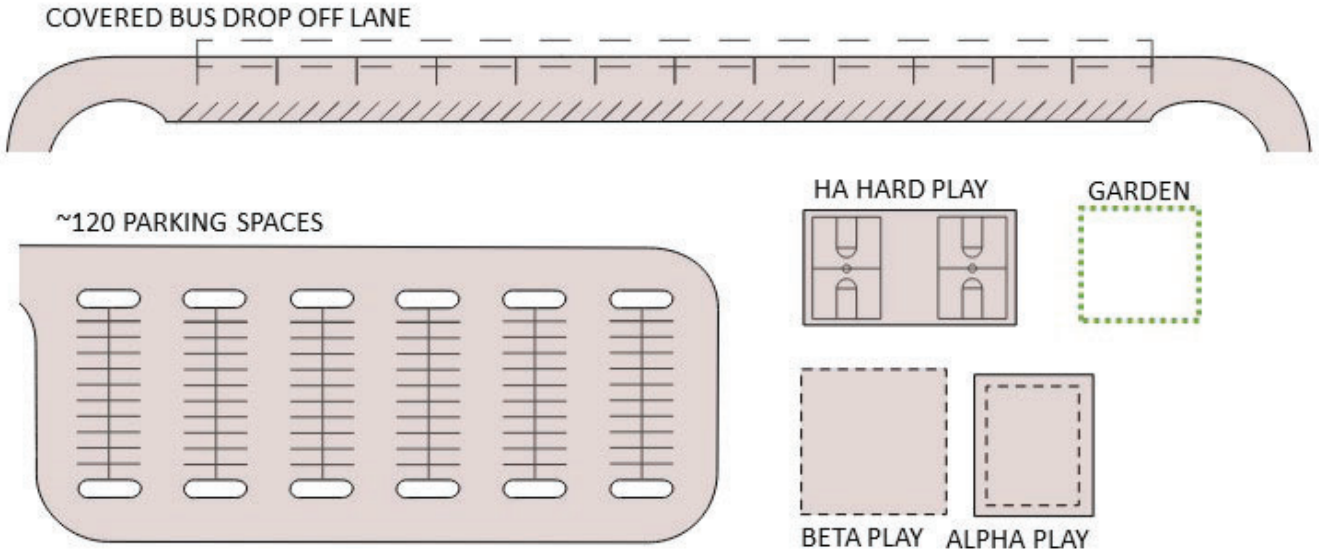
The Harford Academy play areas for this option are located within two separate courtyard areas, however, these courtyards are not completely enclosed within the building and are open to the site on one side. Fences would likely be required along this open side to ensure the safety of the students. This option does, however, feature a fully enclosed courtyard to be shared between Harford Academy and the elementary school. This courtyard would include a garden area for outdoor learning. Similar to the other two options, this option also features a multi-purpose athletic field and hard and soft surface play areas for the elementary school students located around the building.

The Harford Academy play areas closest to the Schucks road are a concern for maintaining positive drainage away from the proposed building during storm events. Should this option be selected, careful attention during design to maintain overland drainage flow away from the proposed building is critical. If adequate overland flow cannot be attained, then it is recommended the building footprint and site design be revised to accommodate the site constraints.

Site Program Requirements

Harford Academy

- 18 stacked busses
- 120 Parking Spaces
- Alpha Playground
- Beta Playground
- Garden/Green Space
- 8,500 sf Hard Surface Play

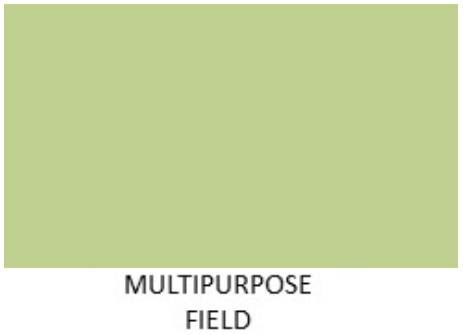


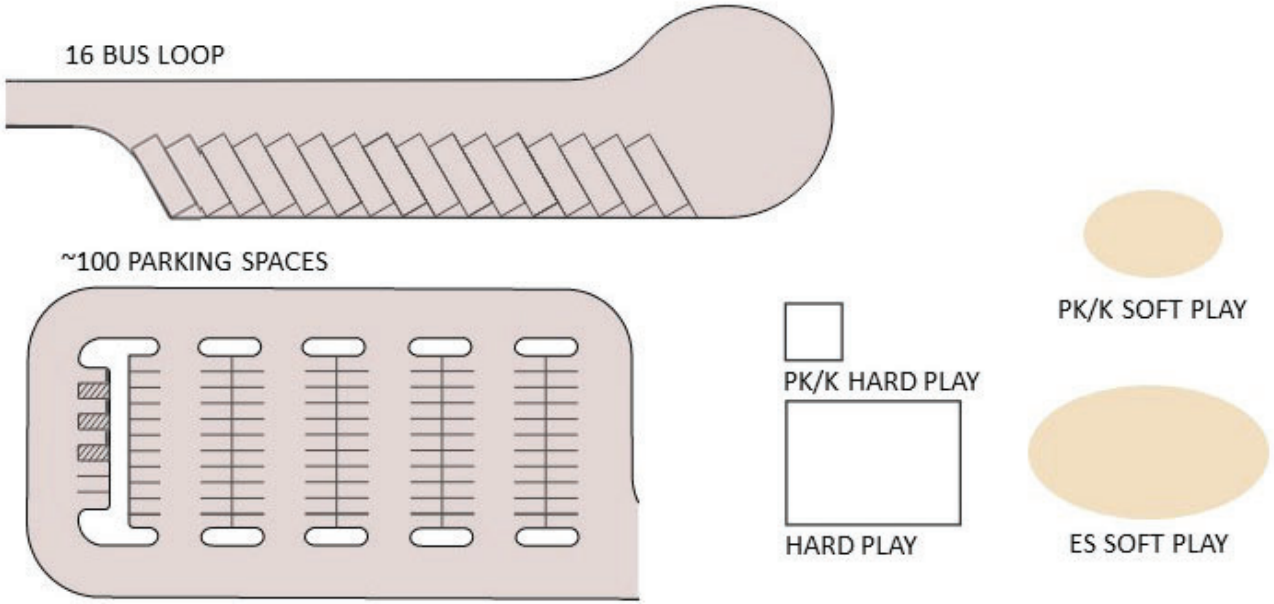
Elementary School

- 16 buses
- 100 Parking Spaces
- PK-K Play Area
- Upper Grades?
- Multi-purpose field
- 1,000 sf K Hard Surface Play
- 7,000 sf Hard Surface Play

Potential Shared Use

- Parking
- Fields





Stakeholder Engagement

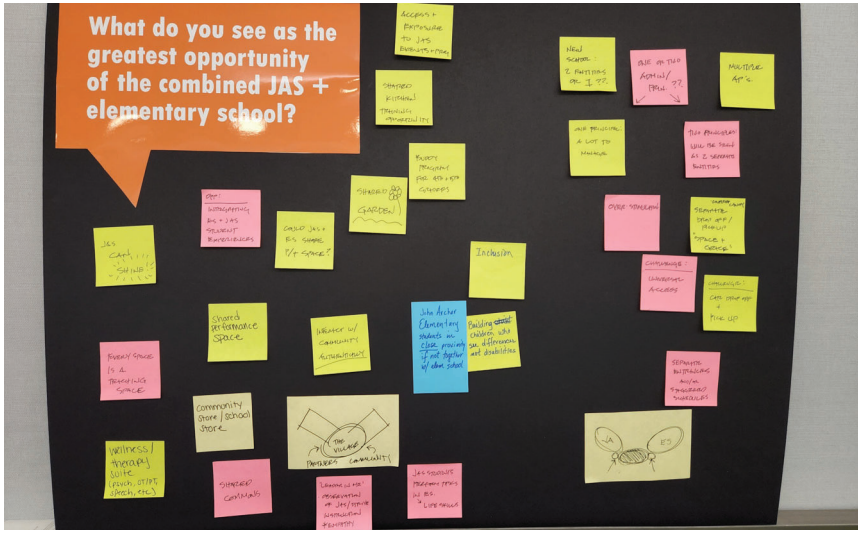
Visioning Process

At the start of the feasibility study, an engagement process was designed, in collaboration with HCPS, to fully harness the energy and vision for the project. Activities such as open visioning sessions, stakeholder engagement workshops, and existing and benchmark facility tours were held to inspire and goal-set for the new facility. Online surveys and visioning boards were also created to encourage participation outside of traditional meeting times, which allowed heightened engagement from the community.

Each of these activities informed project understanding and a series of guiding principles to shape the program, site, and building approach for each option. Multiple stakeholders were included throughout the process to continue to develop and refine priorities and spatial requirements. We have included particular stakeholder feedback to each design option for review, in addition to design team evaluation.

Partnership Exploration

Beyond programmatic elements, as part of the process for the design of the new facility, an ongoing study has been undertaken to seek out strategic connections within the local and regional community to amplify the impact of this new, state-of-the-art facility. Meaningful partnerships have been sought out and evaluated through programmatic and operational lenses - including recreation, healthcare, education, and social services. This study will continue through design to engage the community to maximize resources and promote inclusion for all stakeholders.



Existing Facility Tour
Bel Air, MD

Existing Facility Tour
Bel Air, MD

Rock Creek School Tour
Walkersville, MD

Guiding Principles

Learning Happens Everywhere.

"Every space is a learning space. Every space."
Encourage Independence
Integrate Lab School + Observation

Spaces Where Students Belong

Shared Experience, Shared Spaces
Inclusion + Equity
Universal Access + Barrier Free

Quality of Environment

Connection to Nature + Daylighting
Spaces make students feel like they matter
Inspiring and Energetic
Whole Child Wellness

Building a Support Network

Sharing Resources
Parent + Community Support
Professional Development / Retention
"Front Door" to Special Education Services

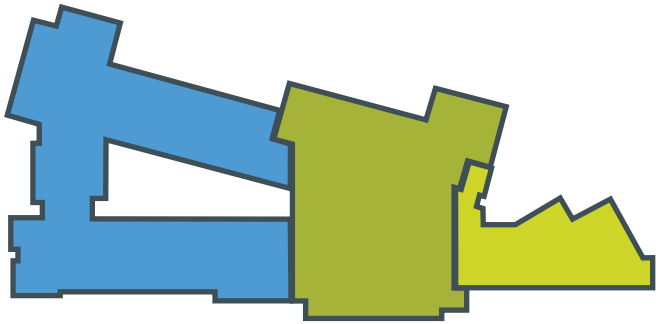
Summary of Options

HARFORD ACADEMY (HA)
SHARED PROGRAM
ELEMENTARY SCHOOL (ES)

Option 1
"Bridge"

- All shared spaces, and program-specific specialty spaces which could potentially be shared, are centralized in plan to maximize inclusion opportunities.

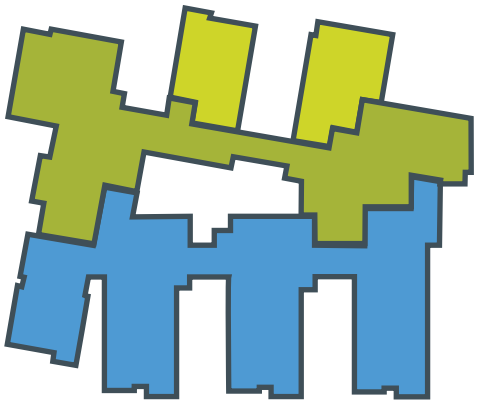
Details	
Square Footage	202,000 gsf
Total Estimated Project Cost	$123,050,137
40-year Life Cycle Cost	$289,696,148



Option 2
"Loop"

- Main shared spaces are centralized in plan to maximize inclusion opportunities.
- Program-specific specialty spaces are separated, located within Elementary and Harford Academy academic zones.

Details	
Square Footage	196,000 gsf
Total Estimated Project Cost	$118,434,136
40-year Life Cycle Cost	$279,366,053



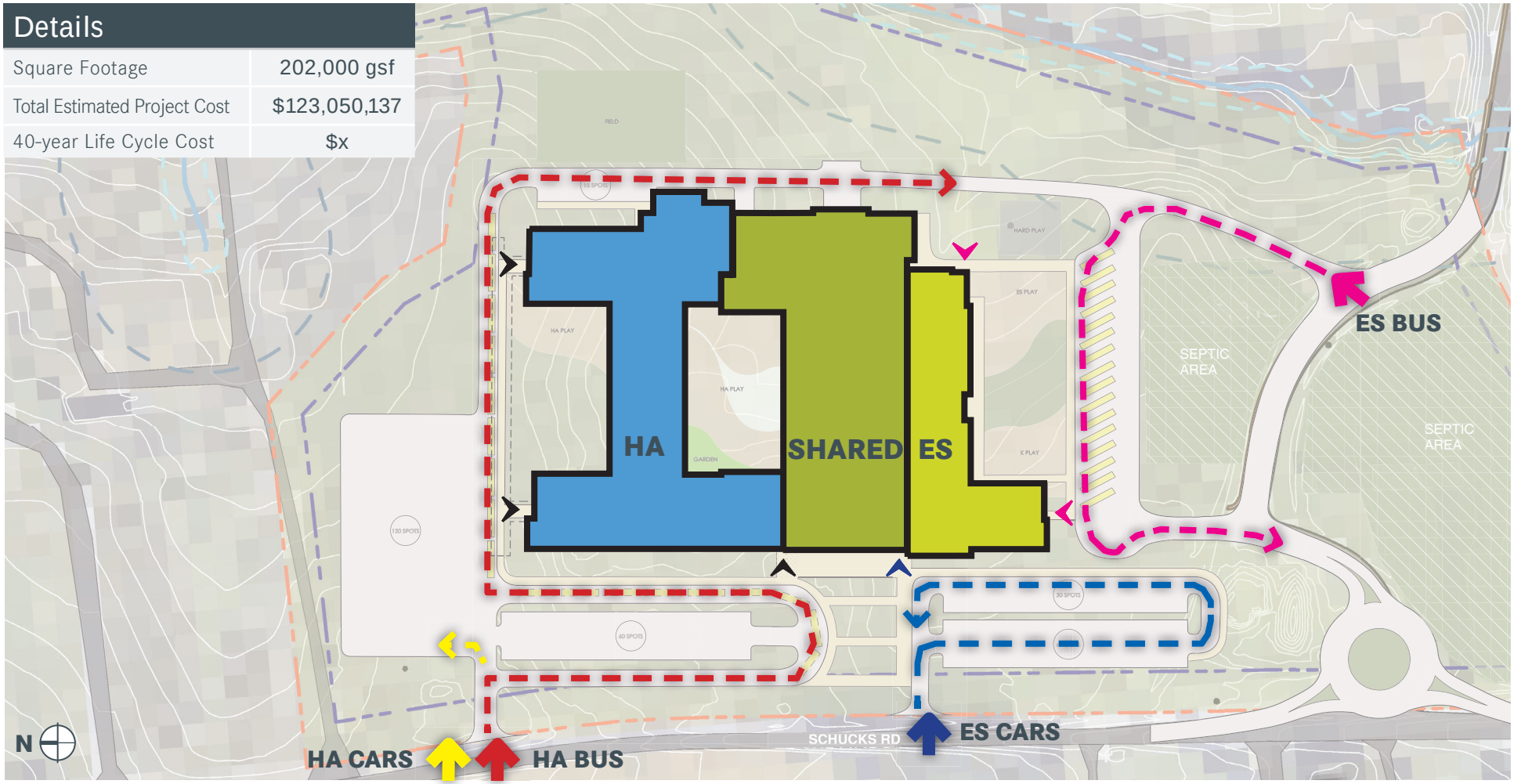
Option 3
"Cluster"

- Main shared spaces are centralized in plan to maximize inclusion opportunities.
- Program-specific specialty spaces are separated, located within Elementary and Harford Academy academic zones.
- Cluster organization creates smaller learning communities within Elementary and Harford Academy academic zones.

Details	
Square Footage	201,000 gsf
Total Estimated Project Cost	$124,262,749
40-year Life Cycle Cost	$292,245,192

Option 1
"Bridge"

Details	
Square Footage	202,000 gsf
Total Estimated Project Cost	$123,050,137
40-year Life Cycle Cost	$x



Zoning Approach

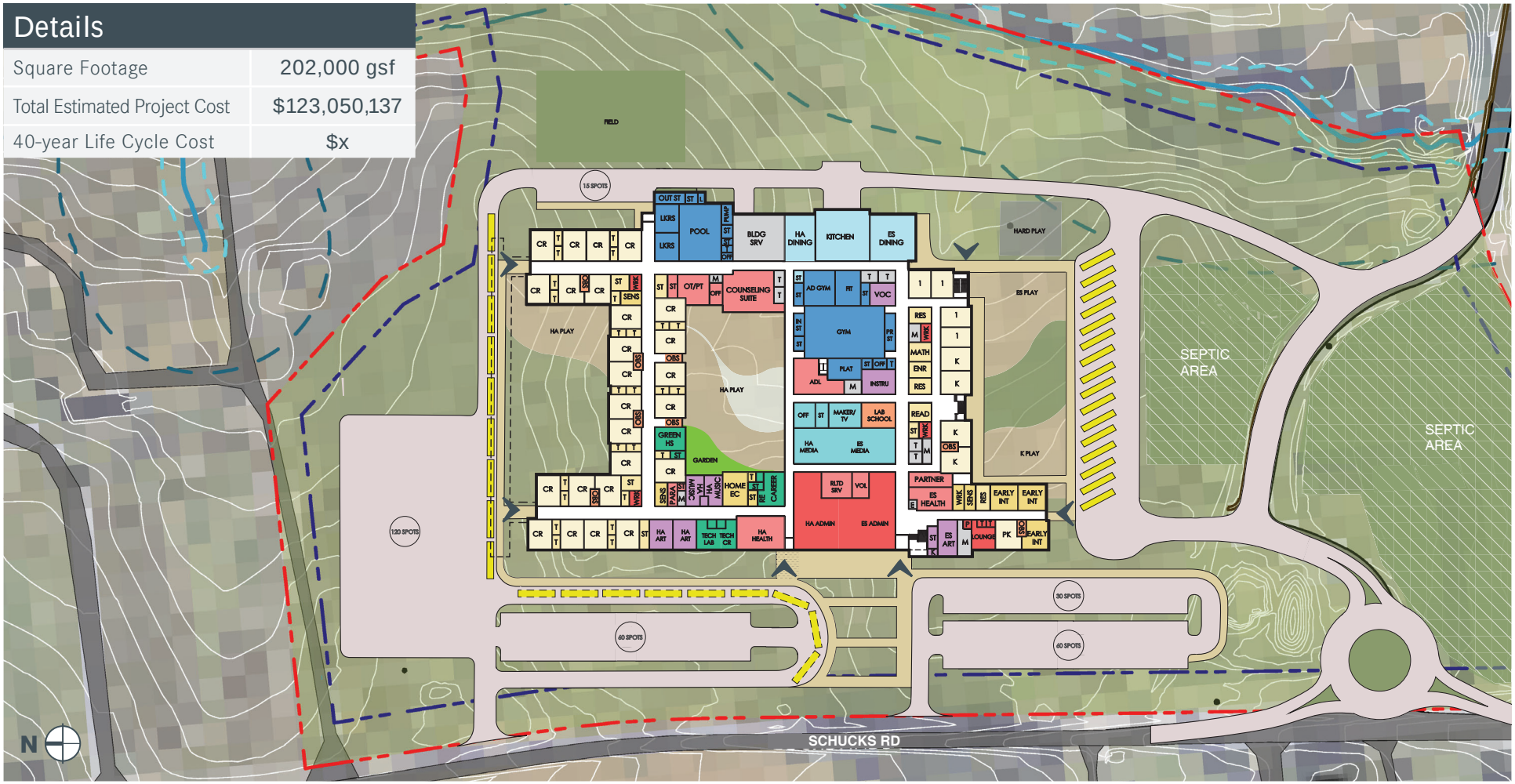
Bus
- Separate bus drop off for HA and ES
- HA 18 bus stacking length, students can enter into classroom bar or front entry
- ES 16 buses – enter directly into cluster or gather in Dining

Cars
- Separate, distinct arrival lobby for HA + ES
- Car dropoff accessed from Schucks Rd

Play
- Play areas located directly outside of Academic zones
- Multipurpose Field size dependent on SWM facilities
- Harford Academy Play Areas contained in central courtyard or directly accessible from classrooms

Option 1
"Bridge"

Details	
Square Footage	202,000 gsf
Total Estimated Project Cost	$123,050,137
40-year Life Cycle Cost	$x



Site Approach

Bus
- Separate bus drop off for HA and ES
- HA 18 bus stacking length, students can enter into classroom bar or front entry
- ES 16 buses – enter directly into cluster or gather in Dining

Cars
- Separate, distinct arrival lobby for HA + ES
- Car dropoff accessed from Schucks Rd

Play
- Play areas located directly outside of Academic zones
- Multipurpose Field size dependent on SWM facilities
- Harford Academy Play Areas contained in central courtyard or directly accessible from classrooms

Option 1
"Bridge"

Building Approach

Harford Academy

- Dining Area centrally located for each school, but distinctly separate spaces
- Contiguous arrangement of classrooms allows for flexibility of programming over time.
- Bus drop off with continuous canopy directly into classroom clusters
- Centralized courtyard dedicated to HA
- CTE + Specialty programs grouped together to activate corridor and create destination for easy wayfinding
- Career and Vocational program located for possible public access and interaction
- One-story configuration

Elementary School

- Separate PK/early intervention cluster allows for supervision and potential dedicated drop off area.
- Linear arrangement for all elementary school classrooms allows for flexibility over time.
- Open and enclosed Resource/Pull-out areas offer choice and flexibility
- Two-story configuration

Shared Use

- Shared administrative suite for HA and Elementary School.
- Dining, Media, Physical Education spaces centralized to allow inclusion where possible for all students

First Floor
177,000 sf

Department Legend

- ADMINISTRATION
- STUDENT SERVICES
- ACADEMIC AREAS
- SPECIAL EDUCATION
- LAB SCHOOL
- MEDIA
- SPECIALS
- FINE ARTS
- PHYSICAL EDUCATION
- FOOD SERVICES
- BUILDING SERVICES

Option 1
"Bridge"

Building Approach

Elementary School

- Linear arrangement for all elementary school classrooms allows for flexibility over time.
- Centralized stair and collaborative area activate classroom cluster and reduces cluster through-traffic
- Distributed workrooms
- Centralized toilet location for 3rd/4th/5th grade
- Open and enclosed Resource/Pull-out areas offer choice and flexibility

Second Floor
25,000 sf

Department Legend

- ADMINISTRATION
- STUDENT SERVICES
- ACADEMIC AREAS
- SPECIAL EDUCATION
- LAB SCHOOL
- MEDIA
- SPECIALS
- FINE ARTS
- PHYSICAL EDUCATION
- FOOD SERVICES
- BUILDING SERVICES

Option 1
"Bridge"

Design Team Evaluation

Site

- ✓ Separate bus loop/parent drop-off areas for Harford Academy and ES
- ✓ Shared front entry and plaza on Schucks Road
- ✓ Bus loops situated to allow option for student entry through main entry or directly into academic areas
- ✓ Full perimeter access around building for bus exit, service/delivery access and emergency vehicles
- ✓ Secure HA play area within internal courtyard
- ✓ Distinct pool entrance for ease of after-hours/shared use
- ✓ Dedicated service/pool parking area
- ✓ School has a strong community presence along Schucks Rd

Building

- ✓ Centralized courtyard creates strong sense of orientation and wayfinding, and provides safe, secure play area
- ✓ Physical Education, Dining, and Media program positioned to maximize engagement and sharing of resources.
- ✓ Adaptive Gym and Fitness configured to allow for operable partition between and expansion of activity space
- ✓ Instrumental Music directly adjacent to performance space
- ✓ Open Observation spaces double as open resource areas and direct courtyard connections from HA classroom areas
- ✓ Contiguous arrangement of classrooms allows for flexibility of programming over time
- ✓ Career program location allows for possible public access and interaction
- ✓ All major program elements are centrally located for easy access for both HA and ES

- ✗ HA buses and cars utilize same site entrance.
- ✗ Requires earthwork, grading, and clearing for new fields.
- ✗ Outdoor play areas less proximate to gymnasium areas
- ✗ ES bus loop distant from building access

- ✗ Instrumental and Vocal music classrooms are separate

Option 1
"Bridge"

Stakeholder Comments

Site

- ✔ Bus loop for HA feeds directly into classroom hallways
- ✔ Separate bus and car lots

Building

- ✔ Building organization allows for each school to have a separate identity with ease of inclusive spaces for sharing without being forced upon either population.
- ✔ Shared program spaces centrally located
- ✔ Ample play area, fully enclosed
- ✔ HA Observation spaces double as courtyard connections
- ✔ Centralized Administration suite
- ✔ Classrooms located acoustically separate from loud group areas/program zones
- ✔ Separate building entrances with clear circulation patterns for each school
- ✔ 2-story ES configuration

Site

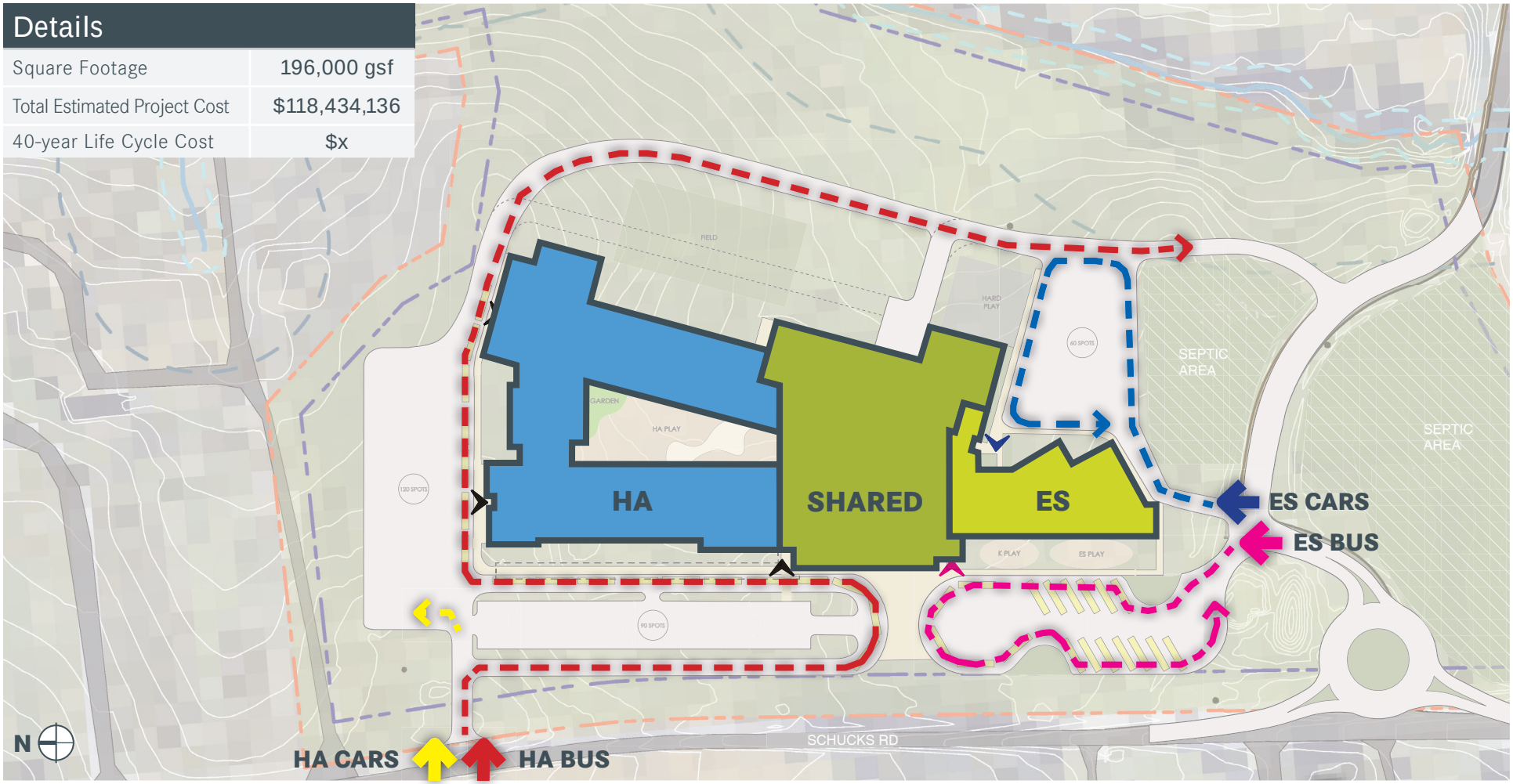
- ✕ No courtyard for ES
- ✕ Staff parking is remote from ES programming
- ✕ Increase in required canopy area for two bus drop offs and main entry area.

Building

- ✕ Compact, linear arrangement of classrooms in ES
- ✕ No open common space in ES
- ✕ No courtyard for ES
- ✕ Design feels separate and not much opportunity for inclusion.
- ✕ 2nd grade classrooms located on upper level

Option 2
"Loop"

Details	
Square Footage	196,000 gsf
Total Estimated Project Cost	$118,434,136
40-year Life Cycle Cost	$x



Site Approach

Bus
- Separate bus drop off for HA and ES
- HA 18 bus stacking length, able to enter into either entrance to academic cluster
- ES 16 buses –enter directly into academic cluster

Cars
- Separate, distinct arrival lobby for HA + ES
- Separate parking lot for HA + ES

Play
- Play areas located directly outside of Academic zones, visible from Schucks Rd
- Harford Academy Play areas contained in central courtyard

Option 2
"Loop"

Details	
Square Footage	196,000 gsf
Total Estimated Project Cost	$118,434,136
40-year Life Cycle Cost	$x

Site Approach

Bus
- Separate bus drop off for HA and ES
- HA 18 bus stacking length, able to enter into either entrance to academic cluster
- ES 16 buses –enter directly into academic cluster

Cars
- Separate, distinct arrival lobby for HA + ES
- Separate parking lot for HA + ES

Play
- Play areas located directly outside of Academic zones, visible from Schucks Rd
- Harford Academy Play areas contained in central courtyard

Option 2
"Loop"

Building Approach

Harford Academy

- Loop corridor provides protected corridor for continual access to all learning spaces in HA program
- Directly adjacent Dining spaces maximize opportunities for inclusion
- Contiguous arrangement of classrooms allows for flexibility of programming over time
- Bus drop off location allows direct entry into cluster
- 1 centralized, interior courtyard dedicated to Harford Academy
- CTE + Specialty programs grouped together to activate corridor and create destination for easy wayfinding
- One-story configuration

Elementary School

- Linear and adjacent cluster arrangement for all ES classrooms allow flexibility over time
- 2-story configuration

Shared Use

- Shared administrative suite for HA and ES
- Centralized Media enables inclusion opportunities

First Floor
168,000 sf

Department Legend

- ADMINISTRATION
- STUDENT SERVICES
- ACADEMIC AREAS
- SPECIAL EDUCATION
- LAB SCHOOL
- MEDIA
- SPECIALS
- FINE ARTS
- PHYSICAL EDUCATION
- FOOD SERVICES
- BUILDING SERVICES

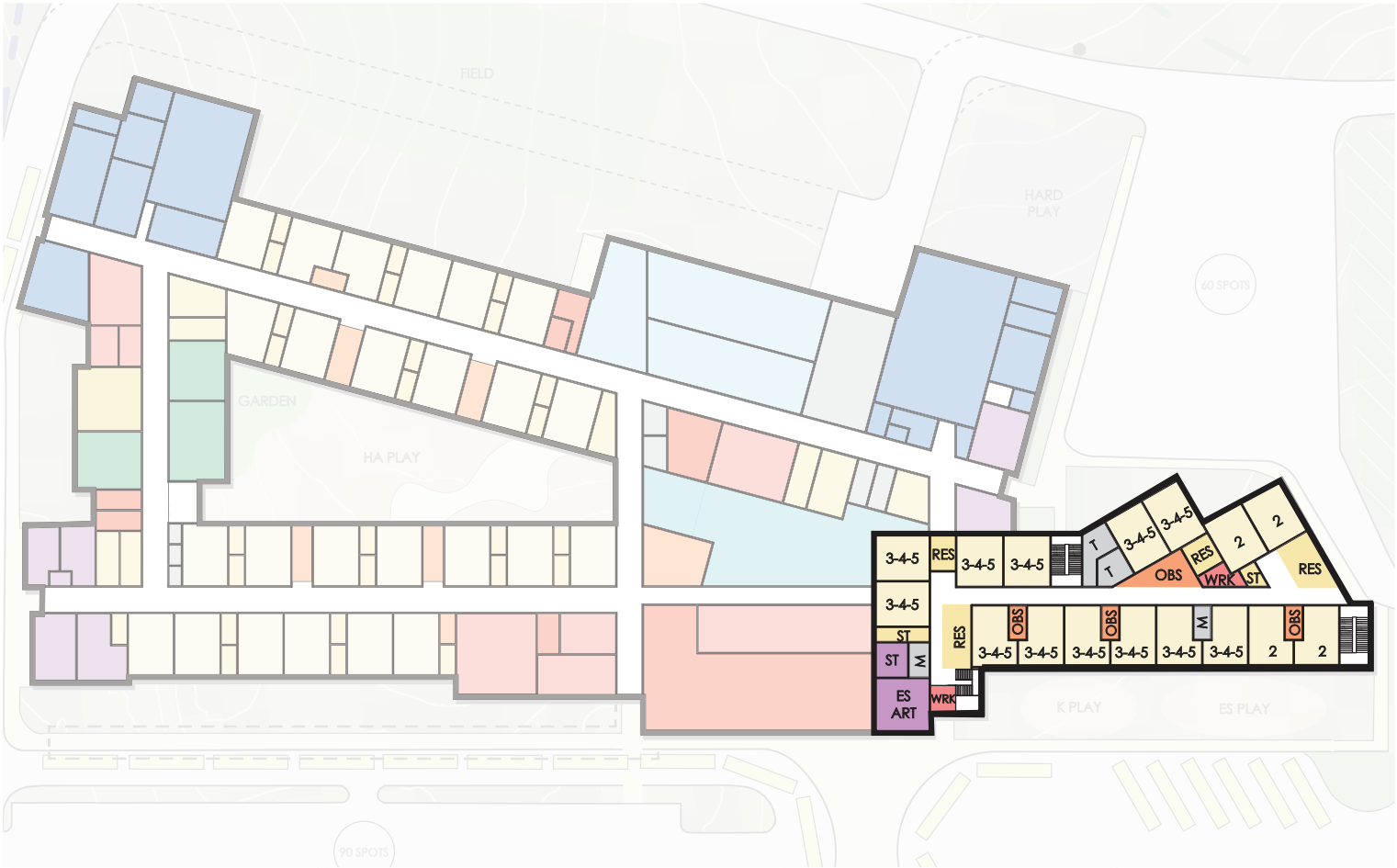
Option 2
"Loop"

Building Approach

Elementary School

- Linear and adjacent cluster arrangement for all ES classrooms allow flexibility over time
- Centralized toilet location for 3rd/4th/5th grade
- Open and enclosed Resource/Pull-Out areas offer choice and flexibility

Second Floor
28,000 sf



Department Legend

- ADMINISTRATION
- STUDENT SERVICES
- ACADEMIC AREAS
- SPECIAL EDUCATION
- LAB SCHOOL
- MEDIA
- SPECIALS
- FINE ARTS
- PHYSICAL EDUCATION
- FOOD SERVICES
- BUILDING SERVICES

Option 2
"Loop"

Design Considerations

Site

- ✔ Separate ES bus loop and parent drop-off areas.
- ✔ Potentially reduced grading impacts due to compact footprint
- ✔ Playground areas visible from Schucks Rd for safety and security
- ✔ Full perimeter access around building for bus exit, service/delivery access and emergency vehicles
- ✔ Combined receiving/loading area for Building Services and Kitchen
- ✔ Secure HA play area with internal courtyard
- ✔ School has a strong community presence along Schucks Rd

Building

- ✔ Centralized courtyard creates strong sense of orientation and wayfinding, and provides safe, secure play area
- ✔ OT/PT and Fitness configured to allow for operable partition between and expansion of activity space
- ✔ Dining areas co-located and directly adjacent to maximize opportunities for inclusion
- ✔ Centrally located counseling suite
- ✔ Instrumental Music directly adjacent to performance space

Site

- ✕ ES buses and cars still utilize same site entrance.
- ✕ Potentially long travel distant for HA students from buses to classrooms

Building

- ✕ HA Career program spaces not easily accessible to public
- ✕ Gym is remote from HA program, not conducive to shared use
- ✕ Adaptive Gym and Fitness are fully separate, distinct spaces
- ✕ Counseling suite has no access to daylight
- ✕ ES Dining has no daylight or views
- ✕ ES Art located upstairs, isolated for other Arts and Specials
- ✕ Students may need to travel through one or more clusters to reach their classrooms/grade level communities

Option 2
"Loop"

Stakeholder Considerations

Site	
✓	Ample play area
✓	Simple bus circulation
✓	Separate car and bus drop off

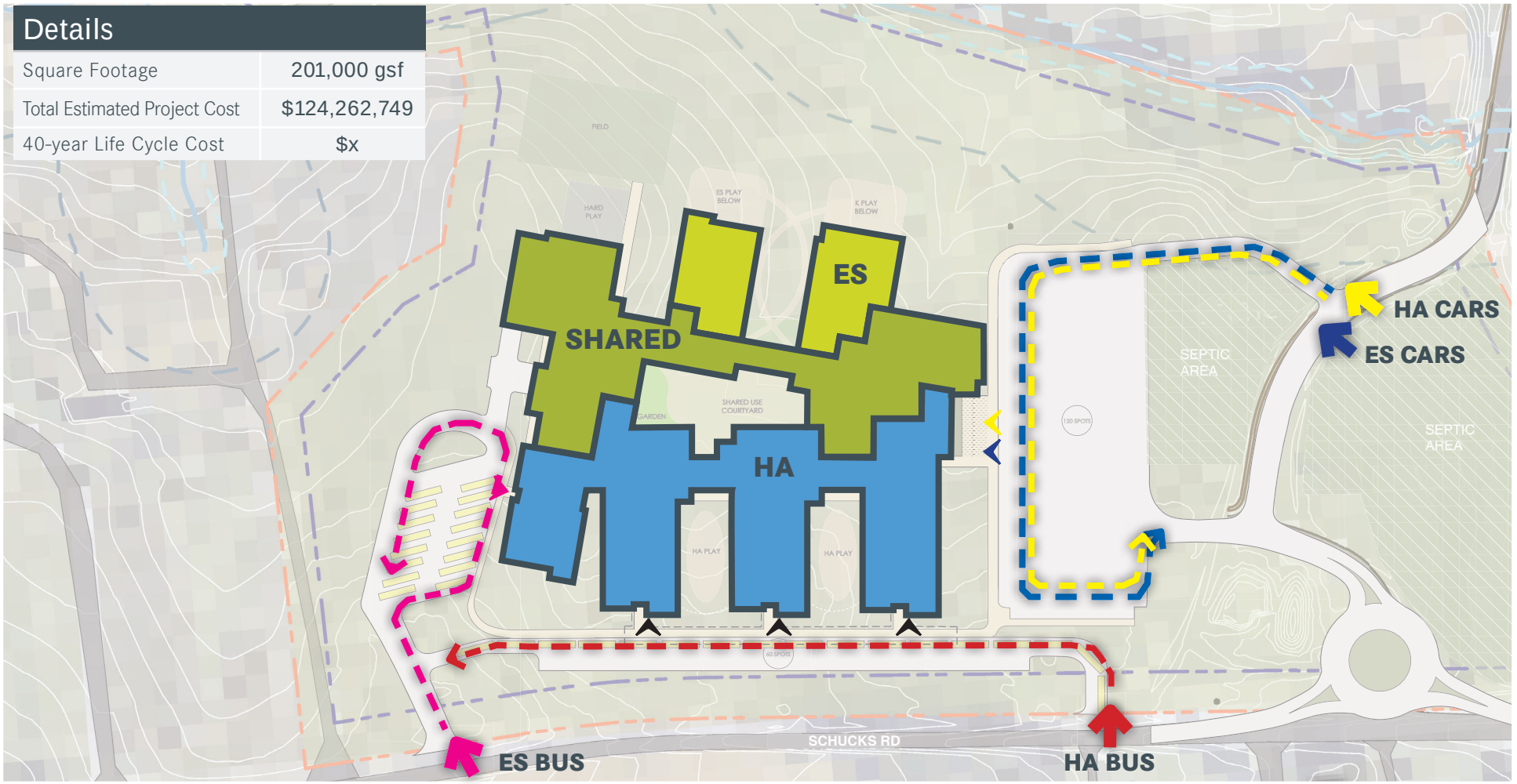
Building	
✓	2-story ES configuration
✓	Building organization allows for each school to have a separate identity with ease of inclusive spaces for sharing without being forced upon either population.
✓	Centralized counseling suite
✓	Fully enclosed play space for HA
✓	HA Music and art clustered together

Site	
✗	Only one dedicated play space for HA which does not allow for differentiation between elementary and secondary
✗	No courtyard access for ES

Building	
✗	Classroom placements are not conducive to deparmental organization
✗	Concerned about acoustics given classroom proximity to large group areas
✗	Art located upstairs
✗	Prefer special areas to be consolidated in a public realm and not as closely connected with classrooms
✗	Atypical room shapes can be challenging to furnish and adequately support teaching/learning activities

Option 3
"Cluster"

Details	
Square Footage	201,000 gsf
Total Estimated Project Cost	$124,262,749
40-year Life Cycle Cost	$x



Site Approach

Bus
- Separate bus drop off for HA and ES
- HA bus drop off students directly to academic clusters
- ES buses drop off at pool entrance

Cars
- Shared HA/ES drop off and parking

Play
- HA play areas proximate to classrooms, fenced and directly outside of learning communities
- ES play areas located on lower level, directly outside of academic wings

Option 3
"Cluster"

Details	
Square Footage	201,000 gsf
Total Estimated Project Cost	$124,262,749
40-year Life Cycle Cost	$x

Site Approach

Bus
- Separate bus drop off for HA and ES
- HA bus drop off students directly to academic clusters
- ES buses drop off at pool entrance

Cars
- Shared HA/ES drop off and parking

Play
- HA play areas proximate to classrooms, fenced and directly outside of learning communities
- ES play areas located on lower level, directly outside of academic wings

Option 3
"Cluster"

Building Approach

Harford Academy
- Clustered arrangement of classrooms creates smaller learning communities
- Bus drop off location allows direct entry into any learning community
- CTE + Specialty spaces grouped together to activate primary HA corridor
- One-story configuration

Elementary School
- Separate PK/K/Early Intervention cluster situated closest to Administrative suite
- Open and enclosed Resource/Pull-Out areas offer choice and flexibility
- Clustered arrangement for all ES classrooms creates smaller, 1-2 grade learning communities centerered around a collaborative/resource area
- 2-story configuration steps down with grade to absorb topography

Shared Use
- Shared administrative suite and primary entrance for HA and ES
- Centralized Media enables inclusion where possible
- 1 centralized, interior courtyard to be shared by entire school community for multiple uses and programming

First Floor
173,000 sf

Department Legend

ADMINISTRATION	SPECIAL EDUCATION	SPECIALS	FOOD SERVICES
STUDENT SERVICES	LAB SCHOOL	FINE ARTS	BUILDING SERVICES
ACADEMIC AREAS	MEDIA	PHYSICAL EDUCATION	

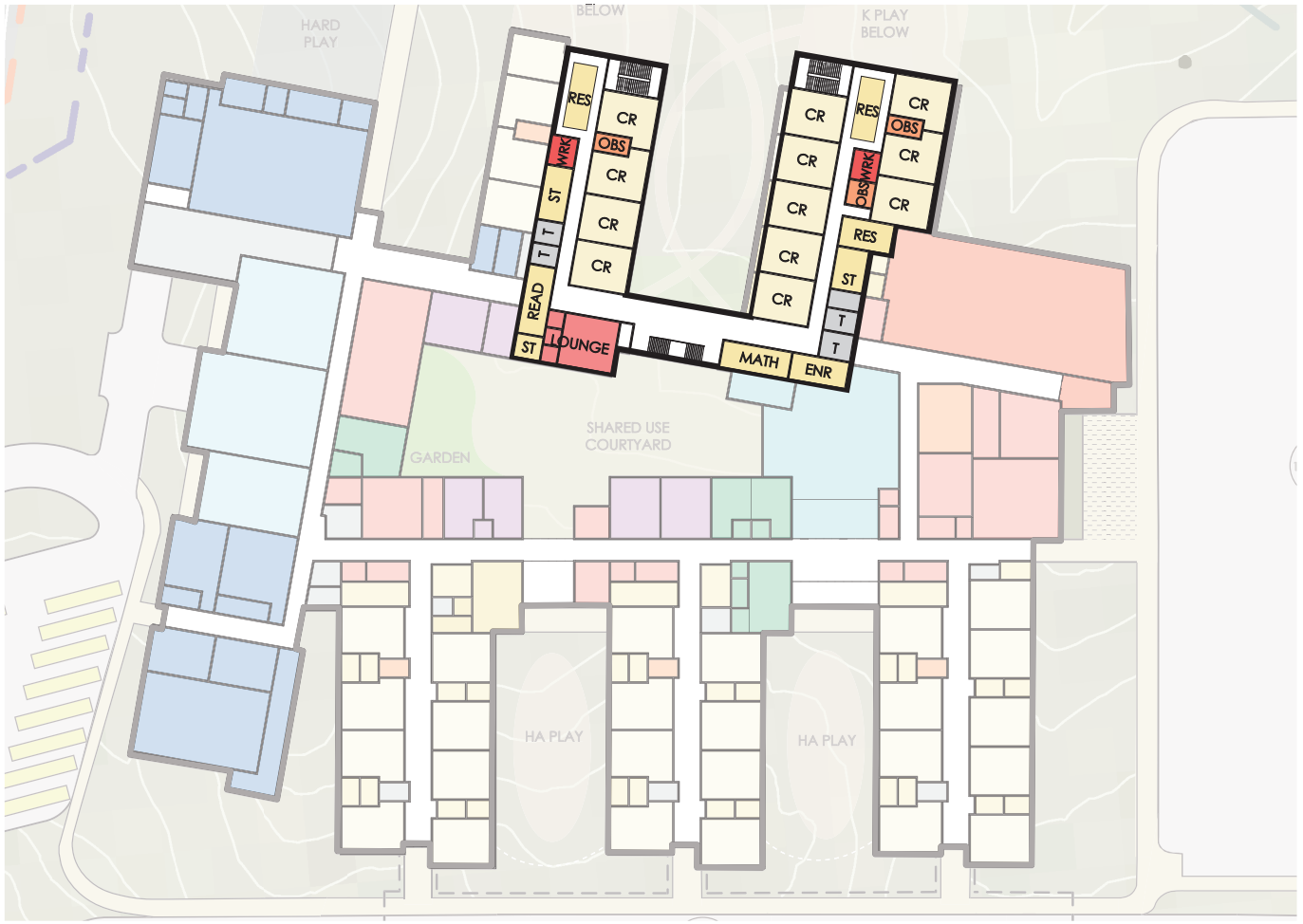
Option 3
"Cluster"

Building Approach

Elementary School

- Clustered arrangement for all ES classrooms creates smaller learning communities centerered around a collaborative/resource area
- Resource rooms centrally located between clusters on lower level
- Play areas accessed directly from lower level classroom clusters
- Open central stair to connect lower level academic zones and special programming on first floor level

Ground Floor
28,000 sf



Department Legend

- ADMINISTRATION
- STUDENT SERVICES
- ACADEMIC AREAS
- SPECIAL EDUCATION
- LAB SCHOOL
- MEDIA
- SPECIALS
- FINE ARTS
- PHYSICAL EDUCATION
- FOOD SERVICES
- BUILDING SERVICES

Option 3
"Cluster"

Design Considerations

Site

- ✔ Two-story ES classroom wings built into existing grades

Building

- ✔ ADL/Speech distributed to allow for easy access across HA learning communities
- ✔ Adaptive Gym and Fitness configured to allow for operable partition between and expansion of activity space
- ✔ Shared courtyard can maximize opportunities for inclusion and provide a safe outdoor space for both schools
- ✔ Centralized Media enables inclusion where possible

Site

- ✕ No perimeter access/service drive
- ✕ HA play area not fully enclosed in courtyard
- ✕ Play areas are obscured behind building and grade
- ✕ Double stacked bus chevron could be problematic in case of bus failure
- ✕ Youngest students must go downstairs to access play areas, resource rooms

Building

- ✕ Distinct HA clusters may limit flexibility as age levels and classroom groupings change over time
- ✕ Shared admin area is remote from HA program
- ✕ ES bus riders must walk a significant distance through HA specific program areas to get to their academic zones
- ✕ HA classroom cluster configurations do not align with current classroom counts by age group
- ✕ Career program is fairly remote from front door/public access
- ✕ Gym is remote from HA program, not conducive to shared use

Option 3
"Cluster"

Stakeholder Considerations

Site

- ✓ Distinct bus and car separation
- ✓ Bus drop off directly into HA clusters
- ✓ Multiple play areas for HA

Building

- ✓ Shared courtyard to promote inclusion and provide an outdoor amenity to both HA and ES
- ✓ Consolidated wellness programming in its own wing
- ✓ Like the idea of the ES having a "lower floor" rather than an "upper level"
- ✓ Direct access to different play areas for HA
- ✓ Cluster configuration of classrooms
- ✓ Classrooms located acoustically separate from loud group areas/program zones
- ✓ Building organiztion allows for each school to have a separate identity with ease of inclusive spaces for sharing without being forced upon either population

Site

- ✗ Combined drop off

Building

- ✗ Complicated building massing
- ✗ ES classroom configuration
- ✗ Long walk distance for ES bus riders to get to their dedicated programmed areas, through HA specific zones
- ✗ Younger students have to travel up and down on a daily basis to access required services
- ✗ Elementary entry points are very remote
- ✗ Early childhood playground should be on same level as classrooms
- ✗ Narrow hallways don't allow for a lot of open gathering space

Summary of Options

Option 1
"Bridge"

- All shared spaces, and program-specific specialty spaces which could potentially be shared, are centralized in plan to maximize inclusion opportunities.

Details	
Square Footage	202,000 gsf
Total Estimated Project Cost	$123,050,137
40-year Life Cycle Cost	$289,696,148

Option 2
"Loop"

- Main shared spaces are centralized in plan to maximize inclusion opportunities.
- Program-specific specialty spaces are separated, located within Elementary and Harford Academy academic zones.

Details	
Square Footage	196,000 gsf
Total Estimated Project Cost	$118,434,136
40-year Life Cycle Cost	$279,366,053

Option 3
"Cluster"

- Main shared spaces are centralized in plan to maximize inclusion opportunities.
- Program-specific specialty spaces are separated, located within Elementary and Harford Academy academic zones.
- Cluster organization creates smaller learning communities within Elementary and Harford Academy academic zones.

Details	
Square Footage	201,000 gsf
Total Estimated Project Cost	$124,262,749
40-year Life Cycle Cost	$292,245,192

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section 6

life cycle cost comparisons

Summary of Options

Option One

Option Two

Option Three

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Summary of Options

Option 1 – Bridge	Cost
I. First Costs	
Estimated Project Cost	$ 102,907,508
II. Maintenance & Operations	
Uniform Present Value of O&M Life Cycle Expenditures	$ 67,429,562
Uniform Present Value of Utilities Life Cycle Expenditures	$ 13,142,009
Uniform Present Value of Environmental Health & Safety Expenditures	$ 958,016
III. Capital Renewal	
Present Value Capital Maintenance Repairs and Replacement	$ 105,259,053
Total	**$ 289,696,148**

Option 2 – Loop	Cost
I. First Costs	
Estimated Project Cost	$ 99,047,121
II. Maintenance & Operations	
Uniform Present Value of O&M Life Cycle Expenditures	$ 65,426,704
Uniform Present Value of Utilities Life Cycle Expenditures	$ 12,751,653
Uniform Present Value of Environmental Health & Safety Expenditures	$ 929,560
III. Capital Renewal	
Present Value Capital Maintenance Repairs and Replacement	$ 101,211,016
Total	**$ 279,366,053**

Option 3 - Cluster	Cost
I. First Costs	
Estimated Project Cost	$ 103,921,623
II. Maintenance & Operations	
Uniform Present Value of O&M Life Cycle Expenditures	$ 67,095,753
Uniform Present Value of Utilities Life Cycle Expenditures	$ 13,076,950
Uniform Present Value of Environmental Health & Safety Expenditures	$ 953,273
III. Capital Renewal	
Present Value Capital Maintenance Repairs and Replacement	$ 107,197,593
Total	**$ 292,245,192**

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section 7

recommendation

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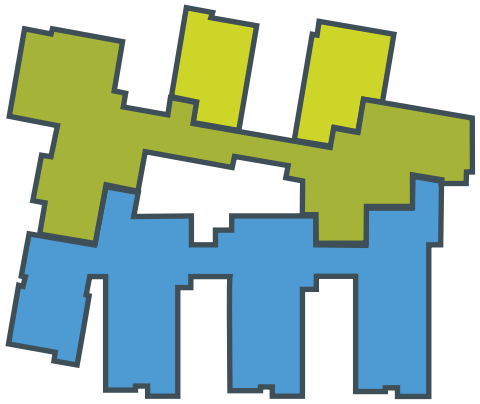
Recommendation

Option 3
"Cluster"



HARFORD ACADEMY (HA)
SHARED PROGRAM
ELEMENTARY SCHOOL (ES)

The Superintendent of Schools recommends that the Board of Education approve Option #3, with a gross square footage of 201,000.

This option would build a new school, Harford Academy at Campus Hills, in a cluster configuration to replace the current Harford Academy public separate day school and add new elementary school capacity (598 state rated capacity) within Harford County Public Schools.

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G+P
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section 8

appendix

Preliminary Hydrogeologic Feasibility Evaluation
Exhibit 1
Exhibit 2
Exhibit 3
Exhibit 4
Exhibit 5

Barton & Loguidice

September 13, 2022

Peter Soprano, P.E.
Site Resources, Inc.
14315 Jarrettsville Pike
PO Box 249
Phoenix, MD 21131

Re: Harford Academy School Preliminary Hydrogeologic Feasibility Evaluation
File: 2420.003.001

Dear Mr. Soprano:

Barton & Loguidice ("B&L") was retained by Site Resources, Inc. ("SRI") to perform a preliminary hydrogeologic feasibility evaluation of proposed on-premises groundwater supply well and septic system (a.k.a. groundwater discharge systems) at the future site of Harford Academy School (Site). This letter report is intended as an attachment to the SRI overall feasibility report. Readers of this letter report area assumed to have familiarity with the SRI report.

This letter report was prepared and completed in accordance with B&L Proposal No. P708.6049, approved by SRI and Grimm and Parker Architects (G+P) through email Notice-to-Proceed on May 4, 2022, and via a signed agreement on August 9, 2022.

B&L Approach

B&L has performed this preliminary hydrogeologic feasibility evaluation to assess the potential to develop Harford Academy with private well water and septic sanitary facilities in step-wise fashion:

1. Review of prior County Health Department and MDE records provided by public agencies, SRI and HCPS.
2. Determine feasibility of the Site to support an increase in the well water withdrawal and septic discharges within the existing permitted area.
3. Provide SRI recommendations necessary to support approval of an increase in the groundwater discharge permit and a new groundwater appropriation permit.

1912 Liberty Road, Suite 26, Eldersburg, MD 21784 ▪ Office: 410-795-4626 ▪ Fax: 410-795-4611 ▪ BartonandLoguidice.com

The experience to listen
The power to solve

4. Prepare a memo summarizing work. Answer questions regarding existing site conditions, particularly on the fate of existing supply wells and monitoring wells, and site options concept.

Site Location and History

The Site is the former Lands of Blevins / Schucks Corner proposed residential subdivision. It is located south of the intersection of MD-22 and Schucks Road, south of Harford Community College and Campus Commons shopping center, and east of Bel Air, in Harford County, Maryland (**Exhibit 1**). Site records on the existing Groundwater Discharge Permit and Groundwater Appropriation Permit exemption history are in **Exhibit 2** and **Exhibit 3**.

Hydrogeologic and Environmental Setting

The Site is underlain by Port Deposit Gneiss. This is a moderately to strongly deformed complex made of gneissic biotite-quartz diorite, hornblende-biotite-quartz diorite, and biotite granodiorite (MGS, 1968).

Soils underlying the Site are identified as mostly Chester Silt Loam and Aldino Silt Loam, with Glenelg loams, Hatboro silt loam and Watchung silt loam seen in a much smaller presence around the border of the Site. Soil classifications in percolation tested areas are described as well drained to moderately well drained. Those in lower lying areas near wetlands and streams, Hatboro and Watchung silt loams, are classified as poorly drained (USDA NRCS, 2022). Aldino and Watchung soils are both listed as restricted wet season soils, and were not percolation tested (**Exhibit 4)**.

Water Use and Population

B&L assessed future water use (wells) and discharge characteristics (septic) using metered flow data at John Archer School (JAS) and data from the past permits and applications, site plans, and information provided by HCPS, G+P architects and SRI on student and faculty population and intended facility use (**Exhibit 5**). The current JAS population make-up is 138 students and 100 staff.

The HCPS goal for Harford Academy is to have 700 mainstream elementary students and staff and 250 special needs students and staff (**Exhibit 5**) for a total population projection of 950 occupants. Other lower population projections were cited in emails between SRI, G+P Architects and HCPS. Herein we discuss the feasibility of achieving the highest population goals.

Key Harford Academy facility details that influence flow factors for water use (wells) and groundwater discharge (septic) include:

1. A therapy pool will be used by special needs students and their support staff. JAS currently uses a therapy pool at an off-site location, the intention is for the Harford Academy to support a therapy pool on the campus. This pool would also be available to outside groups for occupational and physical therapy programs after school hours. To our knowledge, during and after school hours, pool use is restricted to individuals with special needs and their care providers.
2. A shower room will be available for groups using the pool. Mainstream students are not going to use the therapy pool or showers.
3. Gym and athletic facilities (aside from the pool) will not have shower facilities.
4. A warming kitchen will be used in lieu of a commercial kitchen.
5. Outdoor ballfields will not be irrigated.

Table 1. Summary of JAS supply well flow meter data collected monthly in 2019 (no pool included)

Date	Reading	Gallons	Average Use GPD/Person (Students and Staff)
01/03/19	5,770,700		
02/05/19	5,938,300	167,600	21.34
03/08/19	5,979,600	41,300	5.60
04/03/19	6,007,800	28,200	4.56
05/01/19	6,101,100	93,300	14.00
06/04/19	6,229,500	128,400	15.87
07/10/19	6,375,400	145,900	17.03
08/08/19	6,597,300	221,900	32.15
09/04/19	6,804,900	207,600	32.31
10/01/19			
11/05/19	7,201,500	396,600	26.88
12/02/19	7,248,300	46,800	7.28
01/02/20	7,263,700	15,400	2.09

Table 2: JAS 2019 flowmeter data statistics

Statistic	GPD/Person (Student and Staff)	Potential Design Flow @ 1.5 Multiplier (GPD/Person)	Potential Design Flow @ 2.0 Multiplier (GPD/Person)
Minimum	2.09		
Maximum	32.31		
Average	16.28	24.42	32.56
Median	15.87	23.80	31.74

The flowmeter data from JAS (currently without a pool) support a population per capita water use that exceeds previously permitted per capita usage estimates. Former per capita water use approved by MDE for the discharge and groundwater appropriation permits are detailed in *Tables 3, 4 and 5*. The concern with JAS data from 2019 is the frequency in which it was collected and range in per capita use (2 gpd/person to 32 gpd/person), which leads us to question whether this data set is reliable. Thus the previously permitted (discharge to septic) or MDE-approved (well appropriation permit exemption) data sets were relied upon for estimating future flows and assessing feasibility. Subsequent JAS water supply flow meter readings taken on more frequent and preferably daily basis during periods when the school is open may change findings significantly, accordingly.

Table 3. Existing Permitted Capacity and Mainstream Student Per Capita Discharge/Withdrawal

Population and Use Information	MDE Issued Groundwater Discharge Permit (septic)	Application for Groundwater Appropriation Permit (supply well)	MDE Issued Groundwater Appropriation Exemption (supply well)
Mainstream student population	676	696 students + 80 staff	696 students + 80 staff
Average discharge (septic) or annualized average withdrawal (supply well)	5,750 gpd 8.5 gpd/mainstream student	15,520 gpd 20 gpd/mainstream combined student and staff	4,600 gpd 6 gpd/mainstream combined student and staff
Design flow (septic) or month of maximum use (MMU) flow (supply well)	11,500 gpd 17 gpd/mainstream student	19,400 gpd 25 gpd/mainstream combined student and staff	8,200 gpd 11 gpd/ mainstream combined student and staff

Note: Staff to student ratio for mainstream is approximately 1:9, or one staff per every 9 students.

Table 4. Projected Septic Design Flows for MDE Groundwater Discharge Permit Increase

Population	Design Flow Factor*	Notes
Mainstream students	17 gpd/student	From past permits. MDE factors staff use into the student factor.
Special needs students + staff	27 gpd/student + staff	MDE does not factor in staff use, due to a higher staff to student ratio.

*B&L added pool and shower consumptive use per MDE (2011) to the baseline from past discharge permit. The special needs student / staff consumptive use projection is approximately 1.6 times the mainstream.

Table 5. Projected Average and Month of Maximum Use Flows for MDE Groundwater Appropriation Permit Increase

Population	MMU Flow	AVG Flow
Mainstream students	11 gpd/student	6 gpd/student
Special needs students + staff* plus water for pool	22 gpd/student + staff (assume 2.0 mainstream student multiplier)	12 gpd/student + staff (assume 2.0 mainstream student multiplier)

*The septic design flow ratio for special needs to mainstream students was increased from 1.6 to 2.0 to account for the pool make-up water usage.

MDE Groundwater Discharge Permit Modification Feasibility

Currently, the proposed septic system for the Site is designed based off numerous previous percolation testing results and past groundwater discharge evaluation. The location of the proposed future septic field is shown in **Exhibit 1**.

Based on the previous percolation testing by Harford County Health Department, with review from MDE, the soil loading rate was assigned to the permitted septic area (**Exhibit 2**). COMAR 26.04.02.05K allows a loading rate increase from 1.2 gpd/sf to 1.6 gpd/sf or 2.0 gpd/sf, if treatment is upgraded to a Membrane Bioreactor (MBR). MBR effluent requires BOD5 (biochemical oxygen demand) to be less than 3 mg/L, TSS (total suspended solids) less than 1 mg/L and TN (total nitrogen) less than 3 mg/L. Site septic capacity may be increased by a factor of 1.3 to 1.6 using treatment credits alone, and if demonstrated to be hydrogeologically feasible and supported by the past percolation tests. Within these Site constraints, and assuming 250 special needs students and staff, B&L estimates the population, which may be supported by the potential Site septic capacity, in the confines of the previously tested and approved and permitted area (*Table 6)*.

Table 6. Site Septic Capacity Constraints with Increased Loading Rate.

Soil Loading Rate	Estimated Potential Site Septic Capacity	Estimated Potential Student + Staff Capacity	Estimated Total Population Supported by Existing Septic Area Soils w/ Increased Loading
1.6 gpd/sf	14,950 gpd	250 special needs students + staff 482 mainstream students + 53 staff, assuming 1:9 ratio	785
2.0 gpd/sf	19,170 gpd	250 special needs student + staff 730 mainstream students + 81 staff	1061

Based on the percolation tests results it appears only portions of the permitted septic area may support a 2.0 gpd/sf loading rate capacity, but not the septic area as a whole. This is because the average Site percolation rate is approximately 7 minutes per inch. Thus, a 2.0 gpd/sf projected population of 1061 does not appear supported by the site constraints. The average percolation rate appears to support use of a 1.6 gpd/sf loading rate and possibly more in certain areas only. Without further detailed analysis, it is our opinion the Site septic capacity limits the population to approximately 785 and one less than the target maximum goal.

Nitrogen Loading and Hydrologic Balance

B&L prepared analyses of hydrologic balance and nitrogen loading analysis of the previously approved septic area using Chesapeake Environmental Management (CEM) 2009 hydrogeological report inputs (**Exhibit 2**). In the prior hydrologic balance/Darcy's Law analyses we identified a calculation error in the reporting. An updated hydrologic balance is in *Table 7* and does not provide hydrogeological support to increase septic discharges at a 1.6 gpd/sf loading rate or 2.0 gpd/sf loading rate. However, hydrogeological inputs may be modified using additional site-specific data collected in a different manner. If proven to align with the hydrogeological inputs from other sites in the vicinity, this could lead to a different (and possibly more favorable) outcome.

The prior nitrogen dilution demonstrated a need for the wastewater to be pre-treated. Because the permitted treatment level is planned to at least 8 mg/L, an updated nitrogen dilution was not needed. However, the discharge permit establishes a yearly nitrogen loading limit of 140 pounds. Site septic capacity increase to the 1.6 gpd/sf loading would require nitrogen treatment to approximately 6 mg/L to meet the existing permit limit. An increase to 2.0 gpd/sf

loading would require nitrogen treatment to 3 mg/L to meet the code requirement as shown in *Table 8*.

Table 7. Hydrologic Balance Analysis

1. Determine the flow (Q_{avg}) that can be transmitted by the surficial aquifer			
1. Q_{avg} (gpd) = K*i*A * 7.481gal/ft			
Variables		**CEM (2009) Site Inputs Reserve Area 1**	**CEM (2009) Site Inputs Reserve Area 2**
K = horizontal hydraulic conductivity (ft/day)	**K**	1.7	1.7
i = hydraulic gradient	**i**	0.03	0.03
A = area normal to flow = **b*w** (s.f.)	**A**	16728	9433
Q_{avg} = average flow (gpd)	**Q_{avg}**	6382	3599
2. Determine the groundwater recharge (R_{avg}) due to infiltration			
2. R_{avg} (gpd) = GW * DA / 365 days * 7.481 gal/ft^3			
Variables			
R_{avg} = average recharge to groundwater (gpd)	**R_{avg}**	1930	1822
3. Determine wastewater flow (S_{avg}) aquifer is capable of transmitting			
S_{avg} (gpd) = Q_{avg} - R_{avg}			
Variables			
Q_{avg} = average flow (gpd)	**Q_{avg}**	6382	3599
R_{avg} = average recharge to groundwater (gpd**)**	**R_{avg}**	1930	1822
S_{avg} = average allowable wastewater flow (gpd**)**	**S_{avg}**	4452	1777
$S_{avgtotal}$ = total average allowable wastewater flow (gpd)	**$S_{avgtotal}$**	6229	
4. Potential average wastewater flow at 1.6 gpd/sf (gpd)		7475	
5. Potential average wastewater flow at 2.0 gpd/sf (gpd)		9855	
Hydrologic Balance is limiting (Y/N)		Y for 1.6 gpd/sf loading, Y for 2.0 gpd/sf	

Table 8. Wastewater Total Nitrogen Treatment Requirements

Groundwater Discharge Permit Scenario	Design Flow (gpd)	Average Flow (gpd)	Total Nitrogen (mg/L)	Nitrogen Load (Lbs/Day)	Nitrogen Load (Lbs/Year)
Existing GDP Permit at 1.2 gpd/sf	11,500	5,750	8	0.38	140
Modified GDP Permit at 1.6 gpd/sf	14,950	7,475	6.1	0.38	139
Modified GDP Permit at 2.0 gpd/sf*	19,710	9,855	4.6*	0.38	138
* requires 3.0 mg/L TN per code.					

Previous Hydrogeological Analyses for Groundwater Discharge

The Site has past evaluations supporting discharge permits and a limited evaluation of water demand only to support the appropriation permit exemptions. Analysis of the discharge permit evaluations is invaluable to planning for future evaluations to support an increase to the Site permitted capacity. We offered these additional analyses in good faith and at no added expense to SRI, G+P and HCPS.

B&L analyzed past hydrogeological evaluations of the Site and from projects located very close to the Site. A description of the three evaluations follows:

- Study A: Chesapeake Environmental Management (CEM) evaluation discussed previously.
- Study B: A recent (2021-2022) project by B&L at a property adjacent to the Site.
- Study C: A Harford Community College project completed by ALWI (our firm prior to acquisition by B&L)

The following tables (*Tables 9, 10, 11, and 12*) summarize input parameters and results from these prior evaluations, comparing the evaluation methods used at the Site to the current MDE (2015) standard. Specifically for the Site, B&L identifies if, based on our review, further fieldwork is recommended.

Table 9. Slug Testing & Horizontal Hydraulic Conductivity (Kh) Analysis

Study	'Kh' Value	'Kh' Source	Agency Expectation	Recommend Fieldwork or Further Site Analysis?
A (2009)	12.8 gpd/sf (1.7 ft/day)	Falling head slug tests completed on or around Jan 15, 2009 in 7 temporary piezometers completed in the septic area and of unknown construction and depth	Slug tests following methods outlined by Butler (1997), per MDE (2015) in wells penetrating the receiving aquifer (saprolite)	Yes. Low Kh value compared to surrounding area, possibly due to only partially screening the water table aquifer in shallow piezometers and/or not using Butler (1997) field methods. Existing monitoring wells can be used for new tests.
B (2021)	5.9 ft/day	Slug tests, multiple trials, in monitoring wells using methods by Butler (1997)		
C (2000s)	8.8 ft/day	Campbell & Nolan Associates, Inc., 2004.		

Table 10. Hydraulic Gradient (i) Analysis

Study	Hydraulic Gradient	Hydraulic Gradient Source	Agency Expectation	Recommend Fieldwork or Further Analysis?
A (2009)	0.030	Springtime water levels in the temporary piezometers and approximately 50 test pits completed in May 2002, 2004, 2006 and March 2008.	Groundwater contour map based on measurements collected from monitoring wells during the hydrologic wet season	Yes, per MDE at Study Site B, wet season water levels from percolation tests are not acceptable for this purpose or to use as a baseline for groundwater mounding analysis. Also MDE requires a groundwater contour flow map, and piezometer locations and levels are not provided in the records. Also the date of measurements are not provided other than they were measured in "spring". Existing monitoring wells can be used for wet season monitoring.
B (2021)	0.017	2022 groundwater levels from monitoring wells during January-July		
C (2000s)	0.07	Estimate based on land surface		

Table 11. Aquifer Thickness (b) Analysis

Study	'b'	Thickness Source	Agency Expectation	Recommend Fieldwork or Further Analysis?
A (2009)	Reserve Area 1: 41 ft Reserve Area 2: 30.6 ft	Data from installation of piezometers and test pits	Hollow stem auger drilling logs and groundwater level data.	Yes, supplement data from logs of new hollow stem augered monitoring wells (to replace those being abandoned), plus existing monitoring wells in the vicinity. No additional fieldwork required beyond drilling already needed to accommodate the replacement of "to be abandoned" monitoring wells for the site facility plan (e.g. roads).
B (2021)	37 ft	Water levels and lithologic data from on-site monitoring wells and nearby drilled wells.		
C (2000s)	29 ft	Water levels and lithologic data from on-site monitoring wells and nearby drilled wells.		

Table 12. Mounding Analysis

Study	Result	Source	Agency Expectation	Recommend Fieldwork or Further Analysis?
A (2009)	Reserve Area 1: 2.73 ft; Reserve Area 2: 3.26 ft	Hantush (1967) Method	Hantush (1967), per MDE (2015).	Yes, using input parameters from new hydrogeologic testing. The mounding analysis with existing parameters (low K) could be problematic.
B (2021)	1.5 ft	Hantush (1967) Method		
C (2000s)	3.2 ft	Other GDPs		

The prior hydrologic balance/Darcy's Law analyses would need to be revisited to support a Site capacity increase using new data developed from the Site. Likewise and assuming mounding may increase linearly by a factor of 1.3 to 1.6 due to higher soil loading rates, we project a potential to violate the four foot treatment zone beneath the proposed trenches. Groundwater mounding using different aquifer inputs (e.g. higher Kh) if demonstrated by additional testing, could support a more favorable outcome and thus also are a recommended next step.

Groundwater Appropriation Permit Feasibility

MDE estimates the groundwater recharge associated with an area, using hydrologic budgets developed for, and base flow separation analyses computed from, flow data from nearby streams (Carpenter, 1983). B&L estimated an annual average groundwater recharge rate of 13.6 inches per year based on hydrograph data for the USGS Deer Creek Station as is described by Rutledge (1993). For the Site, B&L estimated a 1-year-in-10 drought-level unit groundwater recharge rate of 319 gpd/acre based on hydrograph data for the USGS Deer Creek Station. The estimated impervious land will be approximately 38% (**Exhibit 5**) of the total 31.29 acre property. A summary of the water balance for the Site is in *Table 13.*

Table 13. Water Balance

Description	Property Boundary
Property Acreage [1]	31.3
Net Pervious Area [2]	19.5
Total Maximum Allocability (gpd) using 319 gpd/acre [3]	6217.3

[1] Acreage and square footage was provided by SRI by way of email correspondence and CAD files.

[2] Present MDE Source Protection and Appropriation Division policy is to subtract for estimated post-development impervious surfaces.

[3] Based on an unpublished MDE hydrographic separation analysis performed on Deer Creek.

B&L estimates the Site capacity is limited by groundwater appropriation to an average use (supply well) of 6,217 gpd. At this Site cap, and assuming 250 special needs students and staff, B&L estimates 536 mainstream students and staff may be accommodated by the Site. At a 1 to 9 staff to student ratio, the Site appears to support approximately 477 mainstream students (plus roughly 59 staff).

To achieve a higher population likely would require the acquisition of groundwater recharge easements or a relaxation of flow factors or reduction in impervious or some combination of these factors.

A summary of on-Site supply well construction and pumping test results are below in *Table 14*. The concept is to not use these wells as they interfered with the school facility building plans. However, locations for two new wells are planned in areas downgradient of the school facility. We suggest existing wells be monitored during pumping tests of the newly drilled supplies. Existing wells may be abandoned but only after testing, evaluation and permitting are complete.

Table 14. Existing Supply Well Summary

Well	Total Depth (ft)	Well Diameter (in)	Grouted	Casing Depth	Completion Yield (gpm)	Source
HA-95-1542	500	6	Yes	63	30	6 hour pumping test
HA-94-3848	200	6	Yes	48	10	3 hour pumping test
HA-93-0206	400	6	Yes	50	23	6 hour pumping test
HA-93-0754	265	6	Yes	63	15	3 hour pumping test
HA-95-1564	500	6	Yes	26	2	1 hour pumping test

Overall Findings & Recommendations

Our overall finding of well and septic feasibility is summarized in the SRI report. Findings are subject to change pending review and incorporation of new and/or additional information.

Overall, additional fieldwork and analyses are recommended to support an increase in the groundwater discharge permit and issuance of a water appropriation permit for the intended population goal. Future evaluations would need to align with present MDE allocation and groundwater discharge permit practices (MDE, 2015), which were not necessarily in effect at the time MDE issued the initial groundwater discharge permit and groundwater allocation exemption.

Respectfully submitted,
BARTON & LOGUIDICE, D.P.C.

Amy M. Parrish, P.G., LEHS
Senior Managing Hydrogeologist

David J. Kerr, P.E., B.C.E.E.
Associate

AMP/DJK/tmj

Exhibit 1: Site Maps and Concept Drawings
Exhibit 2: Groundwater Discharge Permit Information
Exhibit 3: Groundwater Appropriation Permit Information
Exhibit 4: USDA Mapped Soils Series
Exhibit 5: Emails regarding Water Appropriation and Population Use

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Option 1 – *Zoning + Site Approach*

Bus

Separate bus loop drop off for HA and ES

HA 18 stacking length, go into one/any cluster

ES 18 busses – go into cluster

Cars

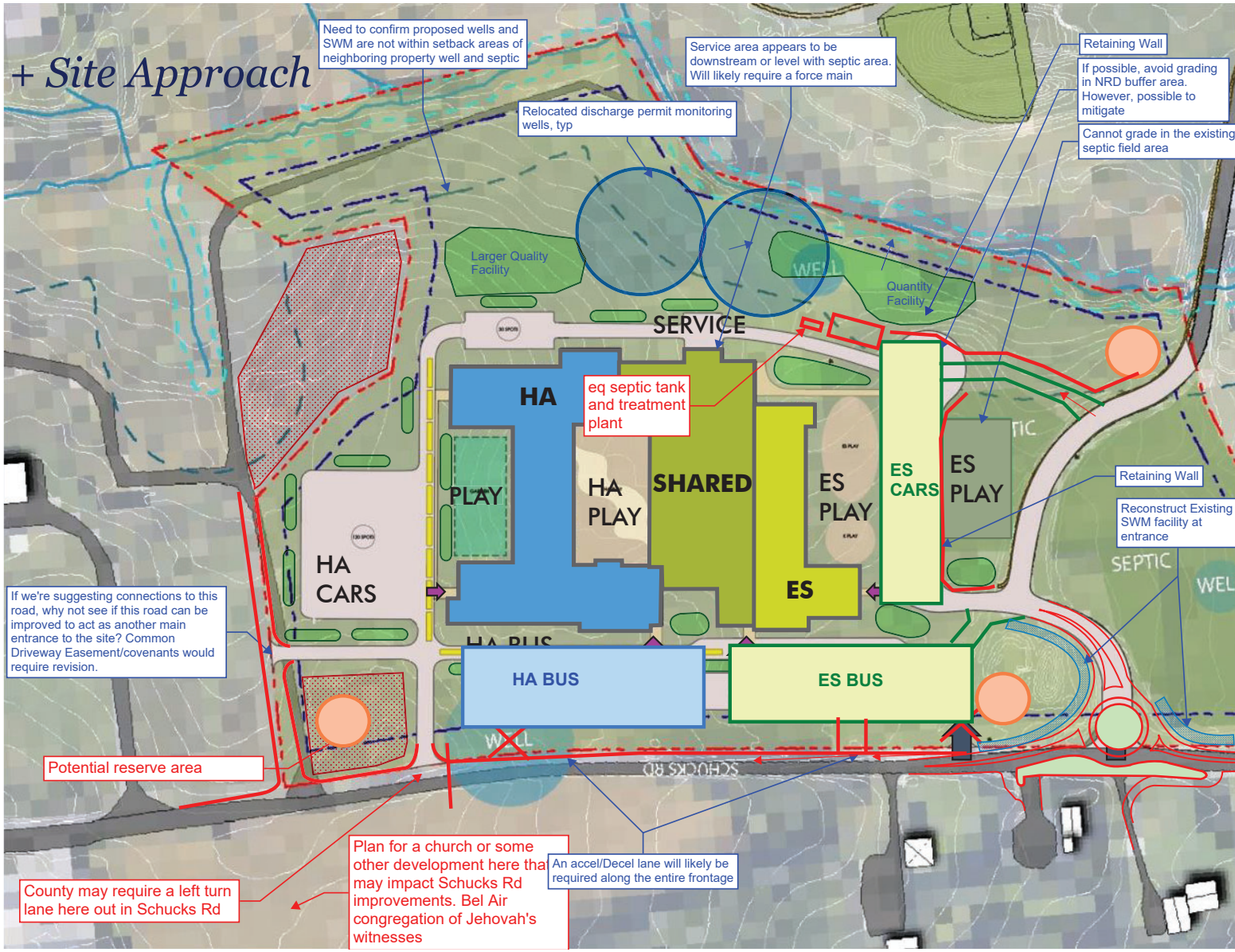
Separate, distinct arrival lobby for HA + ES

Separate parking lot

Play

Play zones located directly outside of Academic Zones

Harford Academy Play Areas contained in central courtyard



Option 2 – *Zoning + Site Approach*

Bus

Separate bus loop drop off for HA and ES

HA 18 stacking length, go into one/any cluster

ES 18 busses – go into cluster

Cars

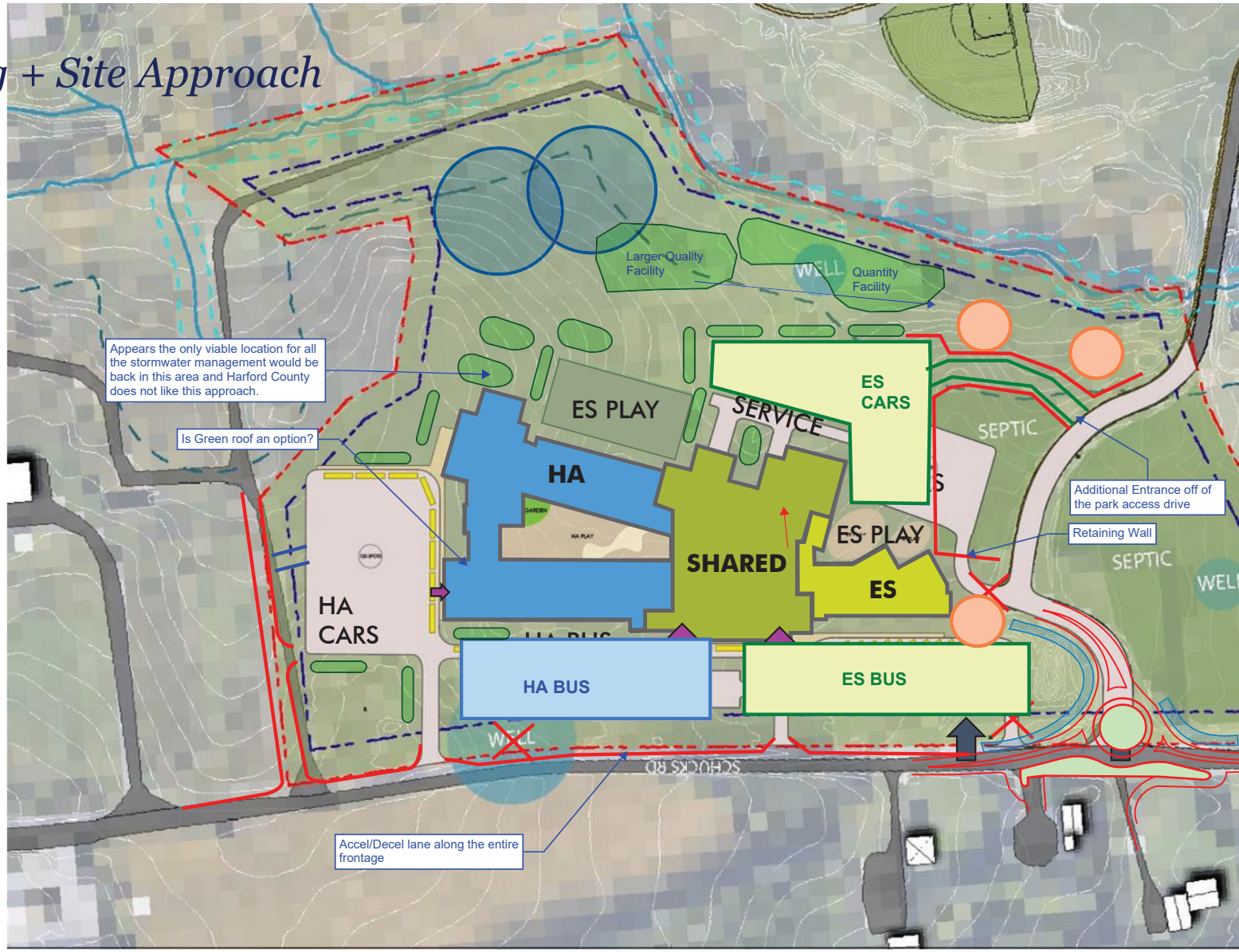
Separate, distinct arrival lobby for HA + ES

Separate parking lot

Play

Play zones located directly outside of Academic Zones

Harford Academy Play Areas contained in central courtyard



Option 3 – *Zoning + Site Approach*

Bus

Separate bus loop drop off for HA and ES

HA 18 stacking length, go into one/any cluster

ES 18 busses – go into cluster

Cars

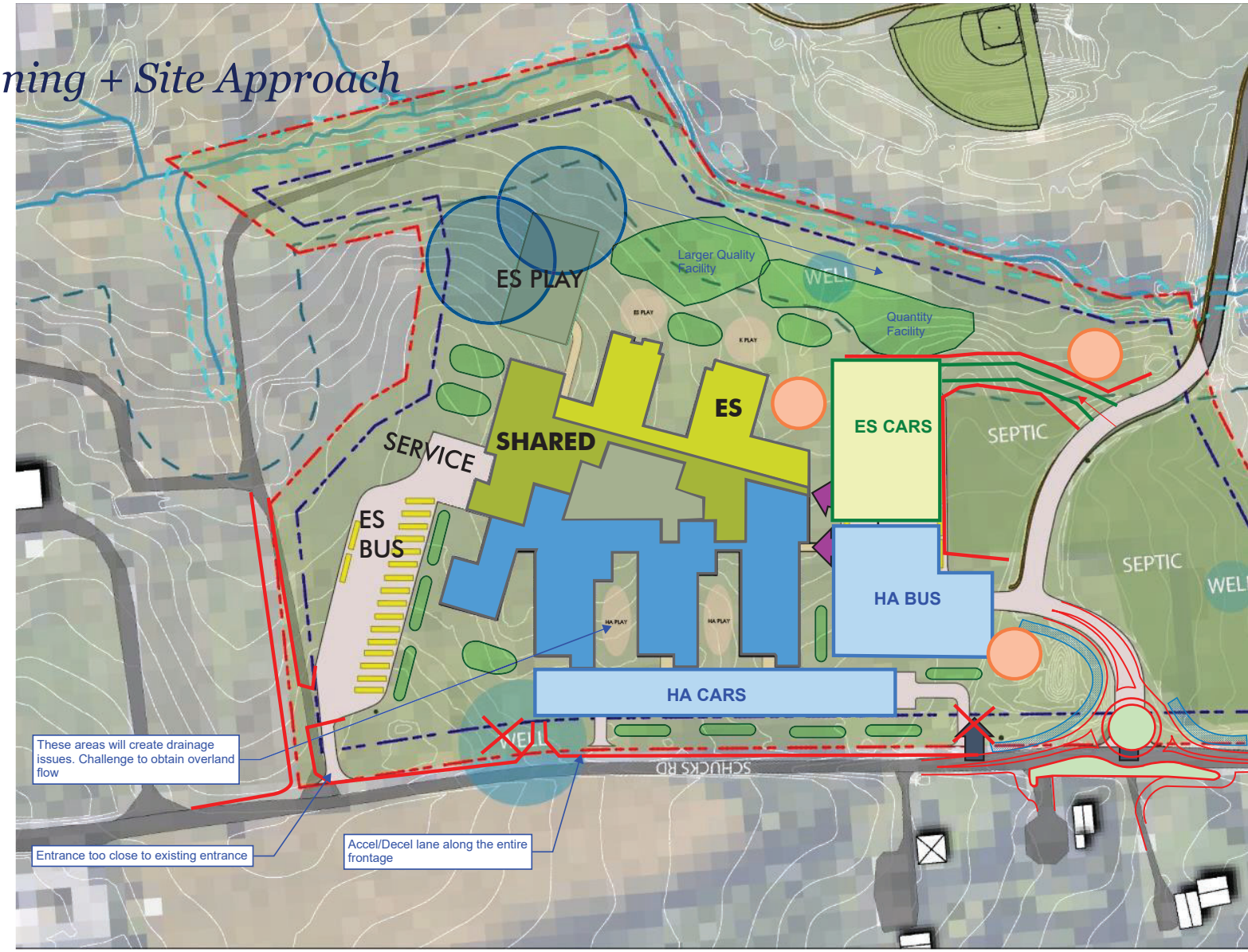
Separate, distinct arrival lobby for HA + ES

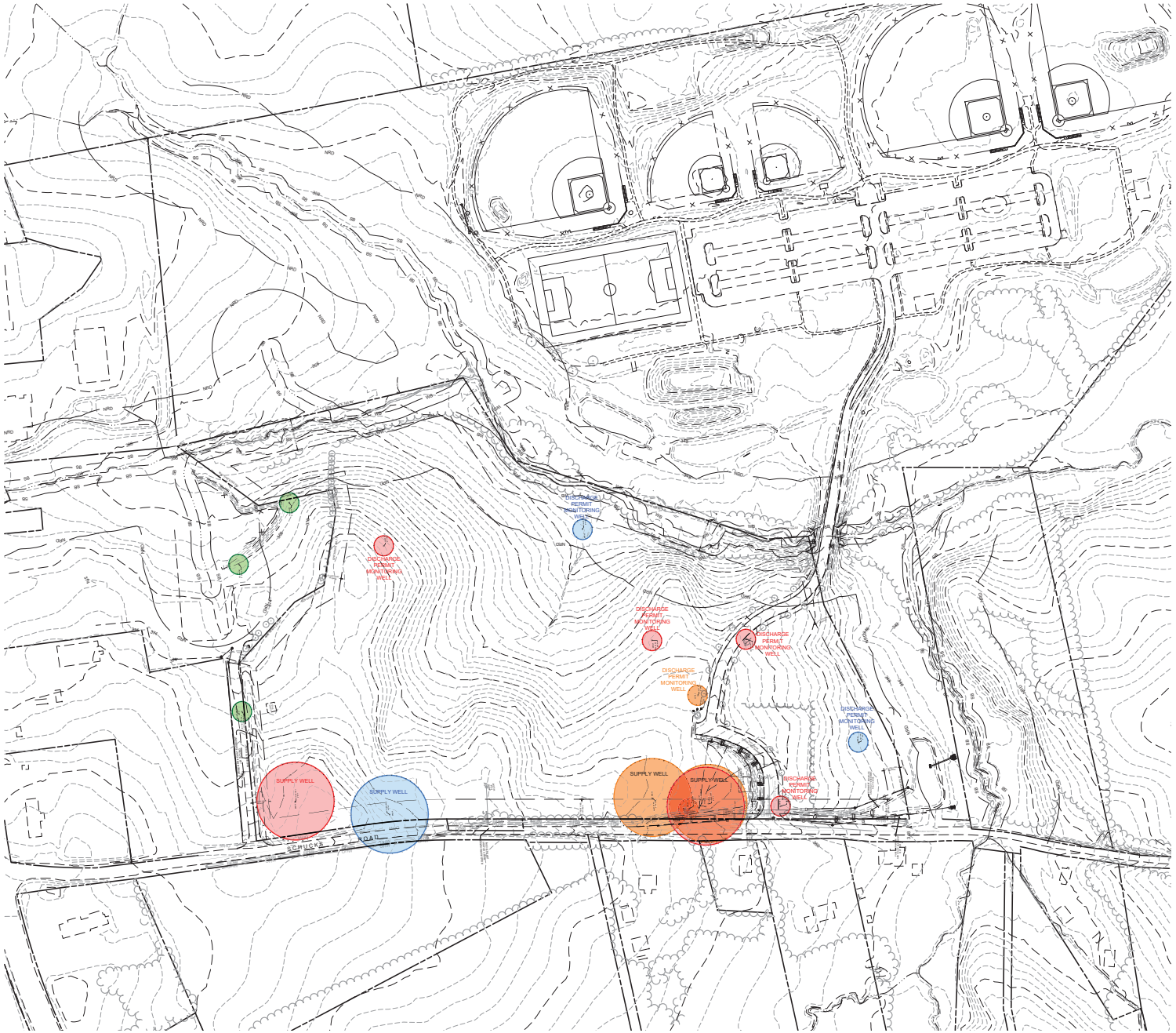
Separate parking lot

Play

Play zones located directly outside of Academic Zones

Harford Academy Play Areas contained in central courtyard





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Site Design Sustainability Engineering
14315 Jarrettsville Pike, Phoenix, MD 21131-0249
410.683.3388 www.siteresourcesinc.com

JOHN ARCHER SCHOOL

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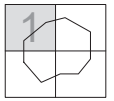
BEL AIR, MD 21015

KEYMAP



PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42977, EXPIRATION DATE: 09/07/2023.

REVISIONS

#	DATE	DESCRIPTION

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DATE: 00/00/0000 PROJECT #: 22015
SCALE: AS NOTED
DRAWING NAME:
EXISTING CONDITIONS PLAN

NOT FOR CONSTRUCTION

DRAWING NO.:
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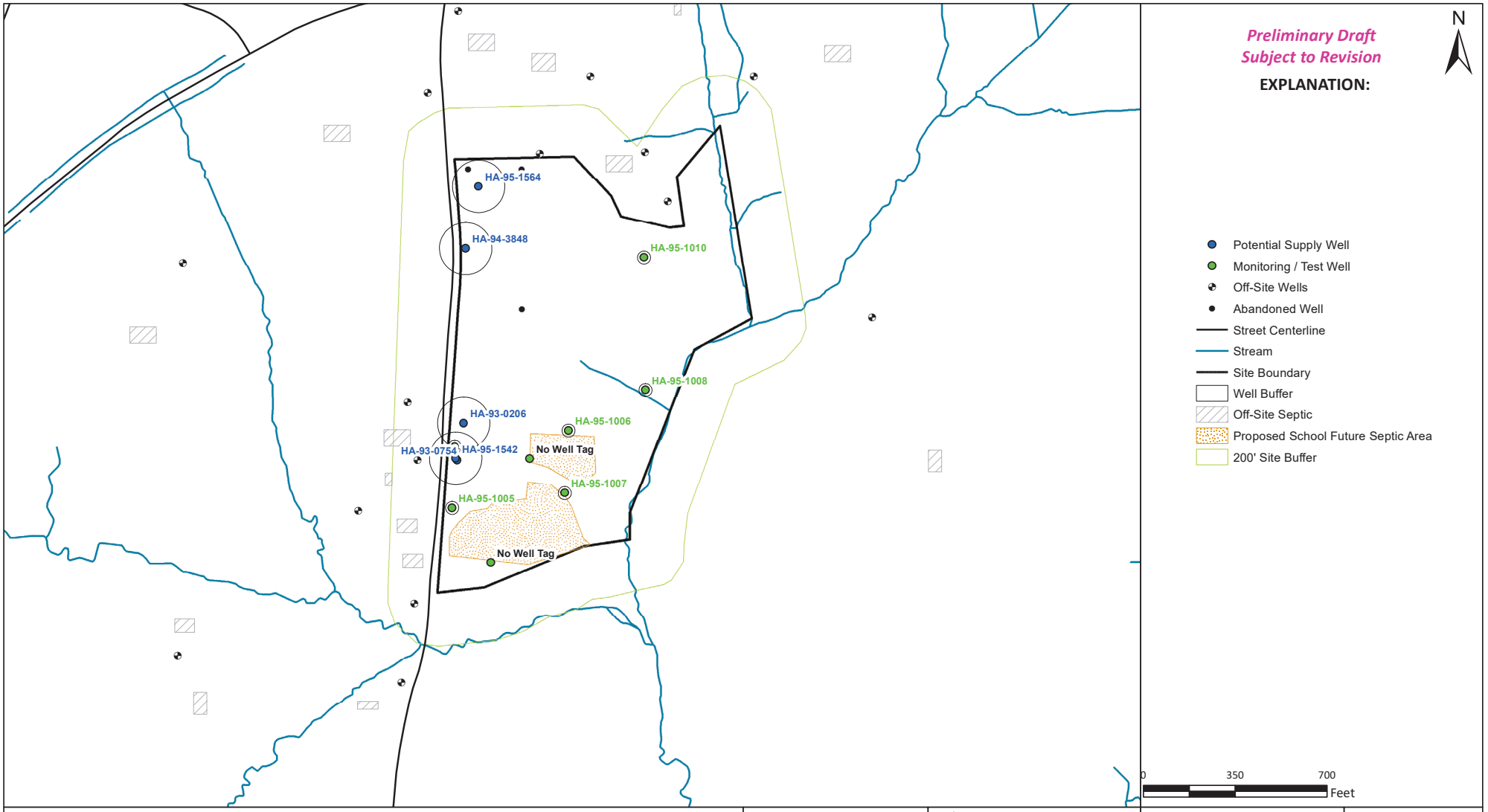


Notes:

1. On-site proposed wells, existing wells, test borings, monitoring wells, and subdivision septic areas obtained from provided maps through SRI.
2. Off-site well and septic information obtained from Harford County through SRI.
3. Soils, street centerline and property boundaries from Maryland iMAP.

Client:

Site Resources, Inc.

PROJECT NO. 2420.003.001

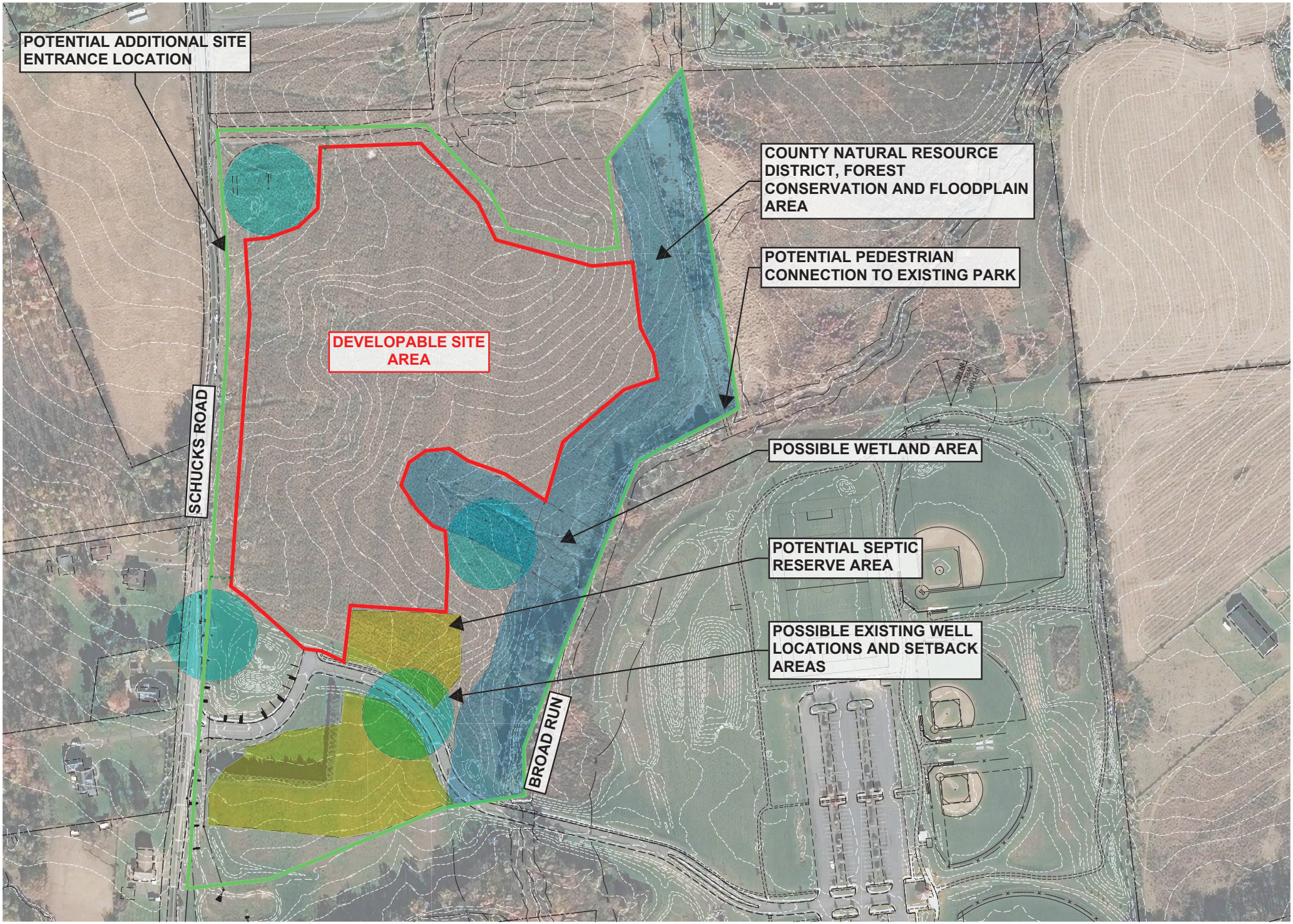
Project:

SRI HCPS Harford Academy W-WW Feasibility

Barton & Loguidice

Figure 1:
Site Map
Surveyed Well Locations

August 12, 2022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COUNTY NATURAL RESOURCE DISTRICT, FOREST CONSERVATION AND FLOODPLAIN AREA
POTENTIAL PEDESTRIAN CONNECTION TO EXISTING PARK
DEVELOPABLE SITE AREA
SCHUCKS ROAD
POSSIBLE WETLAND AREA
POTENTIAL SEPTIC RESERVE AREA
POSSIBLE EXISTING WELL LOCATIONS AND SETBACK AREAS
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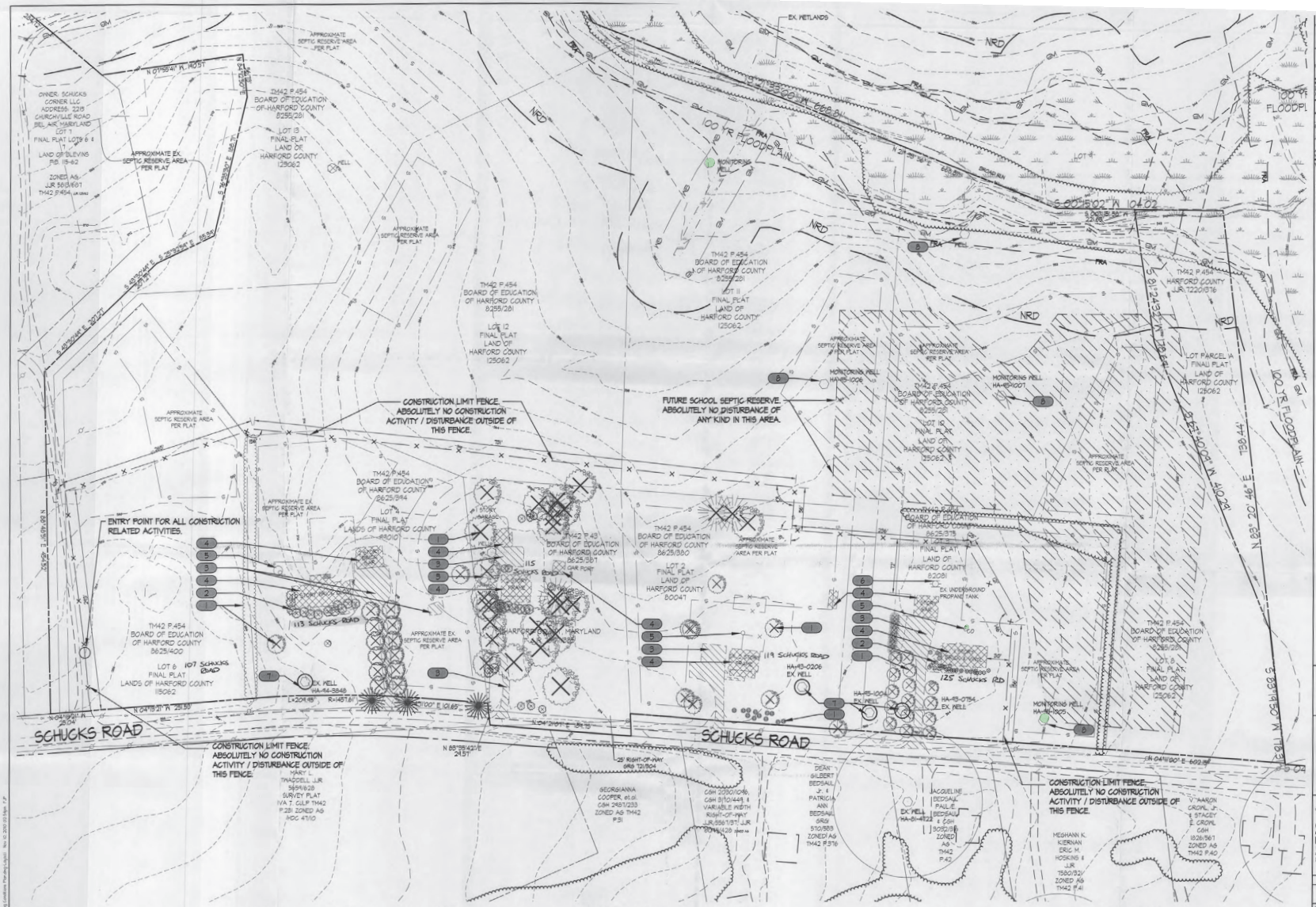
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ENTRY POINT FOR ALL CONSTRUCTION RELATED ACTIVITIES.
FUTURE SCHOOL SEPTIC RESERVE. ABSOLUTELY NO DISTURBANCE OF ANY KIND IN THIS AREA.
100 YR FLOODPLAIN
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HARFORD COUNTY MARYLAND
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LOT 13 FINAL PLAT LAND OF HARFORD COUNTY 12062
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SCHUCKS ROAD
CONSTRUCTION LIMIT FENCE. ABSOLUTELY NO CONSTRUCTION ACTIVITY / DISTURBANCE OUTSIDE OF THIS FENCE.
FUTURE SCHOOL SEPTIC RESERVE. ABSOLUTELY NO DISTURBANCE OF ANY KIND IN THIS AREA.
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EX. WETLANDS
100 YR FLOODPLAIN
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TM42 P.454 HARFORD COUNTY LIBR. 1220/0176
OWNER: SCHUCKS CORNER LLC ADDRESS: 2218 CHURCHVILLE ROAD BEL AIR, MARYLAND LOT 7 FINAL PLAT LOTS 6 & 7 LAND OF BLEVINS P.B. 115-62
ZONED AG LIR 5815/667 TM42 P.454 (LIR 5815)
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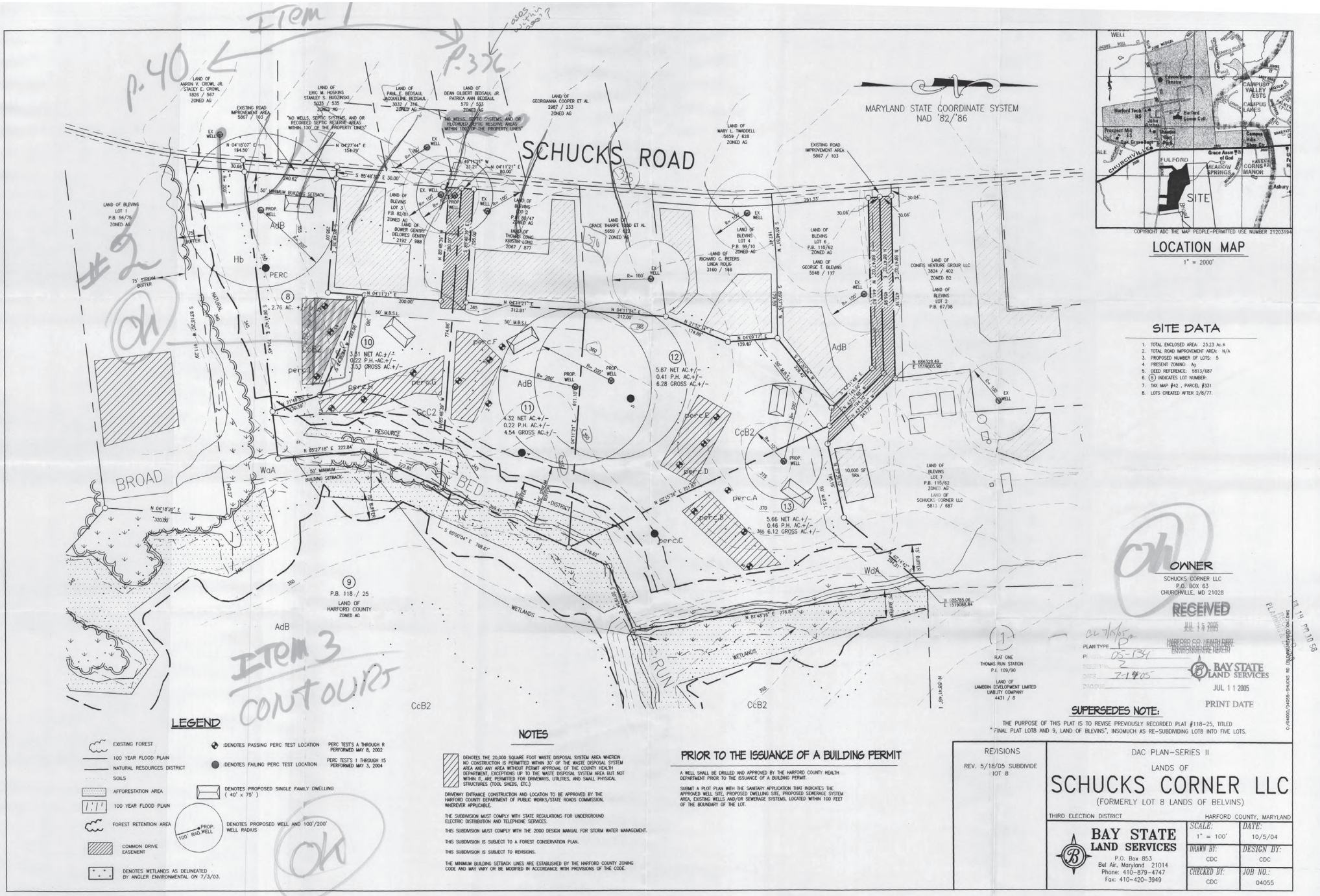
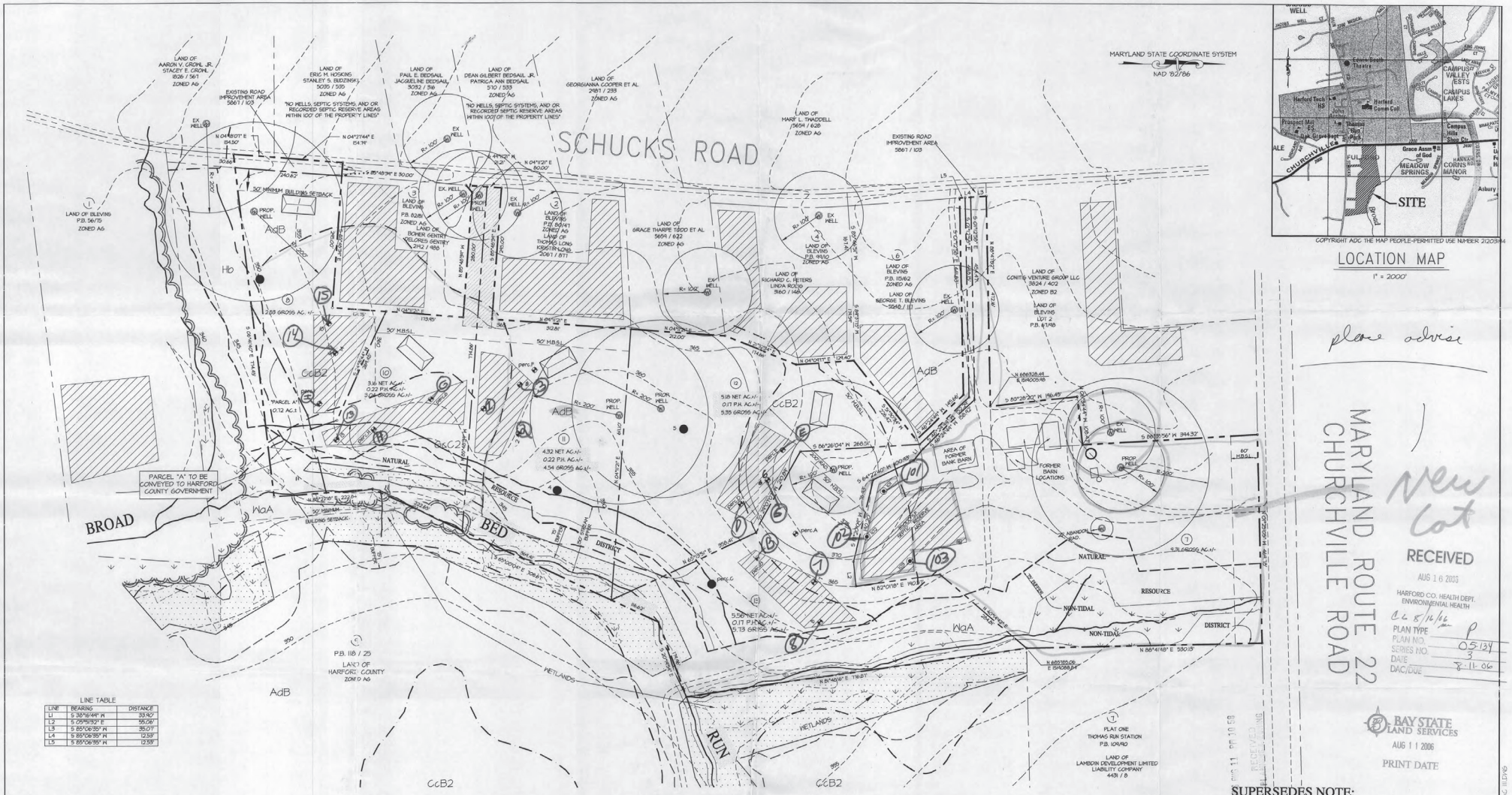
MEGHANN K. KIERNAN ERIC M. HOSKINS II LIR 7360/321 ZONED AS TM42 P.41
V. AARON CROYL, JR. & STACEY E. CROYL GSH 1826/567 ZONED AS TM42 P.40
HA-81-4123
HA-83-0206
HA-83-0754
HA-85-1004
HA-85-1005
HA-85-1006
HA-85-1007
HA-83-1006
S 89°39'42" E 2451'
N 89°39'42" W 2451'
N 04°21'21" W 2824'
N 04°21'21" W 251.55'
N 04°21'01" E 189.76'
N 04°11'20" E 602.19'
S 04°11'20" W 783.02'
S 85°24'32" W 1328.84'
S 85°24'32" W 1328.84'
S 00°35'02" W 1040.2'
N 00°35'02" E 1040.2'
N 21°35'00" W 668.81'
N 21°35'00" W 668.81'
N 01°55'41" W 402.51'
S 62°30'44" E 307.21'
S 62°30'44" E 307.21'
S 27°29'16" E 85.00'
S 27°29'16" E 85.00'
S 27°29'16" E 85.00'
S 62°30'44" W 307.21'
S 62°30'44" W 307.21'
N 27°29'16" W 85.00'
N 27°29'16" W 85.00'
N 62°30'44" E 307.21'
N 62°30'44" E 307.21'
S 35°49'09" E 1569.09'
N 35°49'09" W 1569.09'
N 40°28'39" E 1423.94'
N 40°28'39" W 1423.94'
S 40°28'39" E 1423.94'
S 40°28'39" W 1423.94'
L=204.45'
R=1457.81'
S 01°00'00" E 101.65'
S 01°00'00" E 101.65'
S 01°00'00" E 101.65


SCHUCKS ROAD
BROAD
RUN
MARYLAND STATE COORDINATE SYSTEM
NAD '82/'86
LOCATION MAP
1" = 2000'
SITE DATA
1. TOTAL ENCLOSED AREA: 23.23 Ac.±
2. TOTAL ROAD IMPROVEMENT AREA: N/A
3. PROPOSED NUMBER OF LOTS: 5
4. PRESENT ZONING: Ag
5. DEED REFERENCE: 5813/687
6. (8) INDICATES LOT NUMBER
7. TAX MAP #42 , PARCEL #331
8. LOTS CREATED AFTER 2/8/77.
OWNER
SCHUCKS CORNER LLC
P.O. BOX 63
CHURCHVILLE, MD 21028
RECEIVED
JUL 11 2005
HARFORD CO. HEALTH DEPT.
ENVIRONMENTAL HEALTH
BAY STATE LAND SERVICES
JUL 11 2005
PRINT DATE
SUPERSEDES NOTE:
THE PURPOSE OF THIS PLAT IS TO REVISE PREVIOUSLY RECORDED PLAT #118-25, TITLED "FINAL PLAT LOT8 AND 9, LAND OF BLEVINS", INSOMUCH AS RE-SUBDIVIDING LOT8 INTO FIVE LOTS.
LEGEND
EXISTING FOREST
100 YEAR FLOOD PLAIN
NATURAL RESOURCES DISTRICT SOILS
AFFORESTATION AREA
100 YEAR FLOOD PLAIN
FOREST RETENTION AREA
COMMON DRIVE EASEMENT
DENOTES WETLANDS AS DELINEATED BY ANGLER ENVIRONMENTAL ON 7/3/03.
DENOTES PASSING PERC TEST LOCATION
DENOTES FAILING PERC TEST LOCATION
PERC TEST'S A THROUGH R PERFORMED MAY 8, 2002
PERC TEST'S 1 THROUGH 15 PERFORMED MAY 3, 2004
DENOTES PROPOSED SINGLE FAMILY DWELLING (40' x 75')
DENOTES PROPOSED WELL AND 100'/200' WELL RADIUS
NOTES
DENOTES THE 20,000 SQUARE FOOT WASTE DISPOSAL SYSTEM AREA WHEREIN NO CONSTRUCTION IS PERMITTED WITHIN 30' OF THE WASTE DISPOSAL SYSTEM AREA AND ANY AREA WITHOUT PERMIT APPROVAL OF THE COUNTY HEALTH DEPARTMENT. EXCEPTIONS UP TO THE WASTE DISPOSAL SYSTEM AREA BUT NOT WITHIN IT, ARE PERMITTED FOR DRIVEWAYS, UTILITIES, AND SMALL PHYSICAL STRUCTURES (TOOL SHEDS, ETC.)
DRIVEWAY ENTRANCE CONSTRUCTION AND LOCATION TO BE APPROVED BY THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS/STATE ROADS COMMISSION, WHEREVER APPLICABLE.
THE SUBDIVISION MUST COMPLY WITH STATE REGULATIONS FOR UNDERGROUND ELECTRIC DISTRIBUTION AND TELEPHONE SERVICES.
THIS SUBDIVISION MUST COMPLY WITH THE 2000 DESIGN MANUAL FOR STORM WATER MANAGEMENT.
THIS SUBDIVISION IS SUBJECT TO A FOREST CONSERVATION PLAN.
THIS SUBDIVISION IS SUBJECT TO REVISIONS.
THE MINIMUM BUILDING SETBACK LINES ARE ESTABLISHED BY THE HARFORD COUNTY ZONING CODE AND MAY VARY OR BE MODIFIED IN ACCORDANCE WITH PROVISIONS OF THE CODE.
PRIOR TO THE ISSUANCE OF A BUILDING PERMIT
A WELL SHALL BE DRILLED AND APPROVED BY THE HARFORD COUNTY HEALTH DEPARTMENT PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
SUBMIT A PLOT PLAN WITH THE SANITARY APPLICATION THAT INDICATES THE APPROVED WELL SITE, PROPOSED DWELLING SITE, PROPOSED SEWERAGE SYSTEM AREA, EXISTING WELLS AND/OR SEWERAGE SYSTEMS, LOCATED WITHIN 100 FEET OF THE BOUNDARY OF THE LOT.
REVISIONS
REV. 5/18/05 SUBDIVIDE LOT 8
DAC PLAN-SERIES II
LANDS OF
SCHUCKS CORNER LLC
(FORMERLY LOT 8 LANDS OF BELVINS)
THIRD ELECTION DISTRICT
HARFORD COUNTY, MARYLAND
BAY STATE LAND SERVICES
P.O. Box 853
Bel Air, Maryland 21014
Phone: 410-879-4747
Fax: 410-420-3949
SCALE: 1" = 100'
DATE: 10/5/04
DRAWN BY: CDC
DESIGN BY: CDC
CHECKED BY: CDC
JOB NO.: 04055



COPYRIGHT ADC THE MAP PEOPLE-PERMITTED USE NUMBER 20031144

LOCATION MAP

1" = 2000'

MARYLAND ROUTE 22
CHURCHVILLE ROAD

plane advise

New Lot

RECEIVED
AUG 16 2005
HARFORD CO. HEALTH DEPT. ENVIRONMENTAL HEALTH

PLAN TYPE P
PLAN NO. 05-134
SERIES NO. 3
DATE 8-11-06
DAC/DOE

BAY STATE LAND SERVICES
AUG 11 2006
PRINT DATE

RECEIVED
2006 AUG 11 PM 10:58
PLANNING & ZONING

LINE TABLE

LINE	BEARING	DISTANCE
L1	S 36°16'48" W	33.90'
L2	S 05°51'52" E	55.06'
L3	S 85°06'35" W	35.01'
L4	S 85°06'35" W	12.59'
L5	S 85°06'35" W	12.59'

LEGEND

- EXISTING FOREST
- 100 YEAR FLOOD PLAIN
- NATURAL RESOURCES DISTRICT
- SOILS
- AFFORESTATION AREA
- 100 YEAR FLOOD PLAIN OF HIGHLAND SURVEY.
- FOREST RETENTION AREA
- COMMON DRIVE EASEMENT
- DENOTES WETLANDS AS DELINEATED BY ANSLER ENVIRONMENTAL ON 7/3/03.
- ⊙ DENOTES PASSING PERC TEST LOCATION — PERC TESTS 101 THROUGH 103 PERFORMED MAY 16, 2006
- DENOTES PASSING PERC TEST LOCATION — PERC TESTS A THROUGH R PERFORMED MAY 8, 2002
- DENOTES FAILING PERC TEST LOCATION — PERC TESTS 1 THROUGH 15 PERFORMED MAY 3, 2004
- DENOTES PASSING PERC TEST LOCATION OF HIGHLAND SURVEY.
- DENOTES PROPOSED SINGLE FAMILY DWELLING (40' x 75')
- PROP. 100' RADIUS WELL — DENOTES PROPOSED WELL AND 100'/200' WELL RADIUS

NOTES

DENOTES THE 20,000 SQUARE FOOT WASTE DISPOSAL SYSTEM AREA (UNLESS OTHERWISE DENOTED HEREIN NO CONSTRUCTION IS PERMITTED WITHIN 50' OF THE WASTE DISPOSAL SYSTEM AREA AND ANY AREA WITHOUT PERMIT APPROVAL OF THE COUNTY HEALTH DEPARTMENT, EXCEPTIONS UP TO THE WASTE DISPOSAL SYSTEM AREA BUT NOT WITHIN IT, ARE PERMITTED FOR DRIVEWAYS, UTILITIES, AND SMALL PHYSICAL STRUCTURES (TOOL SHEDS, ETC.)

DRIVEWAY ENTRANCE CONSTRUCTION AND LOCATION TO BE APPROVED BY THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS/STATE ROADS COMMISSION WHEREVER APPLICABLE.

THIS SUBDIVISION MUST COMPLY WITH STATE REGULATIONS FOR UNDERGROUND ELECTRIC DISTRIBUTION AND TELEPHONE SERVICES.

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THIS SUBDIVISION IS SUBJECT TO REVISIONS.

THE MINIMUM BUILDING SETBACK LINES ARE ESTABLISHED BY THE HARFORD COUNTY ZONING CODE AND MAY VARY OR BE MODIFIED IN ACCORDANCE WITH PROVISIONS OF THE CODE.

PRIOR TO THE ISSUANCE OF A BUILDING PERMIT

A WELL SHALL BE DRILLED AND APPROVED BY THE HARFORD COUNTY HEALTH DEPARTMENT PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.

SUBMIT A PLOT PLAN WITH THE SANITARY APPLICATION THAT INDICATES THE APPROVED WELL SITE, PROPOSED DWELLING SITE, PROPOSED SEWERAGE SYSTEM AREA, EXISTING WELLS AND/OR SEWERAGE SYSTEMS, LOCATED WITHIN 100 FEET OF THE BOUNDARY OF THE LOT.

OWNER

SCHUCKS CORNER LLC
P.O. BOX 63
CHURCHVILLE, MD 21028

SITE DATA

1. TOTAL ENCLOSED AREA: 31.40 Ac.±
2. TOTAL ROAD IMPROVEMENT AREA: N/A
3. PROPOSED NUMBER OF LOTS: 6
4. PRESENT ZONING: Ag
5. DEED REFERENCE: 5813/687
6. (6) INDICATES LOT NUMBER.
7. TAX MAP #42 , PARCEL #331
8. LOTS CREATED AFTER 2/8/71.

SUPERSEDES NOTE:

THE PURPOSE OF THIS PLAT IS TO REVISE PREVIOUSLY RECORDED PLAT #118-25, TITLED " FINAL PLAT LOT 8 AND 9, LAND OF BLEVINS", INSOMUCH AS RE-SUBDIVIDING LOT 8 INTO FIVE LOTS AND CONVEY PARCEL "A" TO HARFORD COUNTY.

REVISIONS
REV. 5/18/05 SUBDIVIDE LOT 8
REV. 8/26/05 REV. LOT 8 S.R.A.
REV. 7/18/05 REV LOTS 4 S.R.A.

DAC PLAN-SERIES III
LOTS 8, 10, 11, 12, 13, AND REVISED LOT 7
LANDS OF

SCHUCKS CORNER LLC

(FORMERLY LOT 8 LANDS OF BLEVINS)

THIRD ELECTION DISTRICT — HARFORD COUNTY, MARYLAND

BAY STATE LAND SERVICES
P.O. Box 853
Bel Air, Maryland 21014
Phone: 410-879-4141
Fax: 410-420-3944

SCALE:	DATE:
1" = 100'	10/15/04
DRAWN BY: DMD	DESIGN BY: CDC
CHECKED BY: CDC	JOB NO.: 04055

S:\PROJECTS\04055\04055-SHUCKS RD (BLEVINS)\DWG\04055-DAC II.DWG

SITE RESOURCES
incorporated
Comprehensive Land Planning & Site Design Services

14315 Jarrettsville Pike
P.O. Box 249
Phoenix, MD 21131-0249
(410) 683-3388
(410) 683-3389 Fax

LETTER OF TRANSMITTAL

To: Maryland Department of the Environment
Customer Service Center
1800 Washington Boulevard, Suite 735
Baltimore, Maryland 21230-1720

Date: January 28, 2009
SRI Project #: 08035
SRI Billing Group: A.1
SRI Phase: DD

Attn: Craig Williams

Re: Campus Hills Elementary School (Schucks Road E.S.) Groundwater Discharge Permit Application

We are sending you: ☐ Shop Drawings ☐ Prints ☐ Specifications ☒ Plans ☐ Electronic Files ☒ Report ☐ As Noted Below

COPIES	DESCRIPTION
1	Application for Groundwater Discharge Permit
1	Facility Location Map

These are transmitted: ☐ Approved As Submitted ☐ For Approval ☐ For Your Use ☐ Approved As Noted ☐ Returned for Corrections ☐ As Requested ☒ For Review & Comment ☐ Resubmit

Remarks:
Craig – The Hydrogeologic Report has been submitted under separate cover by Chesapeake Environmental Management as we discussed on the phone. Please let me know when you receive that report. Also, as discussed, this project is to be included in the Water & Sewer Master Plan tentatively scheduled for the second Tuesday in April 2009. We will send verification of this when that occurs.

Cc: Kevin Barnaba, Harford Co. Health Dept.

Signed: Jennifer Harrington, P.E.

Delivery Method: ☐ Same Day ☐ Next Day ☐ AM ☐ PM ☐ 2nd Day ☒ U.S. Mail ☐ In House

Delivery By: Date: Time:

CONFIDENTIALITY NOTICE: The information herein is confidential and is intended for the use of the individual to whom this cover is addressed. Any use of this information by other than the addressee is prohibited. If you receive this transmission in error, please contact us immediately to arrange the return of this material.

Print Form

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101 • http://www.mde.state.md.us

APPLICATION FOR A STATE GROUNDWATER DISCHARGE PERMIT FOR DOMESTIC WASTEWATER

SECTION A: FACILITY & APPLICANT INFORMATION

1. Facility Location: (name and address of facility producing discharge or potential discharge)

Name: Schucks Elementary School
Address: Shucks Road
City: Bel Air County: Harford Zip: 21015
Legislative District: 35A Council District: B
Latitude (Deg., Min., Sec.): 39° 33' 05" Longitude (Deg., Min., Sec.): 76° 17' 05"

2. Applicant Information (name and address of responsible person or organization applying for the permit)

Name: Harford County Public Schools
Address: 102 South Hickory Avenue
City: Bel Air County: Harford Zip: 21014
Telephone No.: 410.809.6124 Fax No.: 410.638.3165
Workers' Compensation Insurance Binder/Policy Number:
Insurance Provider Name: Policy Expiration Date:
Organization's Federal Tax Identification or Individual's Social Security Number:
(Required for renewal of permit, see Privacy Act Notice on page 4)

3. Property Owner Information (name and address of property owner, if different from applicant)

Name:
Address:
City: County: Zip:
Telephone No.: Fax No.:

MDE USE ONLY
Application Number:
Date Received:

Form Number: MDE/WMA/PER.014
Revision Date: January 25, 2005
TTY Users 1-800-735-2258

Recycled Paper

MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION B: TYPE OF DISCHARGE AND TREATMENT FACILITY

1. Describe Business and Treatment Facility: (include Standard Industrial Classification or NAICS Code): Elementary School (611117)

2. Method(s) of Wastewater Discharge: *(Check all applicable spaces)*
   Land Application *(via Spray Irrigation)*: [ ] Overland Flow: [ ] Subsurface Absorption *(via Infiltration Basin)*: [ ]
   Drain Field: [x] Seepage Pit: [ ] Injection Well *(under pressure)*: [ ] Injection Well *(dry)*: [ ]
   Other *(including recirculation with no discharge, describe)*:

3. Method(s) of Wastewater Treatment: *(Check all applicable spaces)*
   Conventional Septic System: [x] Advanced Septic System: [ ] Lagoon System: [ ] Activated Sludge: [ ]
   Extended Aeration: [ ] Contact Stabilization: [ ] SBR: [ ] RBC: [ ] Oxidation Ditch: [ ] Sand Filter: [ ]
   Trickling Filter: [ ] Other *(describe)*:

4. Other Potential Sources of Discharge at Facility: *(Check all applicable spaces)*
   Holding, storage or treatment ponds/lagoons: [ ] Aquaculture ponds/tanks: [ ] Stockpiles and/or waste piles: [ ]
   Mining Activities: [ ] Salt piles: [ ]
   Landfill [ ] describe types of wastes received:
   Other: [ ] (describe):

SECTION C: NATURE OF WASTE, WASTEWATER OR POTENTIAL POLLUTANT

1. Types of Wastewater: *(Check all applicable spaces)*
   Sanitary [x] Industrial [ ] Cooling Water [ ] Water Treatment: [ ] Sludges [ ] Process wastewater [ ]
   Aquaculture wastewater [ ]
   Briefly describe how wastewater is generated: Discharge from Elementary School

2. Quantity of Wastewater and Residuals:
   Liquids: avg. gal/day: 11,500* max. gal/day: 11,500*
   Solids or Sludge: avg. tons/ day: _____ max. tons/ day: _____
   Period of Discharge or Operation *(mm/dd/yyyy)* From: _____ To: _____
   Population served: 676 students

3. If aquaculture pond: lbs. of fish per pond: _____
   Source of Water Supply: Groundwater *(wells)* [x] Public Supply [ ] Surface water [ ] No water used [ ]

*676 students x 17 gallon/day/student = 11,500 gal/day

Form Number: MDE/WMA/PER.014
Revision Date: January 25, 2005
TTY Users 1-800-735-2258

Recycled Paper

MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION D: FACILITY LOCATION MAP & SUPPORTING DOCUMENTS

The application, to be considered complete, must be accompanied by a U.S. Geological Survey topographic map or road map or similar map, at a sufficient scale to adequately show the exact location of the facility which discharges or may discharge, and the exact location of the area used to dispose of any wastewaters generated. Documents necessary to demonstrate the feasibility of the proposed facility such as a hydrogeological study report and verification of conformance with the local Water & Sewerage Master Plan shall also be attached or submitted as supplements to the application.

SECTION E: OTHER ADMINISTRATIVE PERMITS OR ORDERS

List all other State Discharge Permits presently held or applied by the applicant or affiliate:

Identify and list all administrative complaints and/or orders, if any, against the facility of the applicant or affiliate:

SECTION F: SIGNATURE OF APPLICANT OR AGENT

COMAR 26.08.04.01. D.5 requires that applications for a State Discharge Permit be signed by a responsible official as indicated: For corporations, by principal executive officer or authorized representative; For partnerships, by a general partner; For proprietorship, by the proprietor; or, for municipal, State or other public facility, by a principal executive officer, ranking elected official or other authorized employee.

Name and Title (please print)	Phone Number
Ronald Kauffman, Facilities Planner	410.809.6124
Signature: Jennifer Harrington, Agent for	Date Signed: 1.28.09

SECTION G: SUBMITTAL OF APPLICATION

Submit one signed original to:
Maryland Department of the Environment
Customer Service Center
1800 Washington Boulevard: Suite 735
Baltimore, Maryland 21230-1720

Forward one signed copy, with any attachments, to the appropriate local government Environmental Health Director. Retain a copy for your records.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION H: NOTICES

1. Environment Article §9-323 provides that a person shall hold a discharge permit issued by the Department before the person may construct, install, modify, or operate any wastewater disposal system if it's operation could cause or increase the discharge of pollutants into any waters of the State.

2. Environment Article §1-202, provides that the applicant for a permit or license to engage in any activity in which the applicant may employ a "covered employee", as defined in §9-101 of the Labor and Employment Article of the Annotated Code of Maryland shall provide to the Department the policy or binder number of a valid workers' compensation insurance policy that has been issued to the applicant. Such a filing is required before the Department may issue any such license or permit. Alternatively, the applicant shall file a Certificate of Compliance issued by the Maryland Workers' Compensation Commission.

3. Environment Article §4-401 defines a "discharge" as the addition, introduction, leaking, spilling, or emitting any pollutant to State waters or the placing of any pollutant in a location where it is likely to pollute.

4. COMAR 26.08.04.01.D.4 provides that the Department may require that an applicant for a State Discharge Permit provide additional reports, specifications, plans or other information on the existing or proposed discharge if deemed necessary to allow the Department to adequately evaluate the discharge.

5. COMAR 26.08.04.01.D.3 provides that if the discharge is to be from a new facility, preliminary plans and specifications, sufficiently adequate in scope and form to evaluate the proposed facility, shall be submitted with the application.

6. COMAR 26.04.02.02. F provides that a person may only dispose of sewage, body or industrial wastes in accordance with an approved on-site sewage disposal permit approved by the local county health officer or other county official authorized to administer environmental laws.

7. COMAR 26.08.03.01.A.7 & 04.02.A.3 provide that a discharge must be in compliance with all plans approved by the State prior to the issuance of a discharge permit. This includes the county's comprehensive water and sewer plan.

8. Other applicable laws and regulations:
Environmental Article:
Title 4, Subtitle 4: Water Pollution Control and Abatement
Title 9, Subtitle 2: Regulation by State
Title 9, Subtitle 3: Water Pollution Control
Title 9, Subtitle 5: County Water and Sewerage Plans
Code of Maryland Regulations (COMAR):
COMAR 26.03.01 - Planning Water Supply & Sewerage Systems
COMAR 26.04.02 - Sewage Disposal & Certain Water Systems for Homes and other Establishments in the Counties of Maryland Where a Public Sewerage System is not available
COMAR 26.08 - Water Pollution

9. Privacy Act Notice: This notice is provided pursuant to the Federal Privacy Act of 1974, U.S.C Section 552a. Disclosure of your organization's Federal Tax Identification number or your personal Social Security number with this application is mandatory pursuant to the Maryland Environment Article, Section 1-203 (2003), which requires MDE to verify that applicants for the renewal of permits or licenses have paid all undisputed taxes and unemployment insurance. This information will not be used for any purposes other than those described in this Notice.

Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

JUL 18 2018

Certified Mail

Patti Jo Beard, Director of Facilities
Harford County Public Schools
102 South Hickory Street
Bel Air, MD 21014

RE: State Discharge Permit No. 17-DP-3666
Campus Hills Elementary School, Harford County

Dear Ms. Beard:

Enclosed is the above referenced discharge permit with the effective date indicated on the cover page. The permittee is responsible for complying with all permit conditions. Therefore, you are advised to read the permit carefully and to become thoroughly familiar with the requirements.

The Maryland Department of the Environment requires NetDMR for filing your required Discharge Monitoring Report (DMR) forms. NetDMR is a freely available Web based tool that allows NPDES permittees to electronically sign and submit their DMRs to EPA via a secure internet connection. NetDMR is designed to improve data quality, reduce reporting liabilities, save paper, and provide cost savings. It allows participants to discontinue mailing in hard copy forms under 40 CFR 122.41 and 403.12. For more information go to the EPA website (www.epa.gov/netdmr) or call the MDE Water Management Administration, Compliance Program, at 410-537-3510 and ask to speak to a NetDMR coordinator.

As indicated in Condition II.C.2 of your permit, before you can submit official DMRs using NetDMR you must attend a training Webinar and successfully set-up and submit test monitoring results electronically. While paper DMR reporting is being phased out, those who are unable to use the NetDMR system may continue to submit paper copies after applying for a waiver (see Condition II.C.2.b). Enclosed are (EPA No. 3320-1) Discharge Monitoring Report (DMR) forms, which, unless you are already using NetDMR, must be completed for each reporting period and submitted to the Department in accordance with the requirements of the permit. Copies of these forms can also be downloaded from the Department's website ((http://cm.gy/MD-DMRForm) Using the latest version of Adobe Acrobat Reader, the DMR form can be completed from a keyboard and printed for mailing to the Department.

You will also find enclosed a copy of the Code of Federal Regulations, 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants." Unless otherwise specified, these guidelines are to be used for the analyses required by this permit. The most current version of 40 CFR Part 136 can be found online at EPA's website. The link is: www.epa.gov/epahome/cfr40.htm.

Please note that the permit authorizes wastewater discharge to groundwaters of the State; discharges to surface waters are prohibited. Please direct all future correspondence regarding permit compliance to the following address:

Compliance Program
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite 420
Baltimore, MD 21230-1708

If you have any questions, please do not hesitate to call Ching-Tzone Tien, Deputy Program Manager, Wastewater Permits Program at (410) 537-3662.

Sincerely,

Virginia M Kearney/for

D. Lee Currey, Director
Water and Science Administration

Enclosures

cc: Central Inspection Division Chief
Julie Mackert
William Lee (electronic copy)

STATE GROUNDWATER DISCHARGE PERMIT

Permit Number: 17-DP-3666

Effective Date: August 1, 2018

Expiration Date: July 31, 2023

Pursuant to the provisions of Title 9 of the Environment Article, Annotated Code of Maryland, and regulations promulgated thereunder, the Department of the Environment, hereinafter referred to as "the Department", hereby authorizes

Harford County Public Schools
102 South Hickory Avenue
Bel Air, Maryland 21014

hereinafter referred to as "Permittee", to discharge septic tank - tertiary treated effluent, by absorption trenches as described herein, from:

Campus Hills Elementary School
123 Schucks Road
Bel Air, Maryland 21015

to groundwaters of the State in accordance with the following special and general conditions, including the attached maps made a part hereof.

I. Special Conditions

A. Waste and Wastewater Limitations

1. The Permittee is authorized to discharge treated wastewater via absorption trenches to groundwaters of the State at the site known as Campus Hills Elementary School as shown on Tax Map 42, Parcel 454, and on Map A attached. The Permittee is not authorized to discharge any treated or untreated industrial wastewaters to waters of the State.

2. The maximum daily flow to the absorption trenches shall be limited to 11,500 gallons from an educational facility. A construction permit for the pretreatment and disposal systems shall be obtained from the Department prior to installation of same.

3. Prior to discharge to the absorption trenches, all wastewaters shall be treated to produce an effluent which does not exceed the following maximum limitations:

	Effluent Limitations					
Parameter Code (STORET)	Parameter Description	Loading		Concentration	Monitoring Frequency	Sample Type
		Yearly Maximum	Monthly Average	Monthly Average		
00310	BOD_5	N/A	N/A	30 mg/l	Weekly	Grab (2)
00530	Suspended Solids	N/A	N/A	30 mg/l	Weekly	Grab (2)
50050	Flow	N/A	5,750 gpd	N/A	Continuous	Measured
00600	Total Nitrogen(1)	N/A	N/A	8 mg/l	Weekly	Grab (2)
00625	TKN	N/A	N/A	Report Value	Weekly	Grab (2)
00630	Nitrate + Nitrite (N+N)	N/A	N/A	Report Value	Weekly	Grab (2)

(1) Any future expansion of this facility may be limited to no more than 140 lb yearly nitrogen loading requirement which was determined based on 5,750 gpd average daily flow and 8 mg/l effluent nitrogen concentration. Total nitrogen is defined as the sum of Nitrate plus Nitrite and Total Kjeldahl Nitrogen (TKN). The concentration of each constituent shall also be reported.

(2) Grab sample shall be taken between Wednesday and Friday.

4. As specified below, Groundwater samples taken from four monitoring wells per requirements of Section I.C.11.b.and Section I.C.11.c. shall be monitored by the permittee according to the following limitations.

a. The discharge of the wastewater authorized in this permit shall not cause groundwater quality to exceed the limitations listed below, as measured in the designated down gradient monitoring wells MW2 and MW4- shown on Map B. The Table below includes limitations based on the drinking water standards for Nitrite (00615), Total Dissolved Solids (70295), Chloride (00940), and Fecal Coliform (74055).

Parameter Code (STORET)	Parameter Description	Concentration	Monitoring Frequency	Sample Type
		Yearly Average		
00400	pH	(1)	Once every 6 months	Grab
00600	Total Nitrogen ($TKN+NO_2+NO_3$)	**(1)**	Once every 6 months	Grab or calculated
00615	NO_2 Nitrite Nitrogen	1 mg/l[(2)]	Once every 6 months	Grab
00620	NO_3 Nitrate Nitrogen	**(1)**	Once every 6 months	Grab
00625	TKN	(1)	Once every 6 months	Grab
00650	PO_4 -Total Phosphate	(1)	Once every 6 months	Grab
00940	Chloride	250 mg/l[(2)]	Once every 6 months	Grab
70295	Total Dissolved Solids	500 mg/l[(2)]	Once every 6 months	Grab
74055	Fecal Coliform	Non-Detect[(2)]	Once every 6 months	Grab

(1) Monitoring required without limitation

[(2)] For any reported exceedance, if the average groundwater quality in the background upgradient wells exceeds the groundwater discharge standards, the Department may evaluate whether a violation exists on a case by a case basis.

[(3)] The groundwater quality limitations are not applicable to the upgradient well MW1 and MW3 shown on Map B.

b. For other parameters not included in (a) above, unless the annual average groundwater quality in the background upgradient well ((MW3), MO-95-1713) exceeds the groundwater discharge standards during the reporting period, the discharge of the treated wastewater, which is authorized in this permit, shall not cause an exceedance of the groundwater quality standards adopted by the Department of the Environment in COMAR 26.04.01, and 26.08.02.09.

B. Effluent and Groundwater Quality Monitoring

1. Measurements and Reporting Requirements

a. Discharge Monitoring Reports*

Monitoring results obtained each month shall be summarized on a Discharge Monitoring Report form (EPA No. 3320-1). Reports shall be submitted to the Department postmarked no later than the 28th day of the month following the reporting month. One signed copy of these reports shall be submitted to:

Attention: Discharge Monitoring Reports
WSA – Compliance Program
Maryland Department of the Environment
1800 Washington Boulevard, STE-425
Baltimore, MD.21230-1708

b. Monthly Operating Reports*

The permittee shall submit monthly operating reports on a form supplied or approved by the Inspection and Compliance Program. Reports shall be submitted to the Inspection and Compliance Program postmarked no later than the 28th day of the month following the reporting month.

c. Groundwater Monitoring Report (GMR)*

Groundwater monitoring data required by this permit under Section I.C.11.b.and Section I.C.11.c.shall be summarized on a yearly groundwater monitoring report form. Each report shall be submitted on or before the 28th day of the month following the end of each calendar year to the address shown on I.B.1a. above.

*** The permittee is required to submit the Reports via NetDMR in accordance with Section II.C.2.**

2. Definitions

a. The monthly average shall be determined by the summation of all the required measurements divided by the number of days during the month when the measurements were made. The only exception is flow rate which shall be divided by the total number of days each month.

b. A grab sample is an individual sample collected in less than 15 minutes.

c. The accumulated nitrogen load per year is the sum of the monthly nitrogen loads within the year. The monthly nitrogen load is the product of the monthly average nitrogen concentration measured in the effluent and the monthly average wastewater flow with appropriate conversion factors.

3. Analysis Methods

The analytical methods used shall conform to test procedures for the analysis of pollutants as identified in "Guideline Establishing Test Procedures for the Analysis of Pollutants" (40 CFR 136), and published in the Federal Register, Volume 41, No. 232-Wednesday, December 1, 1976 or as amended.

4. Monitoring Equipment Maintenance

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation to insure accuracy of measurements.

5. Data Recording Requirements

For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record the following information:

a. The exact place, date, and time of sampling;
b. The dates the analyses were performed;
c. The person(s) who performed the analyses;
d. The analytical techniques or methods used; and,
e. The results of all required analyses.

6. Records Retention

All records information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation and original records from flow monitoring instrumentation shall be retained for a minimum of three(3) years. This period may be extended during the course of litigation, or when so requested by the Department.

7. The Permittee shall develop a "Manual of Operation and Maintenance". The manual shall clearly state how the entire treatment facility shall be managed to insure satisfactory treatment and operation. The manual shall include:

a. Operating and maintenance procedures involving the sewage treatment facility and disposal trenches.
b. Testing procedures to determine acceptable maximum application rates and cycles.
c. Monitoring and sampling procedures as required in this permit.
d. Personnel requirements.
e. **The wastewater treatment plant and the disposal trench system shall be operated by a Maryland State Certified Operator in accordance with the provisions of COMAR 26.06.01 and consistent with the approved operation and maintenance manual. In order to ensure that the Operator is proficient in the operation of the wastewater system, the operator shall take required training courses, when available, at a frequency approved by the MD Board of Waterworks and Waste Systems Operator. This training shall be specific to the operation of the wastewater system in addition to any other training requirements of the operator's class..**

The manual shall be submitted to the Department for approval three (3) months after the issuance date of the Department's Sewerage Construction Permit.

C. Absorption Trenches System Monitoring Requirements and Limitations

1. Design and installation of the absorption trenches shall be in accordance with COMAR 26.04.02. The pretreatment system and absorption trenches shall be monitored by a certified operator. In addition, the facility engineer or a duly authorized representative shall inspect and check the trenches periodically to determine the efficiency and adequacy of the system.

2. Once every three months, the Permittee shall measure and record the water level in the observation pipes installed in the trenches to check the uniformity of effluent distribution and ongoing performance of the trenches.

3. The water quality of each existing unconfined individual well within 1/4 mile distance down-gradient from the disposal site shall be sampled prior to the issuance of this groundwater permit to provide baseline water quality. The water samples shall be analyzed for nitrates and fecal coliforms.

4. Within three months upon completion of the construction of the disposal system, the Permittee shall submit two complete sets of as-built drawings to the Department. The as-built drawings shall be forwarded to:

Groundwater Discharge Permit Division
Water and Science Administration
1800 Washington Boulevard
Baltimore, Maryland 21230

5. The Permittee shall provide an on-site inspector to inspect the system installation during the construction period. The inspector shall ensure that the system is installed according to the approved construction plans. The inspector shall also record any necessary revisions for the purpose of preparing as-built drawings. This requirement is in addition to county health department inspections.

6. The Permittee shall provide a minimum of one inspection port per disposal trench. All ports shall be extended to the bottom of the trench.

7. The Permittee shall provide a minimum of one piezometer per cell of drainfield for measuring the depth of the groundwater table. The piezometer shall be located at the center of the drainfield. The piezometer shall be extended to at least eight feet below the bottom of the disposal trench.

8. A flow recording device shall be installed for measuring the daily sewage flow discharging to the drainfields.

9. The initial and reserve areas of the disposal system must be properly maintained and mowed regularly. No trees are permitted to grow on the active drain-field tracts.

10. The Permittee shall measure and record the depth of the water table in each piezometer at least once every three months. A minimum of four feet of unsaturated soil must be maintained below the bottom of the disposal trenches at all times. When it is determined that the required 4 foot treatment zone has been violated the certified operator will manage the system by shutting down violating cells or umping and hauling the sewage until the water tables are at a level to return to normal operation of the system.

11. The Permittee is responsible for the installation, operation and maintenance of four (4) monitoring wells to be used for obtaining samples of groundwater. These wells are to be used for obtaining grab or pumped samples of the ground water. Locations of the monitoring wells are shown on attached Map B.

    a. The monitoring wells shall be installed according to the following specifications:

        1) Installation of the wells shall be by a licensed Maryland Well Driller in accordance with the following:

            i. Schedule 40 P.V.C. or better quality well casing, 4-inch diameter shall be used.

            ii. Commercial well screen or neatly slotted well casing, approved by the Department shall be used in conjunction with a gravel pack.

            iii. The screen, or slotted casing, shall extend from the seasonally high water table downward approximately 15 feet.

            iv. The wells shall be grouted from near the top of the screen to ground surface.

            v. The wells shall be equipped with locking watertight removal caps.

        2) The well driller selected to install the observation wells shall obtain all necessary State and local well drilling permits.

    b. So that the background quality of the ground water may be determined, the monitoring wells in each phase shall be installed in the designated areas immediately after the application for groundwater discharge permit.

        1) The Permittee shall take and analyze one sample each month from each of the monitoring wells for a year prior to the discharge of effluent to the absorption trenches.

        2) Water samples may be obtained by either pumping or bailing the monitoring wells. Prior to taking the sample, a volume of water equal to 300% of the wetted volume of the casing and screen shall be removed.

        3) The water sample shall be analyzed for the parameters shown in Section I.A.4.a.:

c. The Permittee shall take and analyze one water sample every six months from each monitoring well after the start-up of the subsurface absorption system. Samples shall be taken as outlined in I.C.11.b.(2), and analyzed for the same parameters listed in I.C.11 b.(3).

II. GENERAL CONDITIONS

A. Management Requirements

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant in toxic amounts, as determined by the Department during the effective period of this permit, is prohibited. Any anticipated facility expansion, production increases, or process modifications which will result in new, different, or increased discharge of pollutants shall be reported by the Permittee by submission of a new application at least one year prior to the commencement of the changed discharge or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Department. Following such notice, the permit may be modified by the Department to specify and limit any pollutants not previously limited.

2. Operational Restrictions

The operation of a waste treatment or disposal facility shall at no time create: (1) a direct discharge to surface waters of the State; (2) any standing or ponded water condition on adjacent properties; or (3) a persistent standing or ponded water condition on the Permittee's property, excluding actual storage lagoons.

3. Noncompliance Notification

a. If, for any reason, the Permittee does not comply with or will be unable to comply with the special and general conditions of this permit, the Permittee shall, within 24 hours, notify the Department by telephone at (410) 537-3510 during work hours and at (866) 633-4686 during evenings, weekends and holidays and provide the Department with the following information in writing within five days of such notification:

i. a description of the noncompliance, including its impact upon the receiving ground or surface waters;

ii. cause of noncompliance;

iii. anticipated time the condition of noncompliance is expected to continue or if such condition has been corrected, the duration of the period of noncompliance;

iv. steps taken by the Permittee to reduce and eliminate the noncompliance discharge;

v. steps to be taken by the Permittee to prevent recurrence of the condition of noncompliance; and

vi. a description of the accelerated or additional monitoring by the Permittee to determine the nature and impact of the noncompliance.

II. GENERAL CONDITIONS

3. Noncompliance Notification continued…..

   b. In the case of any discharge subject to any toxic pollutant effluent standard under Section 307 (a) of the Clean Water Act of 1987, the Department shall be notified within 24 hours of the time the Permittee becomes aware of the noncomplying discharge. Notification shall include information as described in paragraph 3.a. above. If such notification is made orally, a written submission must follow within five days of the time the Permittee becomes aware of the noncomplying discharge.

4. Facility Operation and Quality Control

All waste collection, control, treatment, monitoring, and disposal facilities shall be maintained in good working order and operated at all times as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants.

5. Adverse Impact

The Permittee shall take all reasonable steps to minimize any adverse impact to the ground water quality resulting from noncompliance with any limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

6. Removed Substances

The Permittee shall comply with all existing State and federal laws and regulations that apply to sewage sludge monitoring requirements and utilization practices, and with any regulations promulgated pursuant to Environment Article, Section 9-230 et seq. The Permittee is responsible for ensuring that its sewage sludge is utilized in accordance with a valid sewage sludge utilization permit issued by the Department.

II. GENERAL CONDITIONS

A. Management Requirements continued.....

7. Bypassing

Any bypass of treatment facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited unless:

a. the bypass is unavoidable to prevent loss of life, personal injury or substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources; and

b. there are no feasible alternatives; and

c. the Department is notified within 24 hours (if orally notified, then followed by a written submission within five days of the Permittee's becoming aware of the bypass). Where the need for a bypass is known (or should have been known) in advance, this notification shall be submitted to the Department for approval at least ten days before the date of bypass; and

d. the bypass is allowed under conditions determined by the Department to be necessary to minimize adverse effect; and

e. there is an existing flow of any such diversion or bypass, then a schedule for the elimination of such shall be included in a schedule of compliance.

B. Responsibility

1. Right of Entry

The Permittee shall allow the Secretary of the Department, or authorized representatives, upon the presentation of credentials:

a. to enter upon the Permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit;

b. to have access to and to copy, at reasonable times, any records required to be kept under the terms and conditions of this permit;

c. to inspect, at reasonable times, any monitoring equipment or monitoring method required in this permit;

d. to sample at reasonable times any discharge of pollutants;

e. to inspect, at reasonable times, any collection, treatment, pollution management or discharge facilities required under this permit; or

f. to drill and install monitoring wells for the purpose of obtaining samples of the groundwater.

II. GENERAL CONDITIONS

B. Responsibility continued…..

2. Property Rights/Compliance with Other Requirements

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, State or local laws or regulations.

3. Availability of Reports

Except for data determined to be confidential under COMAR 26.08.04.01.F., all reports, plans, maps, or other specifications submitted for review shall be available for public inspection at the Department.

4. Transfer of Ownership or Control

This permit is not transferable to any person except after notice to the Department. The Department may require modification or revocation and re-issuance of the permit to change the name of the Permittee and may incorporate other requirements as may be necessary. The written notice to the Department shall include at least the following information:

a. the legal name, address and telephone number of the new owner or operator;

b. a statement, signed by the new owner or operator, indicating that the new owner or operator has read, understands and accepts the terms and conditions of the existing permit; and

c. the date that the new owner or operator took control or expects to take control of the facility. In the event that new ownership or control is expected in the future, the current Permittee and the anticipated new owner or operator both must sign the written notice to the Department.

5. Reapplication for a Permit

At least one year before the expiration date of this permit, unless permission for a later date has been granted by the Department, the Permittee shall submit an application for renewal of the permit or notify the Department of the intent to cease discharging by the expiration date. In the event that a timely and sufficient reapplication has been submitted and the Department is unable, through no fault of the Permittee, to issue a new permit before the expiration date of this permit, the terms and conditions of this permit are automatically continued and remain fully effective and enforceable.

6. Permit Modification

A permit may be modified by the Department upon the written request of the Permittee and after notice and opportunity for a public hearing in accordance with the reasons set forth in COMAR 26.08.04.10.

II. GENERAL CONDITIONS

B. Responsibility continued.....

7. Permit Modification, Suspension, or Revocation

A permit may be modified, suspended, or revoked by the Department in the event of a violation of the terms or conditions of the permit, or federal or State laws and regulations and in accordance with the procedures set forth in COMAR 26.08.04.10.

8. Civil and Criminal Liability

Environment Article, Sections 9-342 and 9-343 provide that any person who violates a permit condition implementing Environment Article, Section 9-322 et seq. is subject to a civil penalty in an amount not to exceed $10,000 per day for such violation; and to criminal penalties of a $25,000 fine or imprisonment not exceeding one year or both for a first offense, and a $50,000 fine or imprisonment not exceeding two years or both for subsequent offenses.

9. Waterway Construction and Obstruction

This permit does not authorize the construction or placing of physical structures, facilities, debris, or the undertaking of related activities in any waters of the State including the 100-year flood plain.

10. Severability

If any provision of this permit shall be held invalid for any reason, the remaining provisions shall remain in full force and effect, and such invalid provisions shall be considered severed and deleted from this permit.

11. Nuisance and Odor Restrictions

The facility shall be operated at all times to prevent offensive odors from escaping the facility boundaries and to prevent the facility from becoming a public nuisance. In the event that prolonged or excessive odors are noted outside of the property line, the Permittee shall take actions necessary to remedy the problem.

12. Action on Violations

The issuance or reissuance of this permit does not constitute a decision by the State not to proceed in any administrative, civil or criminal action for any violations of State law or regulations occurring prior to the issuance or reissuance of this permit, nor a waiver of the State's right to do so.

II. GENERAL CONDITIONS

C. MONITORING AND REPORTING

1. REPRESENTATIVE SAMPLING

Samples and measurements, if required herein, shall be taken at such times as to be representative of the quantity and quality of the discharges during the specified monitoring periods.

2. SUBMISSION OF REPORTING-MONITORING RESULTS VIA NETDMR

a. NetDMR

Monitoring results obtained during each month shall be reported using NetDMR. Results shall be submitted to the Department no later than the 28th day of the month following the end of the reporting month.

NetDMR is a freely available U.S. EPA tool allowing permittees to submit monitoring reports electronically via a secure Internet application. You must apply for access to NetDMR at www.epa.gov/netdmr and register for a NetDMR Webinar.

Before you can submit official DMRs using NetDMR you must attend a training Webinar and successfully set-up and submit test monitoring results electronically. You must complete all requirements to gain access to NetDMR within six (6) months of authorization under this permit, including applying for access within one (1) month of being registered.

Hard copies of monitoring results obtained before the permittee is granted access to NetDMR shall be submitted postmarked no later than the 28th of the month following the end of the reporting month. Signed copies of the results shall be submitted to the Department at the following address:

Attention: Discharge Monitoring Reports
Compliance Program
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard, STE-425
Baltimore, MD 21230-1708

NetDMR is designed to improve data quality, reduce reporting liabilities, save paper, and provide cost savings. It allows participants to discontinue mailing in hard copy forms. For more information call the MDE Water and Science Administration, Compliance Program, at 410-537-3510 and ask to speak to a NetDMR coordinator.

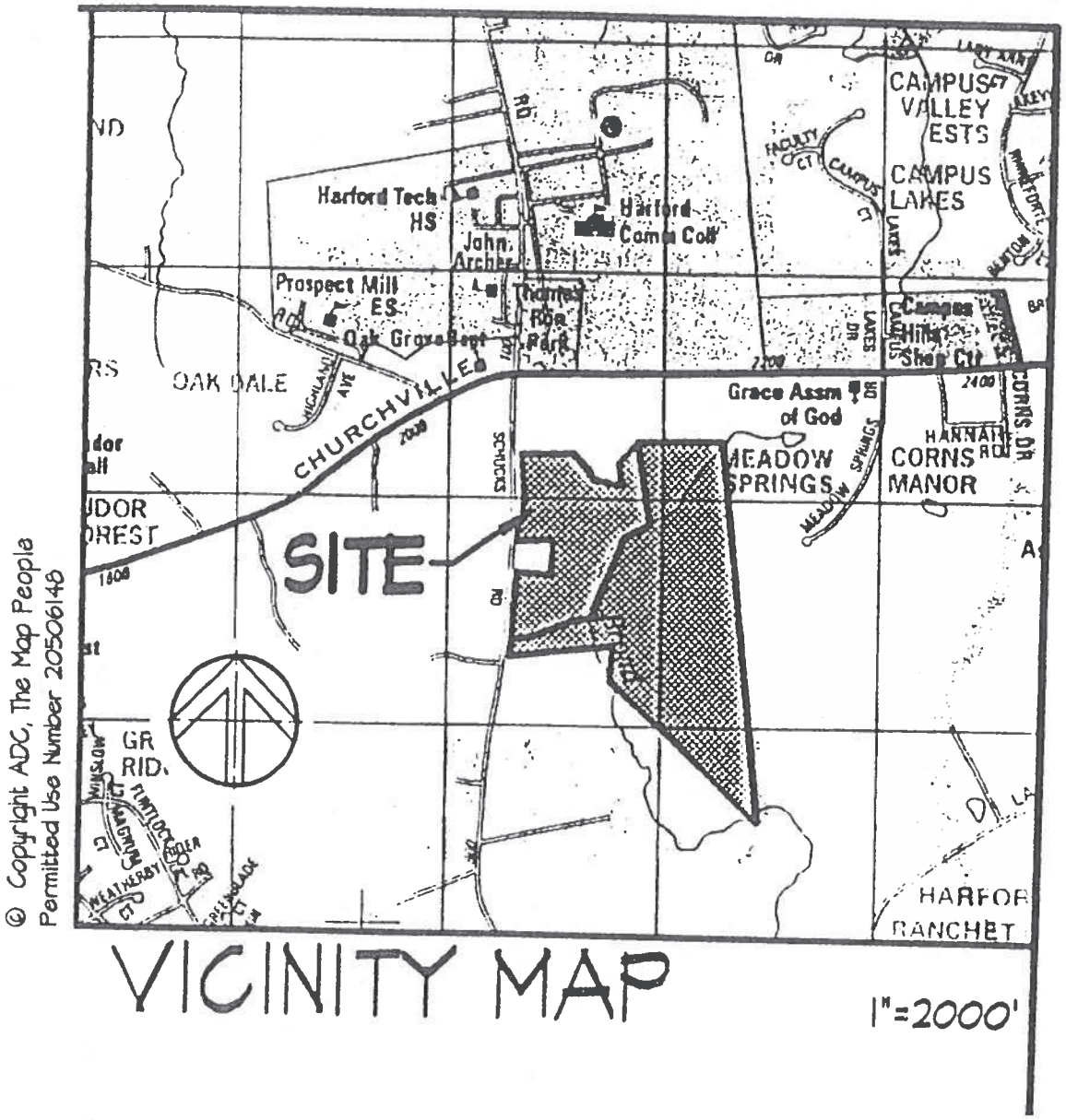
b. NetDMR Waiver Request

The permittee may be eligible for a temporary waiver by MDE from electronic reporting requirements if the permittee has no current internet access and is physically located in a geographic area (i.e., zip code) that is identified as under-served for broadband internet access in the most recent National Broadband Map from the Federal Communications Commission (FCC); or if the permittee can demonstrate that such electronic reporting of the monitoring data and reports would pose an unreasonable burden or expense to the permitted facility. Waiver requests must be submitted in writing to the Department for written approval at least 120 days prior to the date the permittee would be required under his permit to begin using NetDMR. This demonstration shall be valid for one (1) year from the date of the Department approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to the Department unless the permittee submits a renewed waiver request and such request is approved by the Department. All hardcopy DMRs shall be sent to the following address:

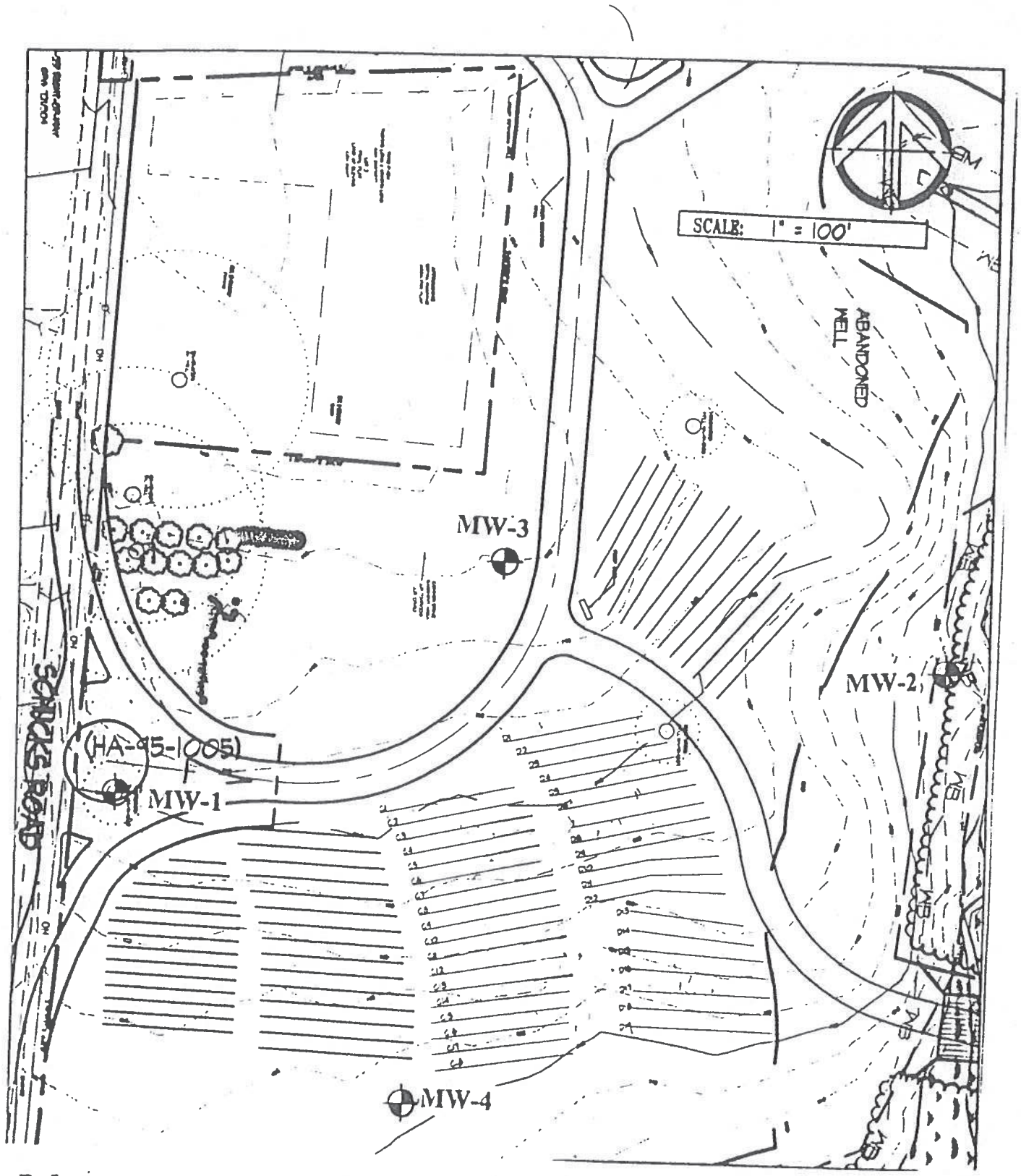
Attention: Discharge Monitoring Reports
Compliance Program
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard, STE-425
Baltimore, MD 21230-1708

Virginia M Kearney/for

D. Lee Currey, Director
Water and Science Administration



Map A. Site Map (Campus Hills Elementary School)



Map B. Locations of Monitoring Wells (MW-1 thru MW-4) and Piezometers (P-1 and P-2)

Department of The Environment
Groundwater Discharge Permit
Summary Report and Fact Sheet

Executive Summary

Municipal Ground Water Discharge Permit

State Application No.: 17-DP-3666
Facility Name and Location: Campus Hills Elementary School
Schucks Road
Bel Air, Maryland

Description of Facility: Public Elementary School
Facility Discharges: Domestic wastewater from the school building is collected by building sewer to septic tanks, treated to reduce nutrients, BOD, and TSS by a treatment plant, and discharged via a pressurized distribution network to deep trench drain-fields.

Pollutants Limited: Subsurface absorption system loading rates require effluent limits of <30 mg/l BOD5 and TSS and <8 mg/l Total Nitrogen
Changes From Previous Permit: None.
Controversial Provisions: None.
Unusual Conditions: None
Major Facility: No.
Summary of Wastewater Facility

The applicant has applied for a permit to discharge advanced pretreated septic tank effluent to drain-fields and subsequently to groundwater of the State. Information regarding the sewerage facility is summarized as follows:

Sewage effluent from the school building is collected by building sewer and transported to a nutrient reducing treatment plant, thence flowing to a pump station where it is dosed to the subsurface absorption trenches. *Three drain-fields cells are required comprising adequate disposal area for 150% of the sewage flow. Adequate area is also designated for a replacement system adequate to handle 150% of the sewage flow. All proposed systems remain at least 4 feet above the seasonal water table after allowing for groundwater mounding. Total Nitrogen in sewage effluent from the treatment plant is required be less than or equal to 8 mg/l as a measure to mitigate impacts to the Chesapeake Bay and local streams.

As of March 2018, the school has not been built. The school system is renewing the permit so that the school has the necessary permits should that change.

Project Type: Absorption Trench System with Advanced Pretreatment

State Application No.: 17-DP-3666

Facility Name: Campus Hills Elementary School

Address: 123 Schucks Road

County: Harford

Contact (name, title): Patti Jo Beard,
Director of Facilities
Harford County public Schools

Phone: 410-809-4088

Applicant is engaged in: Public Education

Legal Name of Applicant: Harford County Public Schools

Address: 102 South Hickory Avenue
Bel Air, Maryland 21014

Basin Code: 02-13-0701

Receiving Water Name(class): Groundwater Type I Aquifer, Port Deposit Formation.

MD Coordinates: **East:** 1,001,000 **North:** 627,000

Project Manager: Ching-Tzone Tien

Phone: (410) 537-3662

Wastewater Characteristics

Design Average Flow: 5,750 **gpd** **Design Peak Flow**: 11,500 **gpd** from 676 students

Proposed Discharge Period: Year round

Parameter	Concentration	
	Raw Concentration *	Treated
BOD5	80 - 190 mg/l	30 mg/l
T.S.S.	48 - 92 mg/l	30 mg/l
Total Nitrogen	63 - 110 mg/l	8 mg/l

*Characteristics of raw wastewater represents the range of values reported by the applicant from 3 similar Harford County schools in November 2007.

Pretreatment Flow Diagram

Septic Tank Effluent ---> Treatment plant ---> Pump Chamber ---> Absorption Trenches

Provide a minimum of 3 treatment cells, each cell with minimum capacity for 50% of design flow for 150% total initial installation. Provide 150% repair area.

Groundwater System

Aquifer Name: Groundwater Type I, Port Deposit Formation

The Port Deposit formation is an important water bearing formation as domestic water supplies are readily obtainable.

Other Properties:

The site is underlain by the soils and rock of the Port Deposit Gneiss rock formation. This formation is described by the Maryland geologic Survey as: "strongly sheared schistose rocks containing secondary muscovite, recrystallized sodic plagioclase, and epidote along with chlorite or biotite and quartz." Soils in this formation are typically described as silty and sandy micaceous soils.

Projected Impact:

The impact on groundwater from the discharge of pretreated septic tank effluent at this site should be negligible. The groundwater discharge permit will limit Nitrogen concentrations in the treatment plant's effluent to less than 8 mg/l total nitrogen because the project occurs in the drainage basin of the Bush River and thence the Chesapeake Bay, impaired due to nutrients. The 8 mg/l total N limit is the effluent quality achievable by the current best available technology (BAT).

The remaining constituents of concern in the wastewater (eg. pathogenic bacteria, phosphorous) will be adequately treated in the four foot unsaturated soil treatment zone that is maintained between the bottom of the absorption trenches and the groundwater. Groundwater mounding studies indicate a greater than 4 foot zone will be maintained as an unsaturated soil treatment zone after groundwater elevation increases due to wastewater loading.

Present Use:

The Port Deposit Formation is used for domestic and agricultural water sources in Harford County. Locally, the groundwater recharges to James Run, tributary to the Bush River and the Chesapeake Bay.

Determining the yearly nitrogen load transported to surface water from the Campus Hills Elementary School large onsite system

(a) Determine the monthly nitrogen load (N_g, lb/month) to groundwater by multiplying the monthly accumulated discharge volume (V, million gallons per month) times the monthly average nitrogen concentration (C, mg/l) measured in the WWTP effluent with a conversion factor of 8.34 for converting mg/l to lb/ million gallons .

$$N_g = V \times C \times 8.34$$

(b) Determine the monthly nitrogen load (N_S) to surface water by multiplying result from (a) to a delivery factor of 50% since the disposal soil absorption bed system is within 1000 ft from Broad Run, a tributary of Bush Creek

$$N_S = N_g \times 50\%$$

(c) The yearly accumulated load to surface water in a calendar year is the sum of the nitrogen load (N_S) from each of the 12 months determined in item (b) above.

MARYLAND

Department of the Environment

Public Hearing for State Groundwater Discharge Permit Application (Permit No. 09-DP-3666) for The Campus Hills Elementary School Wastewater Facility

November 9, 2010

MDE

Discharge Permit Application Summary (Campus Hills Elementary School)

MDE

- Groundwater discharge Permit application received by MDE on 02/23/2009

- Summary of wastewater discharge proposed by the applicant:

  (1) Proposed wastewater flow: 11, 500 gal/day (daily maximum flow) for 676 students (based on 17 gpd/student)

  (2) Proposed drainfield area: Approximately 2 acres (perc test area shown on the attached map)

- Site Characteristics: (1) Soil types: Chester silt loam (CcB2) and Glenelg loam (GcC2); (2) Water table depth ranges from 12 ft (northeastern portion) to 16.5ft (western portion) (per Chesapeake Environ. Letter of 1/15/2009) and (3) Direction of groundwater flow: from northwest to southeast)

- A State Groundwater Discharge permit is required for large drainfield system with treated wastewater greater than 10,000 gal/day (max daily flow). The permit will stipulate effluent quality limitations and requirements for groundwater monitoring , system operation, and reporting, etc

MARYLAND

Proposed Effluent Limitations (Campus Hills Elementary School)

MDE

- **Flow: 5,750 gal/day (Monthly average)**

  11,500 gal/day (maximum)

- **Biochemical Oxygen Demand (BOD-5day) <30 mg/l (monthly average)**

  starts at about 200 mg/l

- **Suspended Solids < 30 mg/l (monthly average)**

  200 mg/l

- **Total nitrogen <10 mg/l (monthly average), yearly nitrogen load shall not exceed 140 pounds**

  40-60 mg/l (typicall for home – could be about 100 for school)

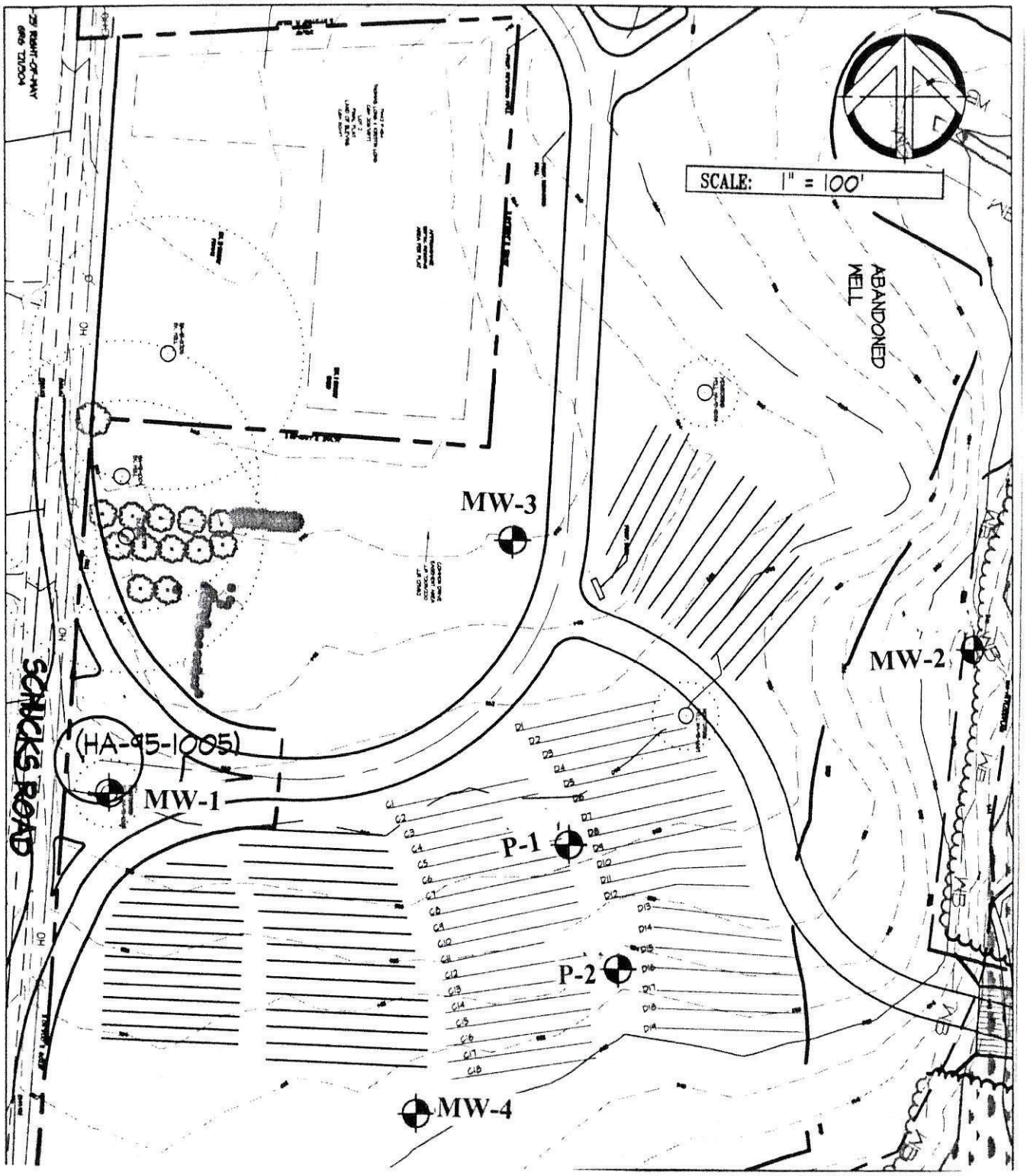
MARYLAND

Proposed Monitoring Requirements (Campus Hills Elementary School)

MDE

- Effluent quality monitoring - Take one sample monthly and analyze for BOD, suspended solids, and total nitrogen.
- Four wells are required for groundwater quality monitoring
  - Establish background groundwater quality monthly within 12 months prior to start-up
  - Take one sample per well every six months after start-up
  - Analyze groundwater samples for nitrate&TKN, pH, total phosphate, total dissolved solids, chlorides and fecal coliform
- Monitoring water levels in the observation pipes installed in the trenches every 3 months to evaluate trench performance.
- Monitoring water levels in the Piezometers installed in the trench area every 3 months to ensure the four feet unsaturated soil treatment zone is maintained.

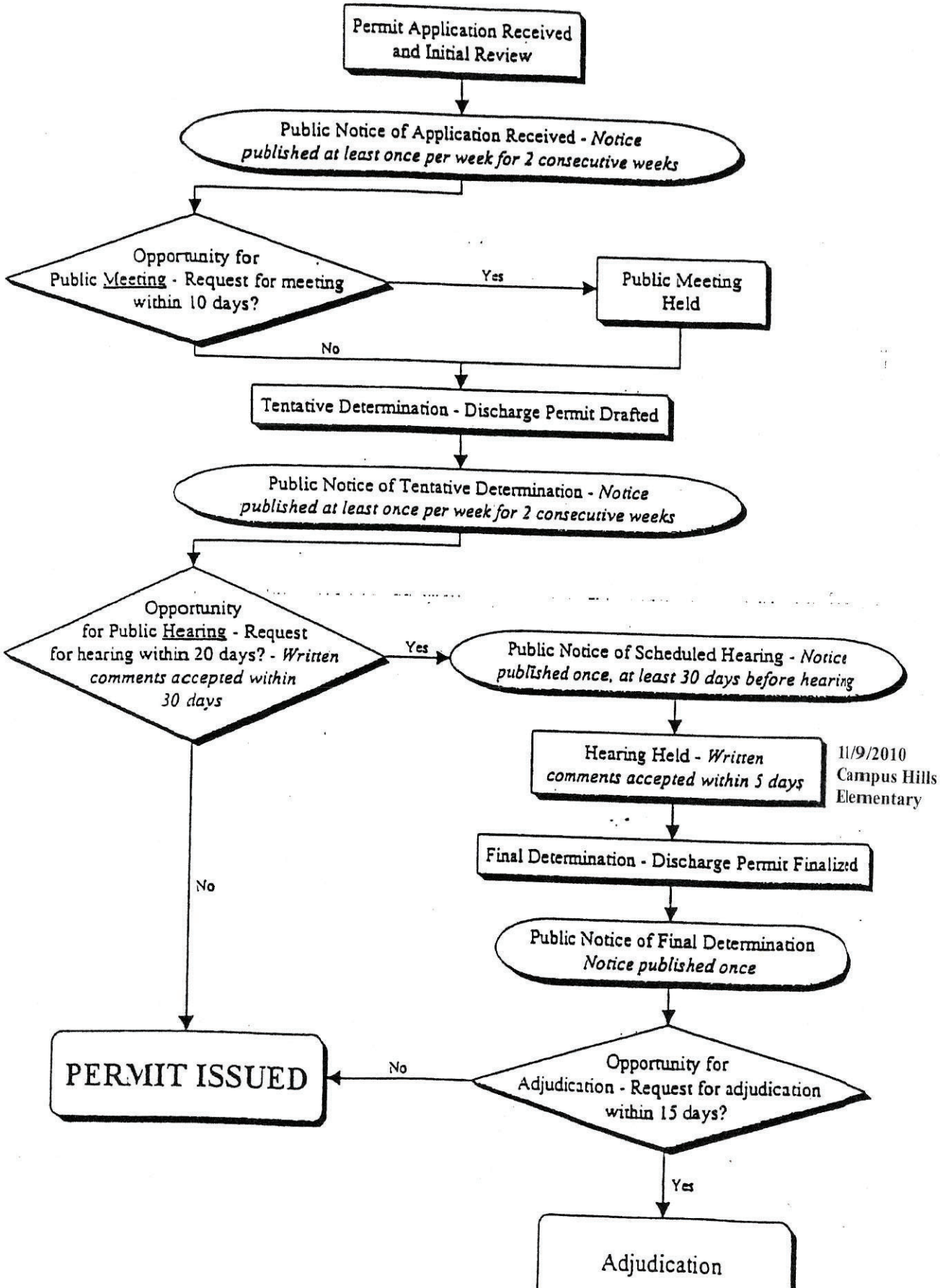
MARYLAND



Map B. Locations of Monitoring Wells (MW-1 thru MW-4) and Piezometers (P-1 and P-2)

Groundwater Discharge Permit

Application Process



MARYLAND

Department of the Environment

Public Information Meeting for State Groundwater Discharge Permit Application (Permit No. 09-DP-3666) for The Campus Hills Elementary School Wastewater Facility

May 28, 2009

MDE

Proposed Drainfield System (Campus Hill Elementary School)

MDE

- **Groundwater discharge Permit application received by MDE on 02/23/2009**

- **Summary of wastewater discharge proposed by the applicant:**

  (1) Proposed wastewater flow: 11, 500 gal/day (daily maximum flow) for 676 students (based on 17 gpd/student)

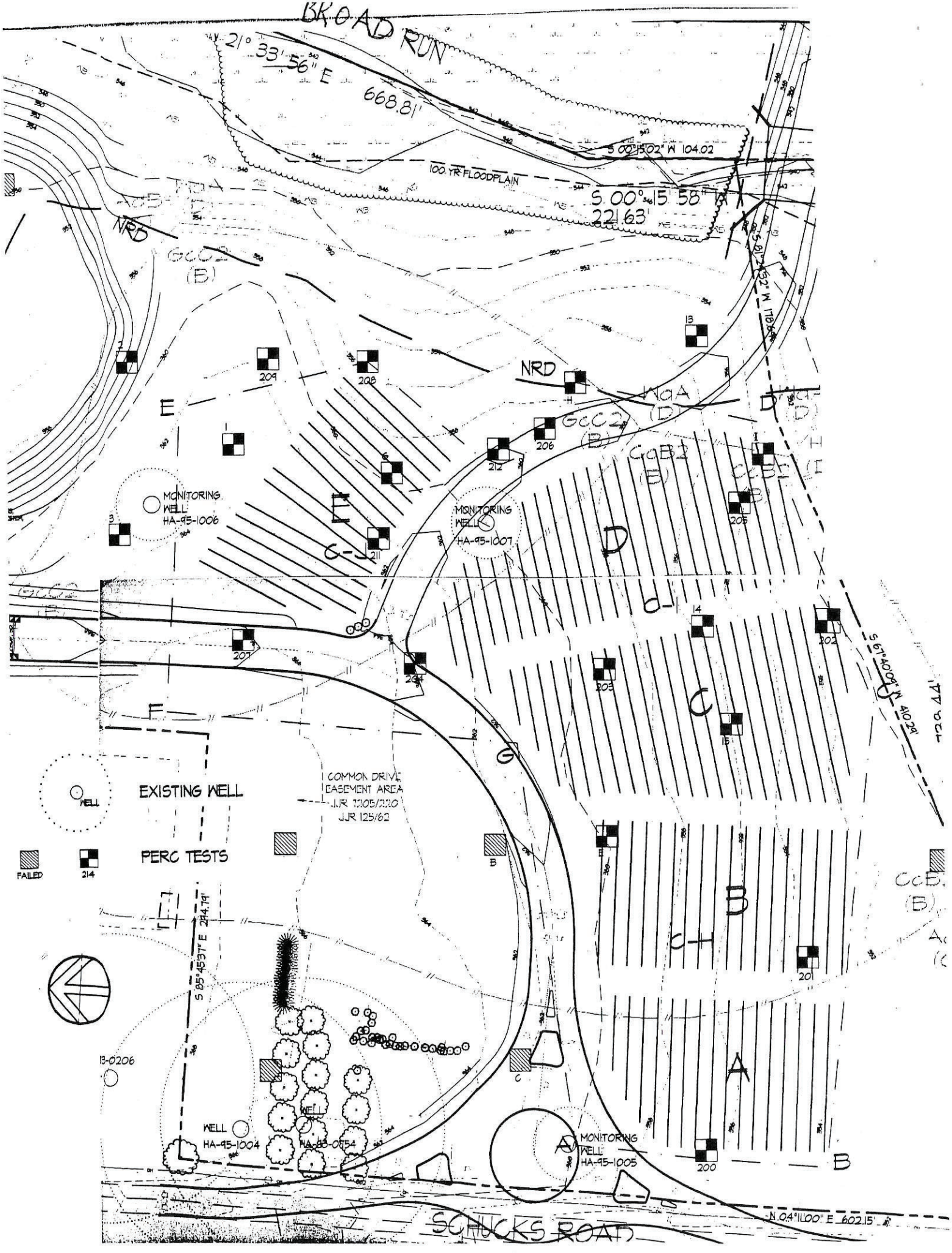
  (2) Proposed drainfield area: Approximately 2 acres (perc test area shown on the attached map)

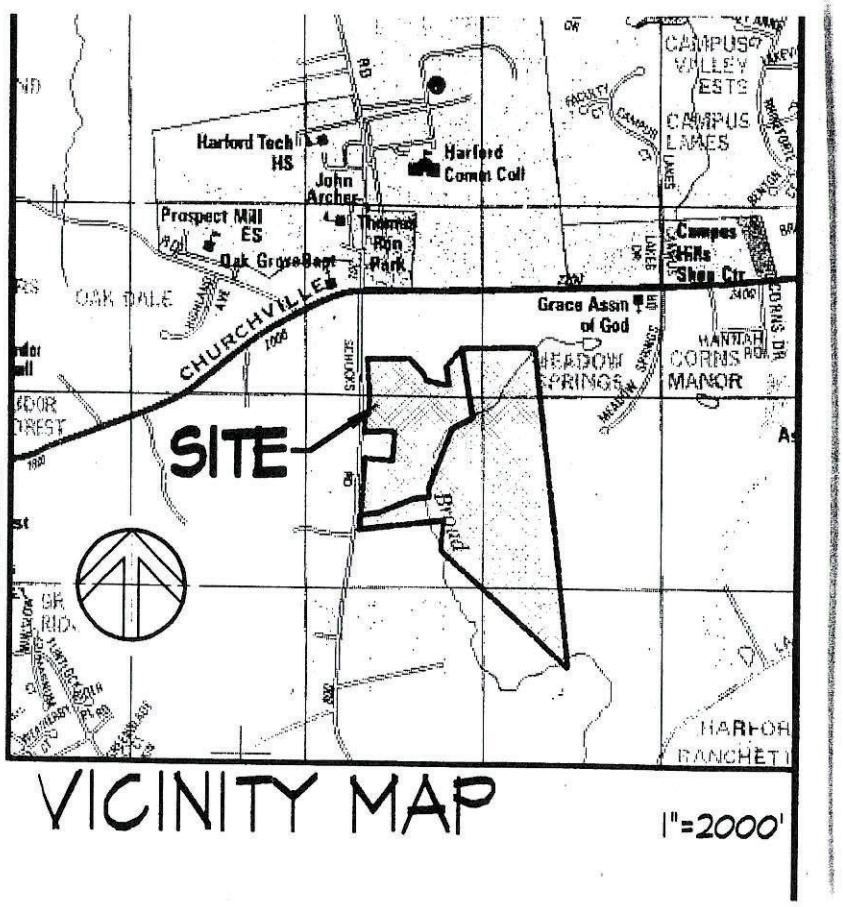
CCB2

- **Site Characteristics: (1) Soil type: Glenelg loam (GcC2); (2) Water table depth ranges from12 ft (northeastern portion) to 16.5ft (western portion) (per Chesapeake Environ. Letter of 1/15/2009) and (3) Direction of GW flow: from northwest to southeast)**

- **A State Groundwater Discharge permit is required for large drainfield system with treated wastewater greater than 10,000 gal/day (max daily flow). The permit will stipulate effluent quality limitations and requirements for groundwater monitoring , system operation, and reporting, etc**

MARYLAND


BROAD RUN
N 21° 33' 56" E 668.81'
S 00°15'02" W 104.02
100 YR FLOODPLAIN
S 00°15' 58" W 221.63'
S 81°24'32" W 178.46'
NRD
GcC2 (B)
MaA (D)
GcC2 (B)
GaB2 (B)
MONITORING WELL HA-95-1006
MONITORING WELL HA-95-1007
EXISTING WELL
WELL
COMMON DRIVE EASEMENT AREA JJR 1305/220 JJR 125/62
PERC TESTS
FAILED
214
S 85°45'37" E 214.74'
13-0206
WELL HA-95-1004
WELL HA-95-0754
MONITORING WELL HA-95-1005
S 67°40'09" W 410.29'
N 04°11'00" E 602.15'
SCHUCKS ROAD



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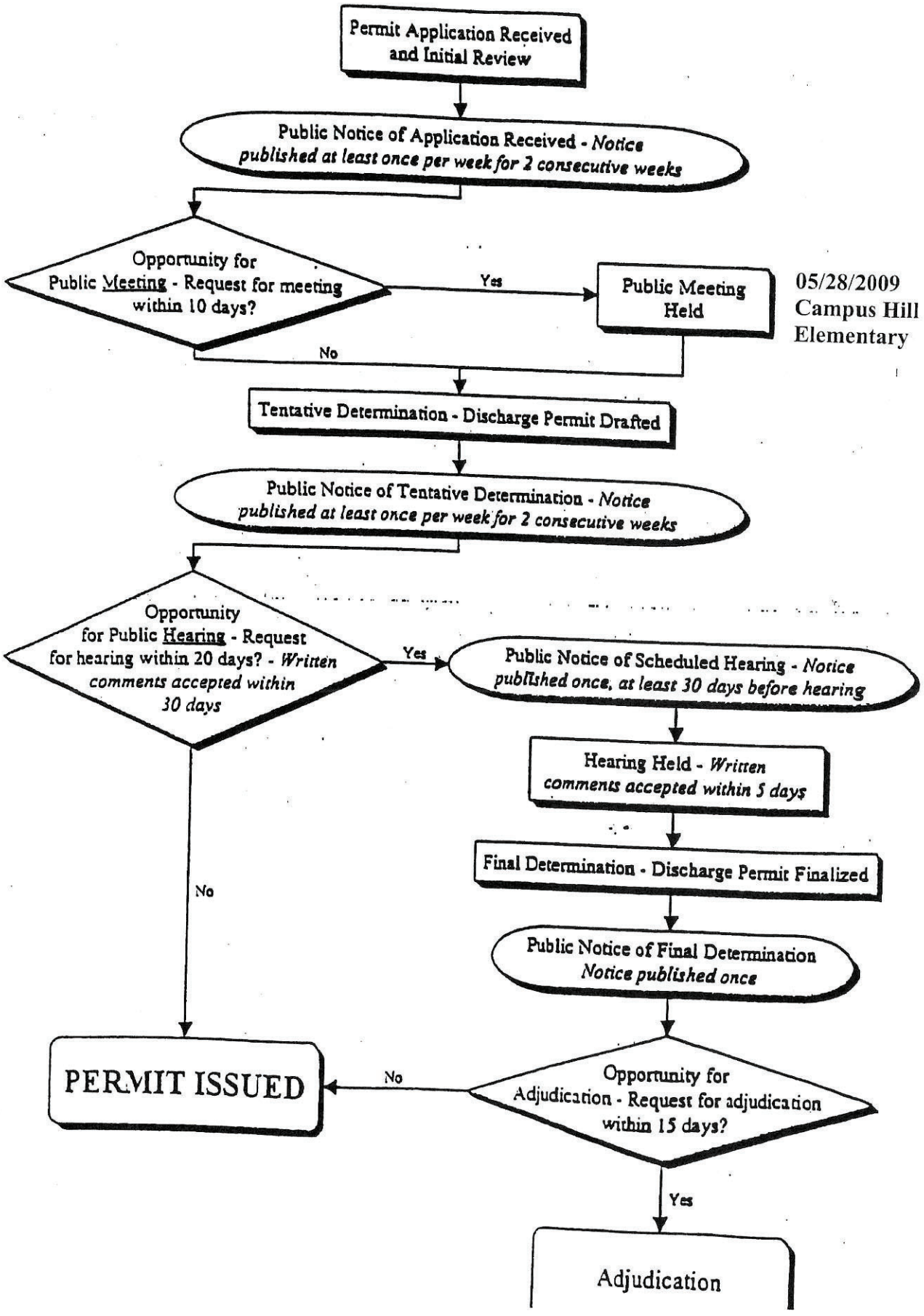
Permitted Use Number 20506148

Groundwater Discharge Permit

Application Process



05/28/2009
Campus Hill
Elementary

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101

Martin O'Malley
Governor

Anthony G. Brown
Lieutenant Governor

Shari T. Wilson
Secretary

Robert M. Summers, Ph.D.
Deputy Secretary

August 26, 2010

Ms. Jennifer Horrington
SRI
14315 Jarrettsville Pike
Phoenix, MD 21131

Re: Application for Campus Hills Elementary School WWTP
State Discharge Permit 09-DP-3666, NPDES Permit
Harford County

Dear Ms. Horrington:

The Maryland Department of the Environment (MDE) is aware of your interest in the Campus Hills Elementary School WWTP discharge permit and is advising you that a tentative determination on the application for this permit has been made and a public hearing scheduled on the proposed permit. The hearing has been scheduled for **6:00 PM., November 9, 2010 in the County Council Chambers (first floor), 212 S. Bond St. Bel Air, MD 21014.** A copy of the public notice is enclosed for your convenience.

If you have any questions or require additional information on this permit, please contact me at (410) 537-3662 .We look forward to seeing you at the hearing.

Sincerely,

Ching-Tzone Tien

Ching-Tzone Tien, Chief, Ph.D., P. E.
Ground Water Discharge Permits Division
Wastewater Permits Program
Water Management Administration

CT:

Enclosure

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

NOTICE OF PUBLIC HEARING

Harford County

Application for State Discharge Permit 09-DP-3666:

Harford County Public Schools, 102 South Hickory Avenue, Bel Air, Maryland 21014 submitted an application for a new permit to discharge a maximum of 11,500 gallons per day of treated wastewater from Campus Hills Elementary School located at Schucks Road, Bel Air, Maryland to ground waters via a subsurface soil absorption system.

The Department is proposing to issue the permit with the following limitations and conditions: (1) BOD5: 30 mg/l (monthly average) ;(2) Suspended solids: 30 mg/l (monthly average); (3) total nitrogen load: 140 lb/year (yearly maximum load based on 8 mg/l nitrogen concentration and daily average flow of 5,750 gpd); and (4) Flow: 11,500 gallons (maximum daily flow). The following conditions are also a part of this permit: 1) The permittee shall monitor the performance of the absorption trench system via inspection ports and piezometers; and 2) The treatment system and disposal fields shall be operated by a Maryland certified operator; and 3) The permittee shall monitor groundwater quality via 4 wells.

The Department has received a request for a public hearing on the tentative determination for the above permit and has scheduled the hearing for **November 9, 2010 at 6:00 PM, in the County Council Chambers (first floor), 212 S. Bond St. Bel Air, MD 21014.** Persons who wish to present information regarding the tentative determination may speak at the public hearing, submit written comments at the public hearing or submit a written statement to the Department no later than **December 9, 2010.** All comments will be considered in making a final determination.

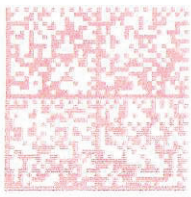
Written comments should be addressed to the **Maryland Department of the Environment, Water Management Administration, 1800 Washington Blvd., Baltimore, Maryland 21230-1708, Attn.: Dr. Ching-Tzone Tien Ph.D., P. E., Chief, Ground Water Discharge Permits Division.** The supporting information for the tentative determination, including the draft permit and fact sheet, may be reviewed by contacting Dr. Tien at the above address or by telephone at (410) 537-3662 or 800-633-6101 to schedule an appointment. Copies of documents may be procured at a cost of $0.36 per page.

Any hearing-impaired person may request an interpreter to be present at the public hearing by giving ten working days notice to Dr. Tien at the address or telephone number listed above.

Publication Dates: Please publish on **September 10 and 17, 2010**

tten: Clarissa Harris
ater Permits Program, WMA
2, Balto., MD 21230-1708

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore, Maryland 21230-1718



Ms. Jennifer Horrington
SRI
14315 Jarrettsville Pike
Phoenix, MD 21131

21131+1766

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CHESAPEAKE
• ENVIRONMENTAL MANAGEMENT, INC. •

January 15, 2009

Harford County Public Schools
C/o Jennifer Harrington
Site Resources, Inc.
14315 Jarrettsville Pike
P.O. Box 249
Phoenix, MD 21131-0249

Re: Hydrogeologic Analyses in Support of a Ground-Water Discharge Permit Application for the Proposed Schucks Road School (C0804)

Dear Jennifer:

As required by Maryland Department of the Environment (MDE) regulations, Chesapeake Environmental Management, Inc. (CEM) has performed hydrogeological analyses for the proposed design of the Schucks Road School septic system. The Hydrogeologic Analysis was performed using the Maryland Department of the Environment (MDE) *"Guidelines for Land Treatment of Municipal Wastewater, 2003."* Attachment 1 contains complete hydrogeologic analyses for the Initial Septic Area. Plate 1 presents a planview diagram of the study area. The proposed septic field is divided into Southwestern (R1) and Northeastern (R2) reserve areas.

1.0 HYDROGEOLOGIC SETTING

The site is located in Harford County, just west of Churchville, and is underlain by the Port Deposit Gneiss, a moderately to strongly deformed intrusive gnessic biotite quartz complex.

Saprolite depths range from 25 to 63 feet in the vicinity of the proposed septic field. The water table generally flows from northwest to southeast across the study area; and the depth to the water table below the septic fields ranges from approximately 12 feet in the northeastern portions of the study area, to nearly 16.5 in the western portions. Hydraulic Conductivity was calculated from falling head slug tests to average 12.8 gpd/sf, and tranmissivity rates were approximately 391-529 gpd/ft.

260 Gateway Drive, Suite 21-C
Bel Air, Maryland 21014
Phone (410) 893-9016 ◆ Fax (410) 893-9380

2.0 GROUND-WATER BALANCE ANALYSIS

The sample MDE calculation for ground-water mounding uses the classic equation of volume rate of flow:

$$Q = KhiA \quad (1)$$

where,

Q = volume rate of flow that can be transmitted by the aquifer;
K = hydraulic conductivity of the aquifer;
I = hydraulic gradient; and
A = cross sectional area of aquifer

The value of K used in CEM's analysis was 12.8 gpd/sf. Table 1 presents the values of K, I and A for each septic reserve area. These parameters were derived from performing slug tests in seven permanently installed piezometers in the area of the septic field, and from data collected during the installation of the piezometers and test pits installed by others.

Table 1. Ground-Water Mounding Parameters

Septic Reserve Area	K	Hydraulic Gradient	Cross Sectional Area
R1	12.8 gpd/sf	9.0 feet/303 feet, or 0.030	41 feet x 408 feet, or 16,728 s.f.
R2	12.8 gpd/sf	13 feet/438 feet, or 0.030	30.6 feet x 308 feet, or 9,432.50 s.f.

Using equation (1) above, the volume rate of flow (Q) that can be transmitted by the aquifer was calculated to be 47,505 gallons per day (gpd) beneath R1 and 26,766 gpd beneath R2, flowing southeast to the property boundary.

Using MDE's suggested methodology, the allowable sewage effluent application rate is calculated with the following equation:

$$S = Q - R \quad (2)$$

where,

S = allowable sewage effluent application rate;
Q = volume rate of flow that can be transmitted by the aquifer; and
R = recharge rate to aquifer from precipitation.

The value of R was assumed to be equal to recharge as extrapolated from hydrograph separation of USGS stream discharge measurements from the gaging station at Deer Creek at Rocks State Park, or 1,011 gpd/ac.

Using equation (2) above, S, the allowable daily sewage flow, was calculated to be 45,576 gpd at R1 and 24,944 gpd at R2. The average wastewater flow rate from either proposed septic system is 5,916 gpd. Because the allowable transmissive rate for the proposed fields are far greater than the average proposed application rate, both proposed systems will be able to adequately transmit ground-water recharge and the proposed septic loading.

3.0 NITRATE LOADING ANALYSIS

A nitrate loading analysis was performed for the property to determine whether the proposed septic system would result in elevated ground-water nitrate levels. As per MDE guidelines, approximately 2.12 acres of property is needed to ensure proper dilution of the amount of nitrate contained in every 225 gallons of septic discharge per day.

Because the Schucks Road School septic system is designed for an average daily discharge of 5,916 gpd, a total of 60.07 of property would be necessary for adequate nitrate dilution. The property is approximately 27 acres in size, thus the proposed septic system would required pretreatment to insure that nitrate levels in the ground-water system are below safe drinking water standards.

4.0 GROUND-WATER MOUNDING ANALYSIS

As per MDE requirements, a ground-water mounding analysis was performed for the proposed septic system to determine the ideal trench depth for the system. The Hantush method of calculating ground-water mounding under a rectangular area was used for this analysis. The equation used for this analysis is as follows:

$$h_{x,y,t} - H = vt/4f\,4\{F[(W/2+x)n,(L/2+y)n]\} \quad (3)$$

where

$h_{x,y,t}$	=	height of the elevated water table;
H	=	original height of the water table;
v	=	arrival rate at water table of discharge;
t	=	time since start of discharge;
f	=	specific yield;
L	=	length of septic field;
W	=	width of septic field;
n	=	$(4tT/f)^{-1/2}$; and
T	=	transmissivity.

This mounding value was calculated from the ground-water table, because the highest water table elevation measured in spring from the piezometers and borings emplaced on the property was higher than the bedrock/saprolite interface.

The value of f was conservatively estimated to be 30%. The value of t was assumed to be twenty years. All other parameter values have been previously presented in this report, and are included in the attached computations.

Using equation (3), an average mounding height of 2.73 feet was calculated below proposed septic field R1 and an average mounding height of 3.26 feet was calculated below proposed septic field R2. The value of (h) plus a 4-foot trench separation buffer was calculated to be an average of 6.73 feet above the water table below R1 and 7.26 feet above the ground-water table beneath R2. Because the water table is located from 9.5 to 16.5 feet below the ground surface, and a minimum of 4 feet is necessary between the septic trench bottom and the high water table, the septic system should be safely designed with a range of trench depths to ensure proper functioning of the system and adequate protection of the local ground-water resources. This range should be from 3.8 to 9.8 feet below ground surface (BGS) in field R1, and from 3.2 to 9.2 feet BGS in field R2.

5.0 CONCLUSIONS

The hydrologic balance analysis of the proposed septic system design for the Schucks Road School septic system indicates that it will be capable of adequately conveying septic discharge and precipitation without detrimental effects on the water table elevation on the property. Nitrate loads to the ground-water system should be pretreated to insure that the discharge will be adequately diluted and will not result in elevated nitrate levels above drinking water standards. Predicted temporary ground-water mounding under the septic fields will require that trenches be designed so that they range in depth between 3.2 to 9.8 feet in depth.

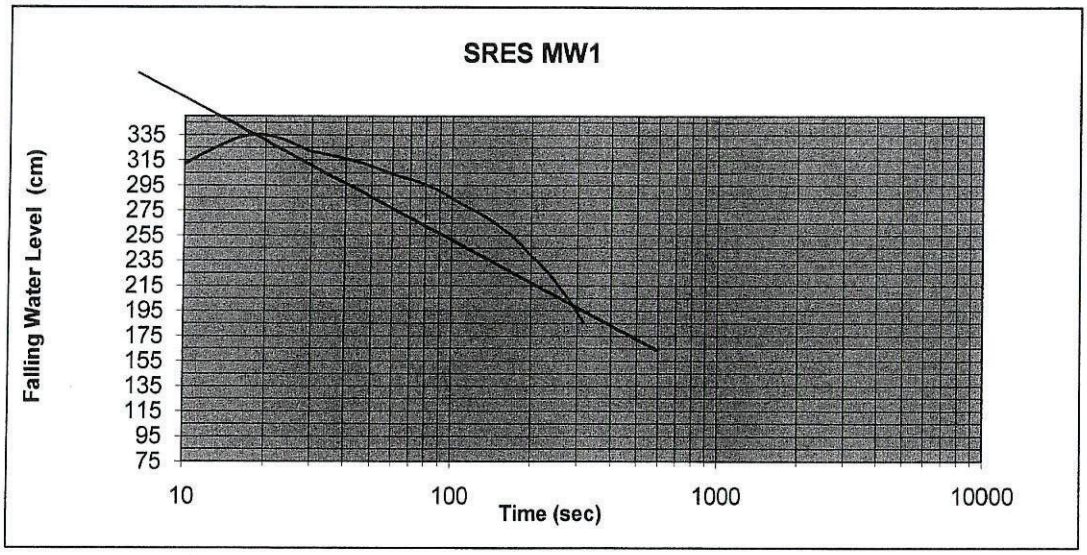
If you are in need of any additional data, or have any questions regarding CEM's analyses, please don't hesitate to call me.

Best Regards,

Joseph A. Hau, P.G.
Vice President

cc: Craig Williams/MDE

ATTACHMENT 1 – HYDROGEOLOGIC ANALYSIS COMPUTATIONS



	Depth	Elevation	Length
Ground Surface	0	365	
Water Table	16	349	
Saprolite/Bedrock Boundary	63	302	
Total Borehole	32	333	
Saturated Screen	30	335	14

Modified Bouwer and Rice
Km=(pi*d^2)/(11*D*(t2-t1)*(lnH1/H2))

d=	10.16	cm
D=	25.40	cm
t1=	30.00	sec
t2=	300.00	sec
h1=	321.87	cm
h2=	193.57	cm

Average Km = 2.19E-03 cm/sec

7.17E-05	ft/sec
6.20E+00	ft/day
5.16E-02	in/min
3.10	in/hr
46.35	gpd/sf

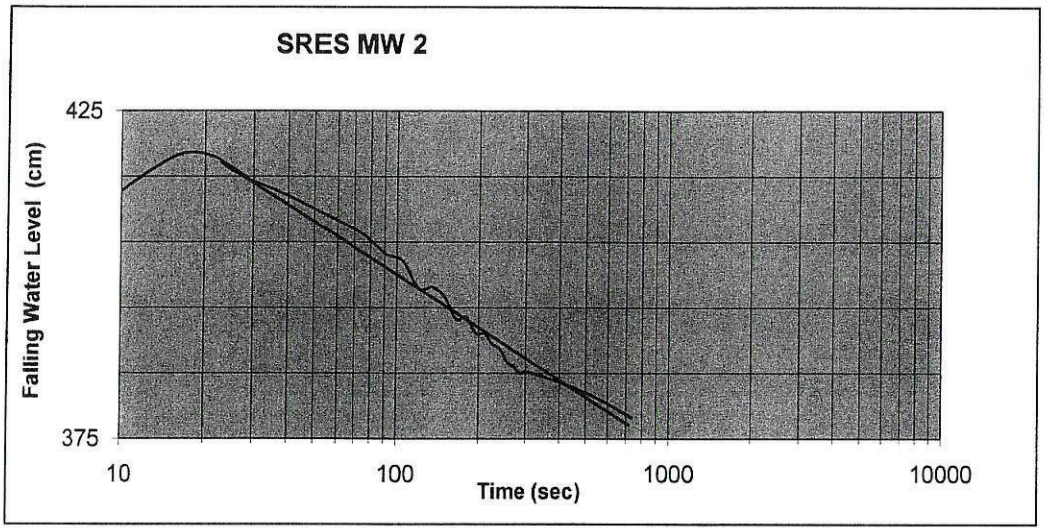
Hvorslev
K = (r^2ln(L/R))/2Lt

		r=	5.08	cm
		L=	426.72	cm
		R=	25.40	cm
47.47	241.04	37%t=	195.00	sec

Average Km = 4.38E-04 cm/sec

1.44E-05	ft/sec
1.24E+00	ft/day
1.03E-02	in/min
0.62	in/hr
9.28	gpd/sf

Method Average 27.81 gpd/sf



	Depth	Elevation	Length
Ground Surface	0	360	
Water Table	13	347	
Saprolite/Bedrock Boundary	63	297	
Total Borehole	32	315	
Saturated Screen	30	330	17

Modified Bouwer and Rice
Km=(pi*d^2)/(11*D*(t2-t1)*(lnH1/H2))

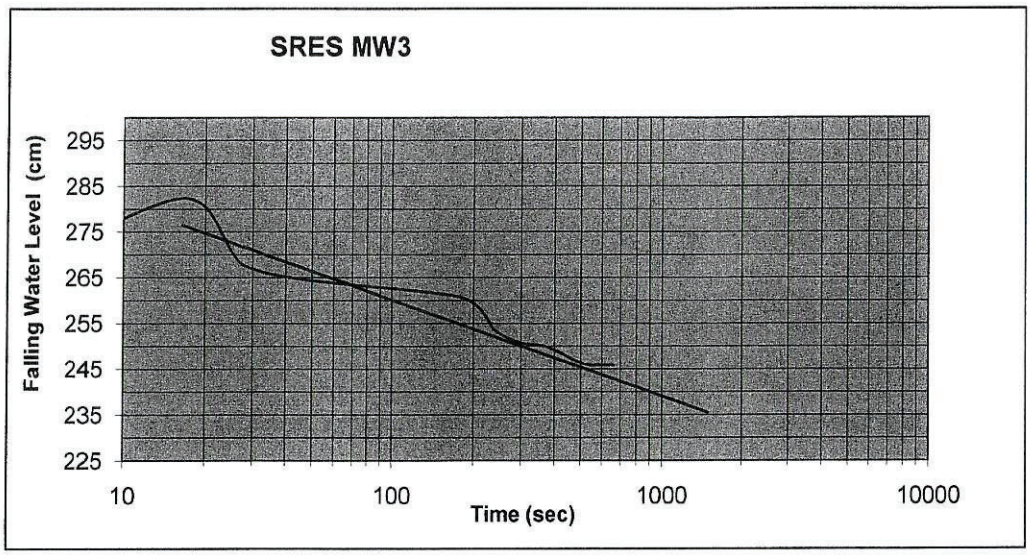
d=	10.16	cm
D=	25.40	cm
t1=	30.00	sec
t2=	300.00	sec
h1=	414.19	cm
h2=	385.24	cm

Average Km =	3.11E-04	cm/sec
	1.02E-05	ft/sec
	8.83E-01	ft/day
	7.36E-03	in/min
	0.44	in/hr
	6.61	gpd/sf

Hvorslev
K = (r^2ln(L/R))/2Lt

		r=	5.08	cm
		L=	518.16	cm
		R=	25.40	cm
10.71	395.95	37%t=	120.00	sec

Average Km =	6.26E-04	cm/sec
	2.05E-05	ft/sec
	1.77E+00	ft/day
	1.48E-02	in/min
	0.89	in/hr
	13.27	gpd/sf
Method Average	9.94	gpd/sf



	Depth	Elevation	Length
Ground Surface	0	361	
Water Table	15	346	
Saprolite/Bedrock Boundary	44	317	
Total Borehole	32	314	
Saturated Screen	30	331	15

Modified Bouwer and Rice
Km=(pi*d^2)/(11*D*(t2-t1)*(lnH1/H2))

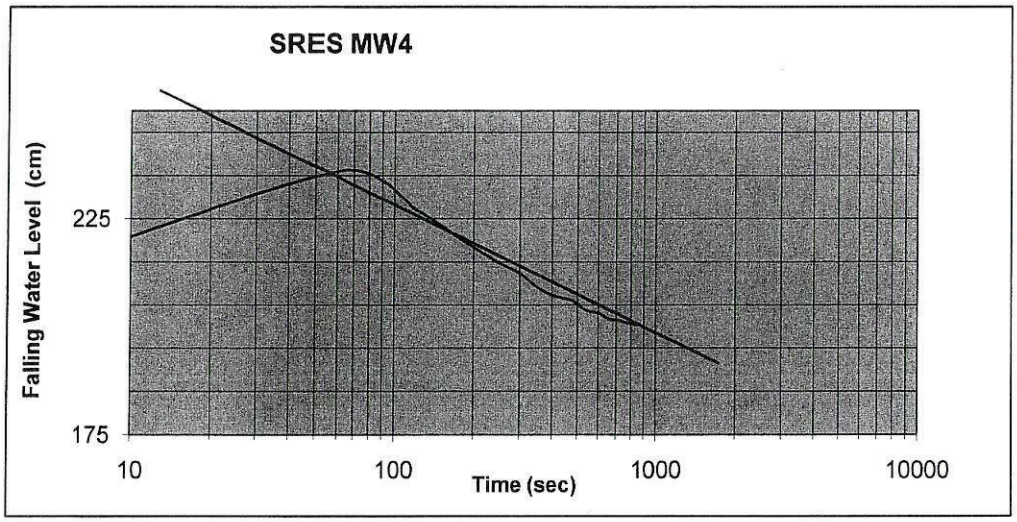
d=	10.16	cm
D=	25.40	cm
t1=	15.00	sec
t2=	600.00	sec
h1=	282.03	cm
h2=	245.85	cm

Average Km =	2.72E-04	cm/sec
	8.94E-06	ft/sec
	7.72E-01	ft/day
	6.43E-03	in/min
	0.39	in/hr
	5.78	gpd/sf

Hvorslev
K = (r^2*ln(L/R))/2Lt

		r=	5.08	cm
		L=	457.20	cm
		R=	25.40	cm
13.39	259.24	37%t=	180.00	sec

Average Km =	4.53E-04	cm/sec
	1.49E-05	ft/sec
	1.28E+00	ft/day
	1.07E-02	in/min
	0.64	in/hr
	9.61	gpd/sf
Method Average	7.69	gpd/sf



	Depth	Elevation	Length
Ground Surface	0	361	
Water Table	16.16	344.84	
Saprolite/Bedrock Boundary	44	317	
Total Borehole	32	312.84	
Saturated Screen	30	331	13.84

Modified Bouwer and Rice
Km=(pi*d^2)/(11*D*(t2-t1)*(lnH1/H2))

d=	10.16	cm
D=	25.40	cm
t1=	60.00	sec
t2=	600.00	sec
h1=	235.95	cm
h2=	203.18	cm

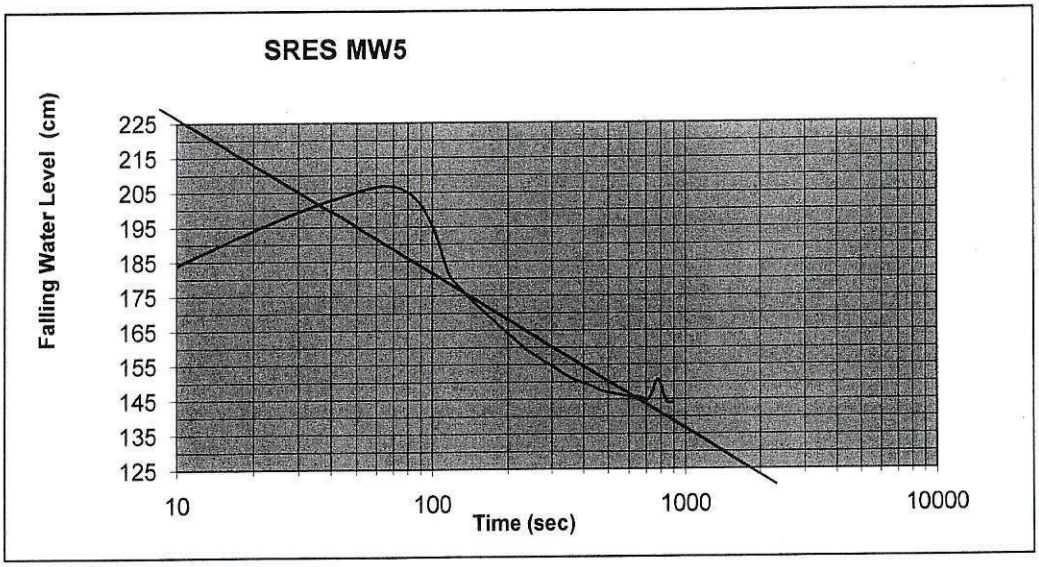
Average Km =	3.21E-04	cm/sec
	1.05E-05	ft/sec
	9.11E-01	ft/day
	7.59E-03	in/min
	0.46	in/hr
	6.81	gpd/sf

Hvorslev
K = (r^2ln(L/R))/2Lt

			r=	5.08	cm
			L=	421.84	cm
			R=	25.40	cm
199	12.12	215.30	37%t=	240.00	sec

Average Km =	3.58E-04	cm/sec
	1.17E-05	ft/sec
	1.02E+00	ft/day
	8.46E-03	in/min
	0.51	in/hr
	7.59	gpd/sf

Method Average	7.20	gpd/sf



	Depth	Elevation	Length
Ground Surface	0	348	
Water Table	4.66	343.34	
Saprolite/Bedrock Boundary	32	316	
Total Borehole	32	311.34	
Saturated Screen	23	325	18.34

Modified Bouwer and Rice
Km=(pi*d^2)/(11*D*(t2-t1)*(lnH1/H2))

d=	10.16	cm
D=	25.40	cm
t1=	60.00	sec
t2=	600.00	sec
h1=	206.50	cm
h2=	145.85	cm

Average Km = 7.47E-04 cm/sec

2.45E-05	ft/sec
2.12E+00	ft/day
1.77E-02	in/min
1.06	in/hr
15.85	gpd/sf

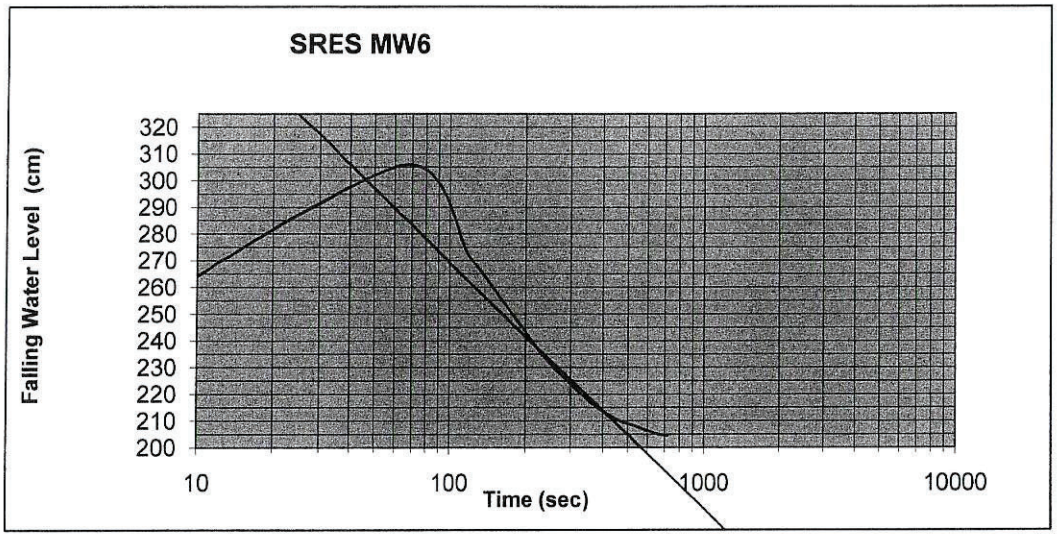
Hvorslev
K = (r^2*ln(L/R))/2Lt

		r=	5.08	cm
		L=	559.00	cm
		R=	25.40	cm
22.44	168.29	37%t=	180.00	sec

Average Km = 3.96E-04 cm/sec

1.30E-05	ft/sec
1.12E+00	ft/day
9.36E-03	in/min
0.56	in/hr
8.41	gpd/sf

Method Average 12.13 gpd/sf



	Depth	Elevation	Length
Ground Surface	0	347.5	
Water Table	4.16	343.34	
Saprolite/Bedrock Boundary	25	322.5	
Total Borehole	25	322.5	
Saturated Screen	24	323.5	19.84

Modified Bouwer and Rice
Km=(pi*d^2)/(11*D*(t2-t1)*(lnH1/H2))

d=	10.16	cm
D=	25.40	cm
t1=	60.00	sec
t2=	600.00	sec
h1=	305.01	cm
h2=	206.26	cm

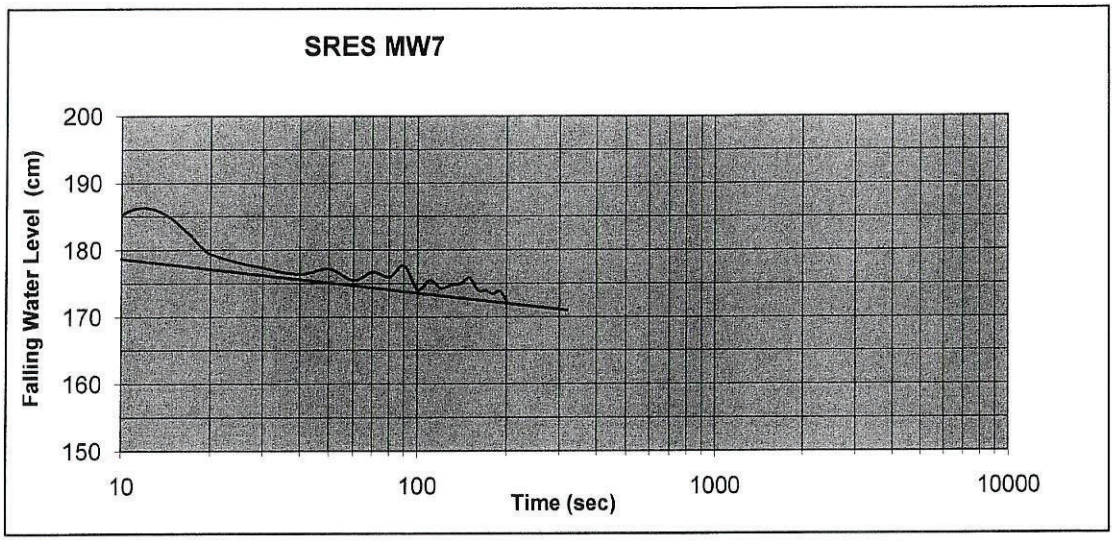
Average Km =	8.41E-04	cm/sec
	2.76E-05	ft/sec
	2.38E+00	ft/day
	1.99E-02	in/min
	1.19	in/hr
	17.83	gpd/sf

Hvorslev
K = (r^2ln(L/R))/2Lt

		r=	5.08	cm
		L=	604.72	cm
		R=	25.40	cm
36.54	242.80	37%t=	240.00	sec

Average Km =	2.82E-04	cm/sec
	9.25E-06	ft/sec
	7.99E-01	ft/day
	6.66E-03	in/min
	0.40	in/hr
	5.98	gpd/sf

Method Average	11.90	gpd/sf



	Depth	Elevation	Length
Ground Surface	0	372	
Water Table	18	354	
Saprolite/Bedrock Boundary	63	309	
Total Borehole	32	340	
Saturated Screen	30	342	12

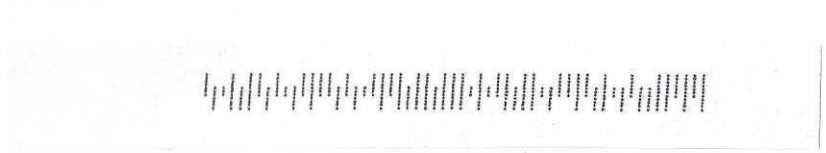
Modified Bouwer and Rice
Km=(pi*d^2)/(11*D*(t2-t1)*(lnH1/H2))

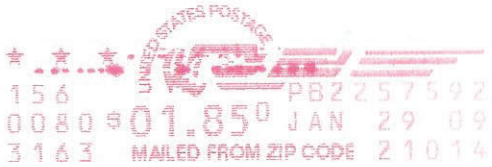
			d=	10.16 cm
			D=	25.40 cm
			t1=	10.00 sec
			t2=	100.00 sec
			h1=	185.26 cm
			h2=	174.07 cm
		Average Km =		8.03E-04 cm/sec
				2.63E-05 ft/sec
				2.28E+00 ft/day
				1.90E-02 in/min
				1.14 in/hr
				17.03 gpd/sf

Hvorslev
K = (r^2ln(L/R))/2Lt

			r=	5.08 cm
			L=	365.76 cm
			R=	25.40 cm
4.14	178.21	37%t=		30.00 sec
		Average Km =		3.14E-03 cm/sec
				1.03E-04 ft/sec
				8.89E+00 ft/day
				7.41E-02 in/min
				4.45 in/hr
				66.52 gpd/sf

Method Average 41.77 gpd/sf





CHESAPEAKE
• ENVIRONMENTAL MANAGEMENT, INC. •

260 Gateway Dr.
Suite 21-C
Bel Air, MD 21014

08035

JAN 30 2009

BY:

SITE RESOURCES
ATTN JENNIFER HARRINGTON
14315 JARRETTSVILLE PIKE
P.O. Box 249
PHOENIX, MD 21131

Hydraulic Conductivity Summary

	MW1	MW2	MW3	MW4	MW5	MW6	MW7	Average	
Area 1	27.8	9.9	7.7	7.2	12.1	11.9	na	12.8	gpd/sf

Depth to Bedrock/Water Table Summary (Thickness of the Aquifer)

Vicinity	MW1	MW2	MW3	MW4	MW5	MW6	MW7	Average
Depth	63.0	63.0	44.0	44.0	32.0	25.0	63.0	
Area 1	A	B	C	D	E	F	G	
Depth	na	na	na	34.5	38.0	53.5	53.5	44.9
			5.0	ft.				

Spring 2008 Depth to Water Table Summary

	A	B	C	D	E	F	G	Average	
Area 1 Elevation	na	na	na	10.5	14.0	16.0	16.5	14.3	ft.

Length of Discharge Plane

	Length	
Area 1	308.0	ft.

Discharge Vector Gradient (From Water Table Observations)

	High (ft.)	Midpoint	Low (ft.)	Gradient	Southeast
Area 1	17.0	-	4.0	13.0	

Discharge Vector Lengths

	Length	
Area 1	438.0	ft

Area of Septic Field

Length	308.0	ft.
Average Width	254.8	ft.
Area	78,490.0	sf

Results Summary

Septic Flow:	11,832.0	gpd max		5,916.0	gpd average			
Hydrologic Balance:	PASS							
Nitrate Loading:	FAIL	Pretreatment Required						
Vicinity	A	B	C	D	E	F	G	
Water Table	na	na	na	10.5	14.0	16.0	16.5	ft.
Mound Height	na	na	na	3.3	3.3	3.3	3.3	
Buffer	na	na	na	4.0	4.0	4.0	4.0	
Max. Trench Depth	na	na	na	3.2	6.7	8.7	9.2	
Vicinty	C-H	C-I	C-J					
Water Table	14.5	16.0	16.5	ft.				
Mound Height	3.3	3.3	3.3					
Buffer	4.0	4.0	4.0					
Max. Trench Depth	7.2	8.7	9.2	ft.				

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Table 1: Schuck's Road Elementary School School Septic Flow Analysis

(696 Student Basis)

Aug-08

Average Weekly Use Program Calculation	Number	Gallons / User / Day	Days in Use	Total Weekly Usage	7-Day Average	5-Day Average
School (Based on 696 Students)	696	15	5	52,200	7,457	10,440
Warming Kitchen	696	2	5	6,960	994	1,392
Special Event (625 Gym Cap, 225 Cafeteria Cap)	850	5	3	12,750	1,821	2,550
TOTAL:				**71,910**	**10,273**	**14,382**

Maximum Day Program Calculation	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
School (Based on 696 Students)	10,440	10,440	10,440	10,440	10,440		
Warming Kitchen	1,392	1,392	1,392	1,392	1,392		
Special Event (625 Gym Cap, 225 Cafeteria Cap)					4,250	4,250	4,250
TOTAL:	**11,832**	**11,832**	**11,832**	**11,832**	**16,082**	**4,250**	**4,250**

MDE Permit Values	Maximum	Average
School (Based on 696 Students)	10,440	5,220
Warming Kitchen	1,392	696
Special Event (625 Gym Cap, 225 Cafeteria Cap)		
TOTAL:	**11,832**	**5,916**

Septic System Analysis Worksheet: Ground Water Balance Analysis (R1)

Q = Kh i A

where

- Q = Volume rate of flow that can be transmitted by the surficial aquifer (gpd)
- Kh = Horizontal permeability of the aquifer (gpd/sf)
- i = Hydraulic gradient dh/dl
  - dh = Change in head (ft.)
  - dl = Change in length (ft.)
- A = Cross sectional area of the aquifer (ft^2) = (b x c)
  - b = Thickness of the aquifer (ft.)
  - c = Width of the aquifer through the discharge plane

R = P A

where

- R = Recharge from precipitation (gpd)
- P = Recharge from USGS Stream Discharge Measurement
  - Extrapolated from Hydrograph Separation
  - USGS Stream Flow Gaging Station
  - Deer Creek at Rocks State Park
- A = Area of the Septic field (sq.ft.)

S = Q - R

where

- S = Allowable septic effluent application rate (gpd)
- Q = Volume rate of flow that can be transmitted by the surficial aquifer (gpd)
- R = Recharge from precipitation (gpd)

Area 1 Solutions

Q = Kh i A

Kh	=	12.78	gpd/sf			
i	=	13.00 ft. / 438.00 ft.	=	0.030	av. grad.	
A	=	b 30.6 ft.	x	c 308.00 ft.	=	9432.50 sf

Q = 26766.35 gpd

R = P A

P = 1011.00 gpd/ac
P = 0.02 gpd/sf

A = 78490.00 sf

R = **1821.70** gpd

S = Q - R

Q = 26766.35 gpd

R = 1821.70 gpd

S = **24944.65 gpd** Allowable Transmissive Rate

Proposed Septic Discharge = **5916.00 gpd**

Pass/Fail = PASS S>(Septic Discharge)

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R2

Area 1 Septic System Analysis Worksheet: Ground-Water Mounding Analysis (R1)

$h_{x,y,t} = H - (Vt/f)\,[4F(\alpha,\beta)]$

where

- $h_{x,y,t}$ = Height (m) of water table including mound above confining layer at time t.
- H = Original water table height (m) above confining layer = b-d
  - b = depth to bedrock
  - d = depth to water table
- V = Arrival rate at water table of septic effluent (m/day)
- t = Time since start of recharge (day)
- f = Fillable Porosity
- F = Septic functions
- α = (w/2+x)n*
- β = (l/2+x)n*
- w = Width of the system (m)
- l = Length of the septic system (m)
- n = (4tT/f)^-1/2
- T = Transmissivity (m^2/day)
- (x,y,t) = Cartesian coordinates of position in septic field at time t

Given:

b	=	44.875	ft	=	13.69	m
d	=	14.250	ft	=	4.35	m
H	=			=	9.34	m
l	=	308.000	ft	=	93.94	m
w	=	254.838	ft	=	77.73	m
V	=	5916.00	gpd	=	0.0031	m/day
T_0	=	391.4	gpd/ft	=	4.86	m^2/day
T_{90}	=	393.2	gpd/ft	=	4.88	m^2/day
T_{365}	=	394.7	gpd/ft	=	4.90	m^2/day
T_{7300}	=	397.9	gpd/ft	=	4.94	m^2/day
f	=			=	0.30	
x	=			=	0.00	m
y	=			=	0.00	m

Solution

$n = (4tT/f)^{-1/2}$

	DAY 1		DAY 90		YEAR 1		YEAR 20	
t	1.00 day		90.00 day		365.00 day		7300.00 day	
T	4.86 m^2/day		4.88 m^2/day		4.90 m^2/day		4.94 m^2/day	
f	30%		30%		30%		30%	
n	0.124		0.013		0.006		0.0014	

$F(\alpha,\beta) = [(w/2+x)n, (l/2+y)n)]$ From Bouwer (1978) pp. 284-29

	DAY 1	DAY 90	YEAR 1	YEAR 20
w	77.73 m	77.73 m	77.73 m	77.73 m
l	93.94 m	93.94 m	93.94 m	93.94 m
n	0.12	0.01	0.01	0.001
x	0.00 m	0.00 m	0.00 m	0.00 m
y	0.00 m	0.00 m	0.00 m	0.00 m
α	4.83	0.51	0.25	0.06
β	5.83	0.61	0.30	0.07
$F(\alpha,\beta)$	1.00	0.60	0.27	0.03

Calculate Mound Height

$h_{x,y,t} = H - (Vt/4f)\,[4F(\alpha,\beta)]$ In meters

	DAY 1	DAY 90	YEAR 1	YEAR 20
$h_{0,0,1}$ - H =	0.010	$h_{0,0,90}$ - H = 0.55	$h_{0,0,365}$ - H = 1.02	$h_{0,0,7300}$ - H = 1.99 m
$h_{0,0,1}$ =	9.35	$h_{0,0,90}$ 9.89	$h_{0,0,365}$ = 10.36	$h_{0,0,7300}$ 11.33 m
$h_{0,0,1}$ - H	Converted back to feet			
$h_{0,0,1}$ - H =	0.03	$h_{0,0,90}$ - H = 1.80	$h_{0,0,365}$ - H = 3.35	$h_{0,0,7300}$ - H = 6.51 ft

Maximum Mound Height	**(Field Center)**	= 6.51 ft
Average Mound Height	**(Entire Field = 1/2 Maximum)**	= 3.26 ft
Add 4 foot buffer		= 7.26 ft

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Area 1 Septic System Analysis Worksheet: Nitrate Loading Analysis

A = BxC

where

A = minimum acreage required for average daily nitrate discharge

B = Planned average daily septic discharge (gpd)

C = acreage requirement per unit septic discharge (MD regulations require 1.06 acres per 225 gpd of septic discharge)

Given:

B	=	5916.00	gpd	
C	=	2.12	ac/225gpd	Assume ~120 mgl

Solution:

A	=	**55.74**	ac	Required for untreated application
Site Acreage	=	**26.93**	ac	Available for application
Pass/Fail	=	**FAIL**	Pass if Total Site Acreage > Acreage Necessary for Nitrate Discharge	
			Fail if Total Site Acreage < Acreage Necessary for Nitrate Discharge	
		2857.733	gpd	Maximum application rate for proposed acreage without pretreatment

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Hydraulic Conductivity Summary

	MW1	MW2	MW3	MW4	MW5	MW6	MW7	Average	
Area 1	27.8	9.9	7.7	7.2	12.1	11.9	na	12.8	gpd/sf

Depth to Bedrock/Water Table Summary (Thickness of the Aquifer)

Vicinity	MW1	MW2	MW3	MW4	MW5	MW6	MW7	Average
Depth	63.0	63.0	44.0	44.0	32.0	25.0	63.0	
Area 1	A	B	C	D	E	F	G	
Depth	63.0	63.0	53.5	34.5	na	na	53.5	53.5
			5.0	ft.				

Spring 2008 Depth to Water Table Summary

	A	B	C	D	E	F	G	Average	
Area 1 Elevation	14.5	11.5	9.5	10.5	na	na	16.5	12.5	ft.

Length of Discharge Plane

	Length	
Area 1	408.0	ft.

Discharge Vector Gradient (From Water Table Observations)

	High (ft.)	Midpoint	Low (ft.)	Gradient	Southeast
Area 1	17.0	-	8.0	9.0	

Discharge Vector Lengths

	Length	
Area 1	303.0	ft

Area of Septic Field

Length	408.0	ft.
Average Width	203.8	ft.
Area	83,137.0	sf

Results Summary

Septic Flow:	11,832.0	gpd max	5,916.0	gpd average
Hydrologic Balance:	PASS			
Nitrate Loading:	FAIL	Pretreatment Required		

Vicinity	A	B	C	D	E	F	G	
Water Table	14.5	11.5	9.5	10.5	na	na	16.5	ft.
Mound Height	2.7	2.7	2.7	2.7	na	na	2.7	
Buffer	4.0	4.0	4.0	4.0	na	na	4.0	
Max. Trench Depth	7.8	4.8	2.8	3.8	na	na	9.8	ft.

Vicinty	C-H	C-I	C-J	
Water Table	14.5	16.0	16.5	ft.
Mound Height	2.7	2.7	2.7	
Buffer	4.0	4.0	4.0	
Max. Trench Depth	7.8	9.3	9.8	ft.

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Table 1: Schuck's Road Elementary School School Septic Flow Analysis

(696 Student Basis)

Aug-08

Average Weekly Use Program Calculation	Number	Gallons / User / Day	Days in Use	Total Weekly Usage	7-Day Average	5-Day Average
School (Based on 696 Students)	696	15	5	52,200	7,457	10,440
Warming Kitchen	696	2	5	6,960	994	1,392
Special Event (625 Gym Cap, 225 Cafeteria Cap)	850	5	3	12,750	1,821	2,550
TOTAL:				**71,910**	**10,273**	**14,382**

Maximum Day Program Calculation	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
School (Based on 696 Students)	10,440	10,440	10,440	10,440	10,440		
Warming Kitchen	1,392	1,392	1,392	1,392	1,392		
Special Event (625 Gym Cap, 225 Cafeteria Cap)					4,250	4,250	4,250
TOTAL:	**11,832**	**11,832**	**11,832**	**11,832**	**16,082**	**4,250**	**4,250**

MDE Permit Values	Maximum	Average
School (Based on 696 Students)	10,440	5,220
Warming Kitchen	1,392	696
Special Event (625 Gym Cap, 225 Cafeteria Cap)		
TOTAL:	**11,832**	**5,916**

Septic System Analysis Worksheet: Ground Water Balance Analysis (R1)

Q = Kh i A

where

- Q = Volume rate of flow that can be transmitted by the surficial aquifer (gpd)
- Kh = Horizontal permeability of the aquifer (gpd/sf)
- i = Hydraulic gradient dh/dl
  - dh = Change in head (ft.)
  - dl = Change in length (ft.)
- A = Cross sectional area of the aquifer (ft^2) = (b x c)
  - b = Thickness of the aquifer (ft.)
  - c = Width of the aquifer through the discharge plane

R = P A

where

- R = Recharge from precipitation (gpd)
- P = Recharge from USGS Stream Discharge Measurement
  - Extrapolated from Hydrograph Separation
  - USGS Stream Flow Gaging Station
  - Deer Creek at Rocks State Park
- A = Area of the Septic field (sq.ft.)

S = Q - R

where

- S = Allowable septic effluent application rate (gpd)
- Q = Volume rate of flow that can be transmitted by the surficial aquifer (gpd)
- R = Recharge from precipitation (gpd)

Area 1 Solutions

Q = Kh i A

Kh	=	12.78	gpd/sf

i	=	9.00 ft. / 303.00 ft.	=	0.030	av. grad.	

A	=	b	ft.	x	c	ft.		
A	=	41.0	ft.	x	408.00	ft.	=	16728.00 sf

Q = 47504.74 gpd

R = P A

P =	1011.00	gpd/ac
P =	0.02	gpd/sf
A =	83137.00	sf
R =	**1929.56**	gpd

S = Q - R

Q	=	47504.74	gpd	
R	=	1929.56	gpd	
S	=	**45575.19**	**gpd**	Allowable Transmissive Rate
Proposed Septic Discharge	=	**5916.00**	**gpd**	
Pass/Fail	=	**PASS**		S>(Septic Discharge)

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Area 1 Septic System Analysis Worksheet: Ground-Water Mounding Analysis (R1)

$h_{x,y,t}$ - H = (Vt/4f) [4F (α,β)]

where

$h_{x,y,t}$	=	Height (m) of water table including mound above confining layer at time t.
H	=	Original water table height (m) above confining layer = b-d
b	=	depth to bedrock
d	=	depth to water table
V	=	Arrival rate at water table of septic effluent (m/day)
t	=	Time since start of recharge (day)
f	=	Fillable Porosity
F	=	Septic functions
α	=	(w/2+x)n*
β	=	(l/2+x)n*
w	=	Width of the system (m)
l	=	Length of the septic system (m)
n	=	(4tT/f)^-1/2
T	=	Transmissivity (m^2/day)
(x,y,t)	=	Cartesian coordinates of position in septic field at time t

Given:

b	=	53.500	ft	=	16.32	m
d	=	12.500	ft	=	3.81	m
H	=			=	12.51	m
l	=	408.000	ft	=	124.44	m
w	=	203.767	ft	=	62.15	m
V	=	5916.00	gpd	=	0.0029	m/day
T_0	=	524.0	gpd/ft	=	6.51	m^2/day
T_{90}	=	525.4	gpd/ft	=	6.52	m^2/day
T_{365}	=	526.6	gpd/ft	=	6.54	m^2/day
T_{7300}	=	529.4	gpd/ft	=	6.57	m^2/day
f	=			=	0.30	
x	=			=	0.00	m
y	=			=	0.00	m

Solution

n = (4tT/f)^-1/2

	DAY 1		DAY 90		YEAR 1		YEAR 20	
t	= 1.00	day	= 90.00	day	= 365.00	day	= 7300.00	day
T	= 6.51	m^2/day	= 6.52	m^2/day	= 6.54	m^2/day	= 6.57	m^2/day
f	= 30%		= 30%		= 30%		= 30%	
n	= 0.107		= 0.011		= 0.006		= 0.0013	

F (α,β) = [(w/2+x)n, (l/2+y)n)] From Bouwer (1978) pp. 284-29

w	= 62.15 m	= 62.15 m	= 62.15 m	= 62.15 m
l	= 124.44 m	= 124.44 m	= 124.44 m	= 124.44 m
n	= 0.11	= 0.01	= 0.01	= 0.001
x	= 0.00 m	= 0.00 m	= 0.00 m	= 0.00 m
y	= 0.00 m	= 0.00 m	= 0.00 m	= 0.00 m
α	= 3.34	= 0.35	= 0.17	= 0.04
β	= 6.68	= 0.70	= 0.35	= 0.08
F (α,β)	= 1.00	= 0.50	= 0.23	= 0.02

Calculate Mound Height

$h_{x,y,t}$ - H = (Vt/4f) [4F (α,β)] In meters

$h_{0,0,1}$	- H =	**0.010**	$h_{0,0,90}$	- H =	**0.43**	$h_{0,0,365}$	- H =	**0.79**	$h_{0,0,7300}$	- H =	**1.66**	m
$h_{0,0,1}$	=	**12.51**	$h_{0,0,90}$		**12.94**	$h_{0,0,365}$	=	**13.30**	$h_{0,0,7300}$		**14.17**	m

Converted back to feet

$h_{0,0,1}$ - H =	**0.03**	$h_{0,0,90}$	- H =	**1.41**	$h_{0,0,365}$	- H =	**2.60**	$h_{0,0,7300}$	- H =	**5.46**	ft

Maximum Mound Height (Field Center) = **5.46** ft

Average Mound Height (Entire Field = 1/2 Maximum) = **2.73** ft

Add 4 foot buffer = **6.73** ft

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Area 1 Septic System Analysis Worksheet: Nitrate Loading Analysis

A = BxC

where

A = minimum acreage required for average daily nitrate discharge

B = Planned average daily septic discharge (gpd)

C = acreage requirement per unit septic discharge (MD regulations require 1.06 acres per 225 gpd of septic discharge)

Given:

B	=	5916.00	gpd	
C	=	2.12	ac/225gpd	Assume ~120 mgl

Solution:

A	=	**55.74**	ac	Required for untreated application
Site Acreage	=	**26.93**	ac	Available for application
Pass/Fail	=	**FAIL**	Pass if Total Site Acreage > Acreage Necessary for Nitrate Discharge	
			Fail if Total Site Acreage < Acreage Necessary for Nitrate Discharge	
		2857.733	gpd	Maximum application rate for proposed acreage without pretreatment

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JOB NO. Schucks Rd. Sanitary Design
SHEET NO. 08035 OF
CALCULATED BY JH DATE 9.9.08
CHECKED BY DATE
SCALE

Daily Usage

674 Students x 17 GPD = 11,500 gpd*

*assume this incorporates extra activities and can be used as a 7-day average.

Standard Trench design:

soil loading rate = 1.2 gpd/sf (using pretreatment)
where the trench is 3-ft wide rate = 3.6 gpd/LF

Std design length = $\frac{\text{usage volume}}{\text{loading}}$

$= \frac{11500 \text{ gpd}}{3.6 \text{ gpd/LF}} = 3200 \text{ LF}$

site is limited in available space - try

find 3-areas providing 3200 LF each.

- comar 26.04.02

$= \left(\frac{W+2}{W+1+2d}\right) \times 100 \times$ Std. length.

3ft

gravel below pipe -
(depends upon available vertical distance computed by mounding analysis)

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JOB NO. 08035
SHEET NO. Schucks Road OF
CALCULATED BY jh DATE 9.9.08
CHECKED BY DATE
SCALE

mounding analyses indicates that 4.46 to 8.46 ft is the depth of remaining unsaturated depth (see CEM Spreadsheet).

if W= 3
and d = 2.5

$$\frac{(3+2)}{(3+1+5)} \times 100 = 55\%$$

∴ deep trench length = 55% × 3200 = 1775 LF

min spacing std trench = 10.5 ft. - 9' undisturbed with 3' trench
min spacing deep trench = 18 Ft.

d= 2.5' $\frac{3+2}{3+1+5} \times 100 = 55\%$

d= 3.5' $\frac{3+2}{3+1+7} \times 100 = 45\%$

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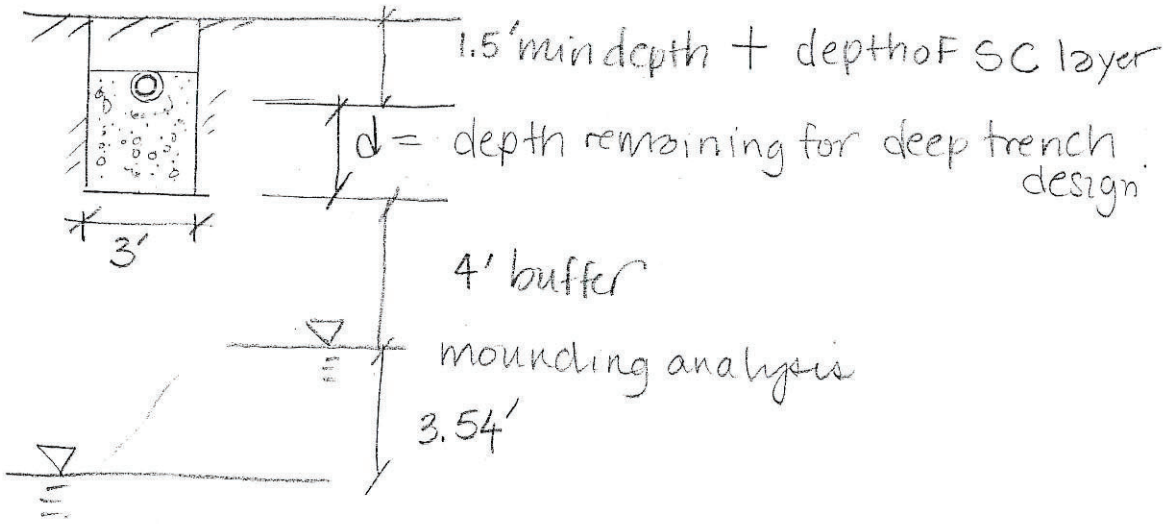
JOB NO. 08035 Shucks Rd
SHEET NO. OF
CALCULATED BY jh DATE 09.10.08.
CHECKED BY DATE
SCALE

schematically the trench will be as follows.



design will incorporate a 150% design factor where flow will be distributed between at least 3 cells.

for standard trench design the required length of trench is 150% x 3200 LF = 4800 LF.

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SHEET NO. OF
CALCULATED BY jh DATE 9.10.08
CHECKED BY DATE
SCALE

Trench Layout

		estimate equiv. Std length (divide by percent as determined for deep trench)	
Cell A	700 LF	700 ÷ 1.00	700 LF
Cell B	550 LF	550 ÷ 1.00 =	550 LF
Cell C	700 LF	700 ÷ 0.45 =	1540 LF
Cell D	600 LF	600 ÷ 0.55 =	1080 LF
Cell E	600 LF	600 ÷ 0.55 =	1080 LF
			4950 LF OK
			> 4800 LF REQ'D.

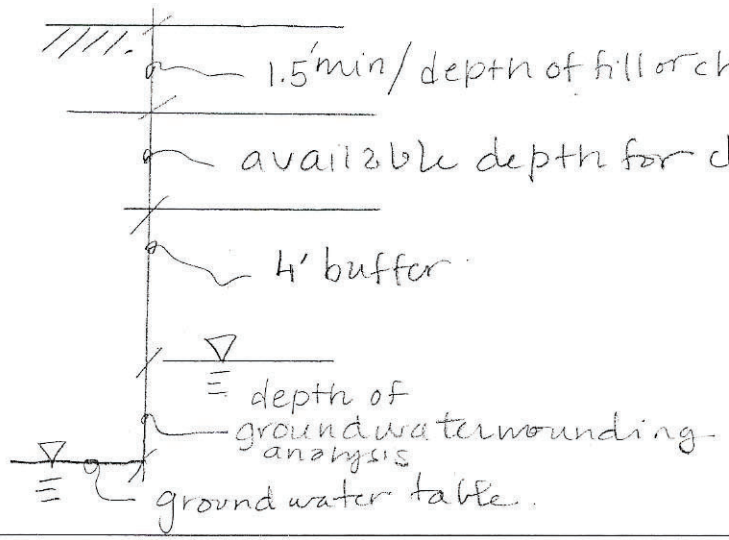
Construct Cell A + B as Std trenches

construct Cell C as deep trench d = 3.5'

construct cells D+E as deep trench d = 2.5'

Cell no.	length	GW.	SC depth / boring	% STD Trench	Trench depth	equivalent STD trench length
A	800 LF	14'	5.5' / 200,201	1.00%	0'	800 LF
B.	575LF	14'	5.5' / 200, 201.	100%	0'	575LF
C	700LF	14'	0 / 203	45%	3.5	1540LF
D	600LF	14'	4' / 206.	55%.	2.5	1080LF
E	650LF	16'	6' / 211.	55%.	2.5	1180LF.
F	555LF	16	8' / 204	100%.	0.	555.LF.

to determine depth available for septic trenches.



SITE RESOURCES incorporated
Comprehensive Land Planning & Site Design Services

JOB NO. 08035 Schnucks Rd.
SHEET NO. OF
CALCULATED BY JR DATE 9.11.08
CHECKED BY DATE
SCALE

SITE RESOURCES
incorporated
Comprehensive Land Planning & Site Design Services

JOB NO.
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

G	595	16'	6.5/207+	62'.	2.0.	950 LF.
H	375	16'	4/209	62'.	2.0.	600 LF.
						7220 LF

9600 NEED for MAIN + REQUIRED

2380 LF needed.

KB= KEVIN BARDARBA

LABEL WELLS W/ MDE PERMIT #'s

KB! - DESIGN SYSTEM USING BOTTOM SURFACE OF TRENCH ONLY

676 (STUDENT POPULA. XX 17 GPD = 11,492 GPD SAY 11,500 GPD

1.2 GAL/S.F. OF SOIL

3,200 LIN. FT. of 3' WIDE TRENCH

8' EDGE TO EDGE

100'

PRE-TREATMENT

8mg NITROGEN

30/30 BOD/

4' WATER MOUNDING

WHERE WATER IS

12'-16' BELOW +

4' UNSATURATED ZONE

→ ALL WELLS WITHIN 1/4 MI. NEED TO BE MONITORED TO GET DISCHARGE PERMIT

SEPTIC TRENCH DESIGN
LOW PRESSURE DISTRIBUTION

Campus Hills ES - 08035
Date : June 11, 2009

Step 1 - Select Lateral Length

Lateral length is dictated by trench length. Trenches should be a long as possible perpendicular to the gradient of groundwater flow or the gradient of the restrictive horizon. In the absence of specific information of ground water or limiting horizon gradients, it is assumed these gradients are parallel to the surface gradient. Therefore, trenches should be as long as feasible along the contour. Trenches longer than 75 feet typically have a center manifold; trenches shorter than 50 feet typically have an end manifold.

width of trenches -	3 ft	manifold type -	center manifold
depth of trenches -	varies ft	lateral length -	110 ft
depth of stone -	varies ft	number of laterals -	6

Step 2 - Select Perforation Hole Diameter

A 5/16 inch perforation is recommended. A 1/4 inch perforation is acceptable but is more subject to clogging and is best reserved for use on sloping sites. Using a smaller diameter hole with slightly higher head at the distal end of the lateral may allow for use of a smaller pump.

perforation diameter -	5/16 in

Step 3 - Select Perforation Spacing

Holes in the distribution lateral should be spaced 3 to 10 feet apart. As holes are spaced closer together application of effluent to the absorption area is more uniform, but the system flow rate increases which may require a larger pump.

Special Note for Sloping Sites: Sloping sites present a special set of problems for designing pressure distribution systems. The system must be carefully planned to obtain even distribution to all laterals. The pressure head on each lateral is different due to a different elevation. As the elevation changes by one foot, the pressure head changes by one foot. Hole spacing and diameter must be selected such that there is less than a 10% differential in flow rate between any two laterals.

number of perforations (N) -	20
perforation spacing -	5.5 ft

Step 4 - Determine Lateral Diameter

use figure 4.4 (Sand Mound Systems) to determine lateral diameter for appropriate perforation diameter

lateral diameter (d) -	2 in

Step 5 - Calculate Lateral Discharge Rate

Lateral Discharge Rate = number of holes per lateral X discharge rate per hole

H = 2 ft for the first lateral
H = 2 + change in EL for next lateral

$Qo = 11.797d^2H^{1/2}$ $Q_L = 11.797Nd^2H^{1/2}$

H -		2 ft
Qo =	discharge rate per hole -	1.63 gpm / hole
Q_L =	lateral discharge rate -	32.60 gpm

Step 6 - Select Manifold Diameter and Forcemain Diameter

use Table 4.4 for guideline of appropriate pipe diameter.

manifold diameter -	6 in
manifold length -	60 ft
forcemain diameter -	6 in
forcemain length -	660 ft

Step 7 - Determine Minimum Dose

The minimum dose must be no less than 1/6 X design flow or the volume of (5 x lateral volume) + one manifold volume + one forcemain volume. Use Table 4.2b to determine volumes for 100 feet length of different diameter pipes.

volume/ft for lateral = 17.4
volume/ft for manifold = 150
volume/ft for forcemain= 150

5 x lateral volume = 5 x Length x volume/ft = 574 gal
one manifold = manifold length x volume/ft = 90 gal
one forcemain volume = FM length x volume/ft = 990 gal
1654 gal

design flow = 11850 gpd
1/6 x design flow = 1975 gal
USE MINIMUM 2000 gal

Step 8 - Determine Minimum System Discharge

The minimum discharge rate = the sum of the lateral discharge rates.

minimum discharge rate - 0.00 gpm

Step 9 - Sizing the Pump

The pump must be capable of delivering the minimum flow rate at the designed total dynamic head (TDH). The minimum flow rate is the minimum system discharge rate. The total dynamic head is the sum of friction losses, the static head (the elevation differential) and the operating head.

1. Friction Loss: (from Table 4.4 in the EPA Design Manual)
   - friction loss at 200 gpm — 0.28 ft per 100 foot length of 6 in. pipe
   - friction loss at 250 gpm — 0.41 ft per 100 foot length of 6 in. pipe

   therefore, friction loss at 219.78 gpm — 0.33 ft per 100 foot length of 6 in. pipe
   friction loss in 660 LF — 2.2 ft

2. Static Head: The distance that the laterals are above the pump inlet is the static head.
   pump El = 340 — 17.0 ft
   highest lateral El = 357

3. Discharge Head: 2.0 ft

4. TDH = Friction Loss + Static Head + Discharge Head = 21.2 ft

Therefore the pump must be capable	
of delivering	219.78 gpm
against a TDH of	21.2 ft.

SEPTIC TRENCH DESIGN
LOW PRESSURE DISTRIBUTION

Campus Hills ES - 08035
Date : June 11, 2009

Summary of Data Tabulation

FIELD 1C	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Head (feet)	Perforation Diameter (inches)	Flow per Perforation (gpm)	Perforation Spacing (feet)	Number of Perforations	Lateral Flow (gpm)
C1	359.9	355.9	110	2	5/16	1.63	4.23	26	42.38
C2	359.6	355.6	110	2.3	5/16	1.75	4.58	24	42.00
C3	359.3	355.3	110	2.6	5/16	1.86	4.58	24	44.64
C4	358.9	354.9	110	3	5/16	2.00	5.00	22	44.00
C5	358.5	354.5	110	3.4	5/16	2.12	5.50	20	42.40
								Total gpm =	215.42

FIELD 2C	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Head (feet)	Perforation Diameter (inches)	Flow per Perforation (gpm)	Perforation Spacing (feet)	Number of Perforations	Lateral Flow (gpm)
C6	358.1	354.1	110	2	5/16	1.63	5.50	20	32.60
C7	357.9	353.9	110	2.2	5/16	1.71	6.11	18	30.78
C8	357.3	353.3	110	2.8	5/16	1.93	6.87	16	30.88
C9	356.7	352.7	110	3.4	5/16	2.12	7.85	14	29.68
C10	356.1	352.1	110	4	5/16	2.30	7.85	14	32.20
C11	355.5	351.5	110	4.6	1/4	1.58	5.50	20	31.60
C12	354.8	350.8	110	5.3	1/4	1.70	6.11	18	30.60
								Total gpm =	218.34

FIELD 3C	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Head (feet)	Perforation Diameter (inches)	Flow per Perforation (gpm)	Perforation Spacing (feet)	Number of Perforations	Lateral Flow (gpm)
C13	354	350.5	110	2	5/16	1.63	5.00	22	35.86
C14	353.5	350.5	110	2	5/16	1.63	5.00	22	35.86
C15	352.5	349.5	110	3	5/16	2.00	6.11	18	36.00
C16	351.5	348.5	110	4	5/16	2.30	6.87	16	36.80
C17	351	348	110	4.5	5/16	2.44	7.85	14	34.16
C18	350	347	110	5.5	1/4	1.73	5.50	20	34.60
								Total gpm =	213.28

FIELD 1D	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Head (feet)	Perforation Diameter (inches)	Flow per Perforation (gpm)	Perforation Spacing (feet)	Number of Perforations	Lateral Flow (gpm)
D1	361	357	110	2	5/16	1.63	5.00	22	35.86
D2	360.5	356.5	110	2.6	5/16	1.86	5.50	20	37.20
D3	359.9	355.9	110	3	5/16	2.00	6.11	18	36.00
D4	359.5	355.5	110	3.5	1/4	1.38	4.23	26	35.88
D5	359	355	110	3.8	1/4	1.44	4.58	24	34.56
D6	358.7	354.7	110	4.1	1/4	1.49	4.58	24	35.76
								Total gpm =	215.26

FIELD 2D	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Head (feet)	Perforation Diameter (inches)	Flow per Perforation (gpm)	Perforation Spacing (feet)	Number of Perforations	Lateral Flow (gpm)
D7	358.3	354.3	110	2	5/16	1.63	5.00	22	35.86

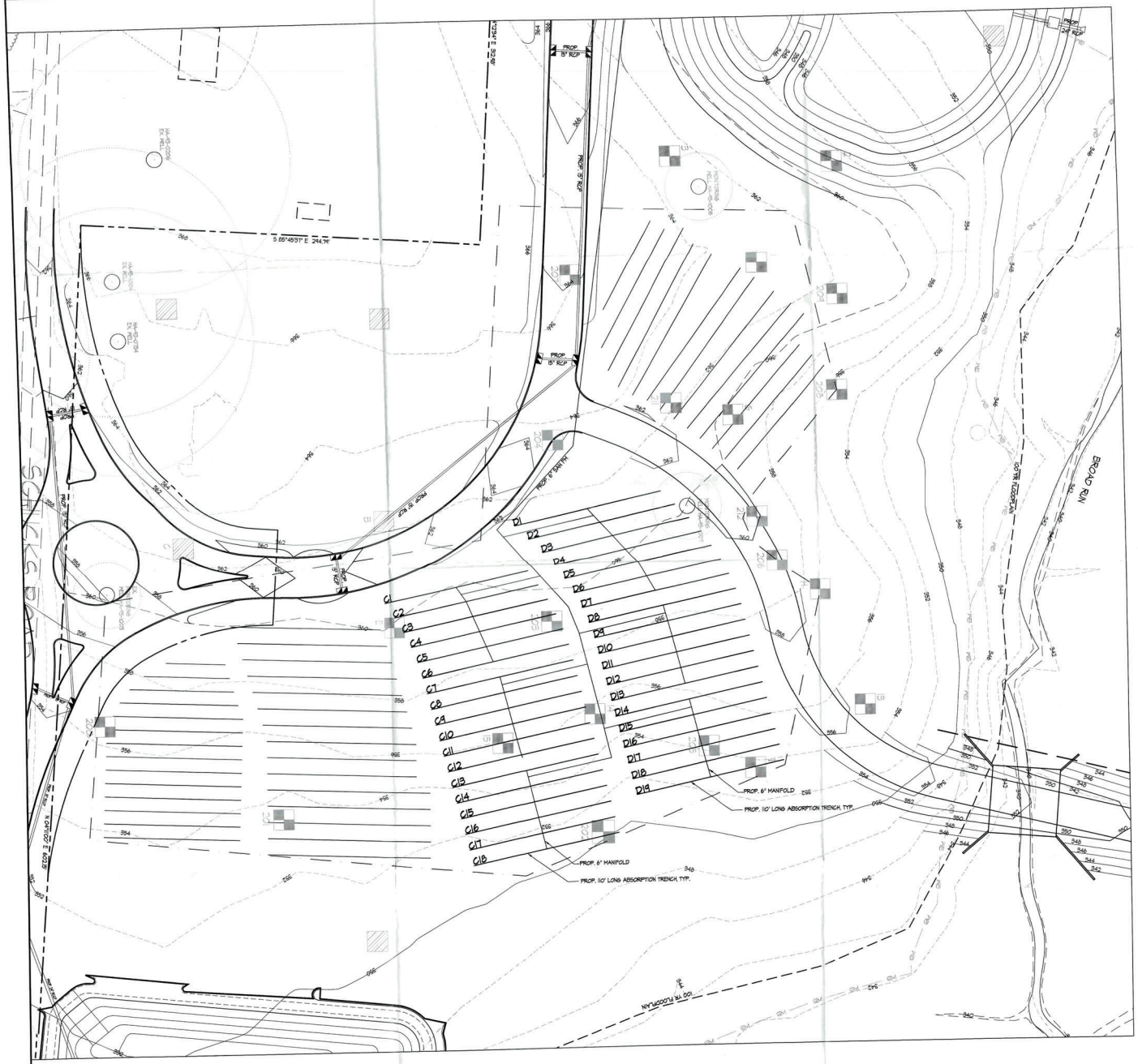
Suggest clear pipe for viewing the dosing cell
1. separate lines from chamber
2. k valves
3. solenoids

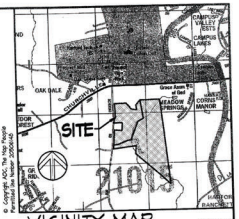
SEPTIC TRENCH DESIGN
LOW PRESSURE DISTRIBUTION

Campus Hills ES - 08035
Date : June 11, 2009

D8	358.2	354.2	110	2.1	5/16	1.67	5.00	22	36.74
D9	357.9	353.9	110	2.4	5/16	1.78	5.50	20	35.60
D10	357.5	353.5	110	2.8	5/16	1.93	6.11	18	34.74
D11	357	353	110	3.3	5/16	2.09	6.11	18	37.62
D12	356.5	352.5	110	3.8	5/16	2.25	6.87	16	36.00
								Total gpm =	216.56
FIELD 3D	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Head (feet)	Perforation Diameter (inches)	Flow per Perforation (gpm)	Perforation Spacing (feet)	Number of Perforations	Lateral Flow (gpm)
D13	355.6	350.6	110	2	5/16	1.63	5.50	20	32.60
D14	355	350.5	110	2.1	5/16	1.67	6.11	18	30.06
D15	354.2	350.2	110	2.4	5/16	1.78	6.11	18	32.04
D16	353.5	349.5	110	3.1	1/4	1.30	4.58	24	31.20
D17	352.8	348.8	110	3.8	1/4	1.44	5.00	22	31.68
D18	352	348	110	4.6	1/4	1.58	5.50	20	31.60
D19	351.3	347.3	110	5.3	1/4	1.70	6.11	18	30.60
								Total gpm =	219.78

PIEZ-1
PIEZ-2
PIEZ-3
MH-1
MH-2
PROP. 8" MANIFOLD
PROP. 110' LONG ABSORPTION TRENCH, TYP.
PROP. ABSORPTION TRENCH, LENGTH VARIES TYP.
PROP. 15" RCP
EX. 15" RCP
EX. 18" RCP
EX. 24" RCP
EX. 30" RCP
EX. 36" RCP
EX. 42" RCP
EX. 48" RCP
EX. 54" RCP
EX. 60" RCP
EX. 66" RCP
EX. 72" RCP
EX. 78" RCP
EX. 84" RCP
EX. 90" RCP
EX.





VICINITY MAP 1"=2000'

FIELD 1C	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Perforation Diameter (inches)	Perforation Spacing (feet)	Number of Perforations
C1	359.4	355.4	110	5/16	4.23	26
C2	359.6	355.6	110	5/16	4.58	24
C3	359.3	355.3	110	5/16	4.58	24
C4	359.4	354.9	110	5/16	5.00	22
C5	359.5	354.5	110	5/16	5.50	20

FIELD 2C	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Perforation Diameter (inches)	Perforation Spacing (feet)	Number of Perforations
C6	359.1	354.1	110	5/16	5.50	20
C7	357.4	353.4	110	5/16	6.11	18
C8	357.3	353.3	110	5/16	6.87	16
C9	356.7	352.7	110	5/16	7.85	14
C10	356.1	352.1	110	5/16	7.85	14
C11	355.5	351.5	110	1/4	5.50	20
C12	354.8	350.8	110	1/4	6.11	18

FIELD 3C	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Perforation Diameter (inches)	Perforation Spacing (feet)	Number of Perforations
C13	354	350.0	110	5/16	5.00	22
C14	355.5	350.5	110	5/16	5.00	22
C15	352.5	344.9	110	5/16	6.11	18
C16	351.5	348.5	110	5/16	6.87	16
C17	351	348	110	5/16	7.85	14
C18	350	347	110	1/4	5.50	20

FIELD 1D	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Perforation Diameter (inches)	Perforation Spacing (feet)	Number of Perforations
D1	361	357	110	5/16	5.00	22
D2	360.5	356.5	110	5/16	5.50	20
D3	359.4	355.4	110	5/16	6.11	18
D4	359.9	355.5	110	1/4	4.23	26
D5	359	355	110	1/4	4.58	24
D6	358.7	354.7	110	1/4	4.58	24

FIELD 2D	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Perforation Diameter (inches)	Perforation Spacing (feet)	Number of Perforations
D7	358.9	354.5	110	5/16	5.00	22
D8	359.2	354.2	110	5/16	5.00	22
D9	357.4	353.4	110	5/16	5.50	20
D10	357.5	353.5	110	5/16	6.11	18
D11	357	353	110	5/16	6.11	18
D12	356.5	352.5	110	5/16	6.87	16

FIELD 3D	Ground Surface Elevation	Lateral Elevation	Lateral Length (feet)	Perforation Diameter (inches)	Perforation Spacing (feet)	Number of Perforations
D13	355.6	350.6	110	5/16	5.50	20
D14	355	350.5	110	5/16	6.11	18
D15	354.2	350.2	110	5/16	6.11	18
D16	353.5	344.5	110	1/4	4.58	24
D17	352.8	348.8	110	1/4	5.00	22
D18	352	348	110	1/4	5.50	20
D19	351.3	347.3	110	1/4	6.11	18

SCALE: 1" = 50'

SEPTIC TRENCH LAYOUT PLAN

SCHUCKS ROAD ELEMENTARY SCHOOL & SCHUCKS ROAD REGIONAL PARK

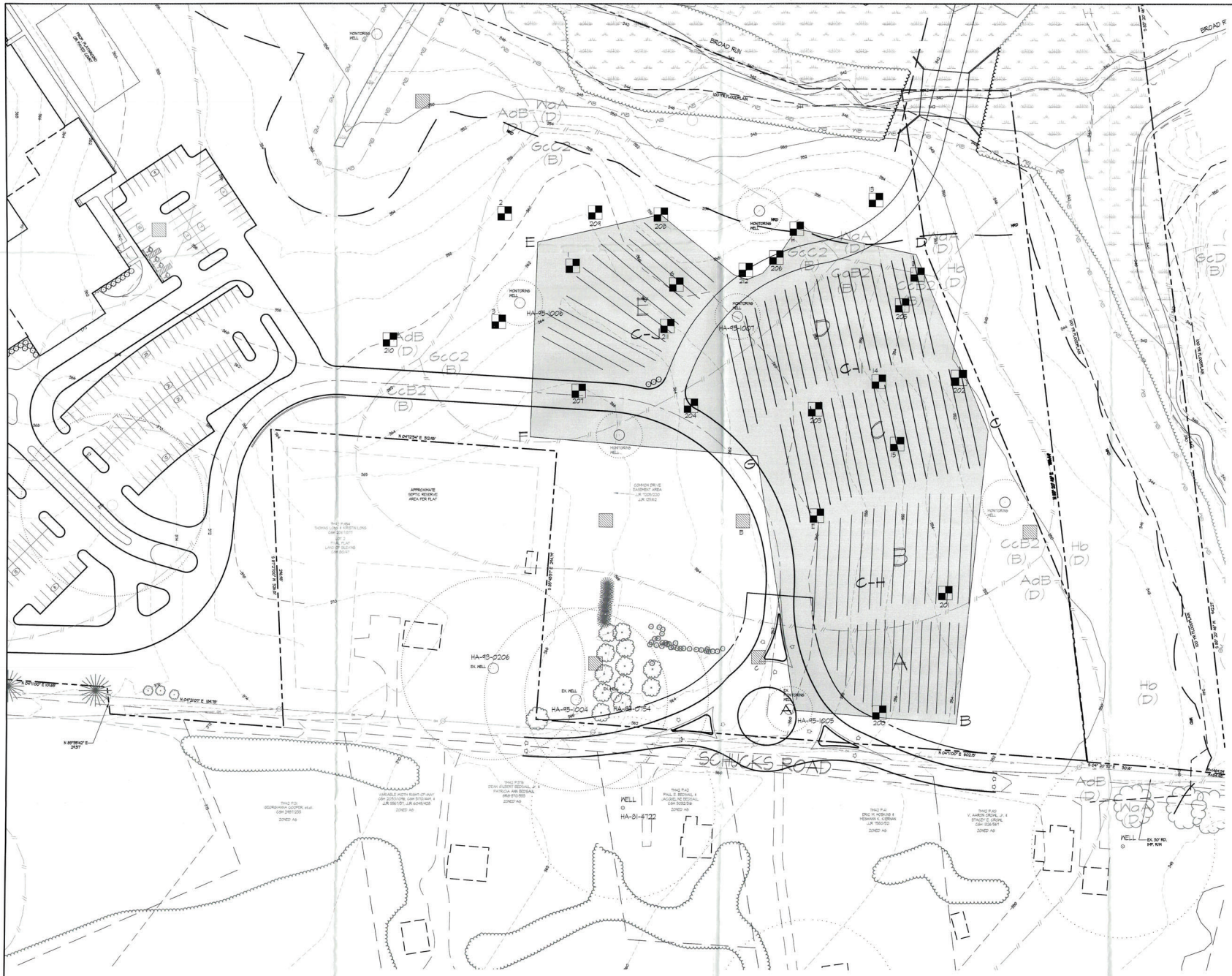
REVISIONS

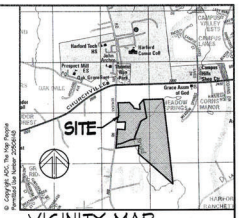
SITE RESOURCES INCORPORATED
Comprehensive Land Planning & Site Design Services
14316 Jarrettsville Pike • Phoenix, Maryland 21131
(410) 683-3266 • fax (410) 683-3269

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19078, EXPIRATION DATE: 09/24/11.

DRAWN BY: CGS	CONTRACT NO.:
DESIGNED BY: JLH	SCALE: 1"=50'
CHECKED BY: SGC	SRI PROJECT NO: 08055
DATE: 6/03/09	SHEET 1 OF 1

8055-Schucks Rd Elementary School/Dwg/Septic_Plan.dwg 11/10/2009 2:02:42 PM





VICINITY MAP 1"=2000'

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LEGEND

- PROPERTY LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING TREES
- PROPOSED PLANTING
- EXISTING ROAD
- PROPOSED ROAD
- PROPOSED WALK
- EX. 8" SD — EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- EX. 8" WATER — EXISTING WATER
- PROP. 8" WATER — PROPOSED WATER
- EX. 8" SAN. — EXISTING SANITARY
- PROPOSED SANITARY
- EXISTING ELECTRIC
- PROPOSED ELECTRIC
- EXISTING FENCE
- PROPOSED FENCE
- EXISTING STREAM
- 100 YR FLOODPLAIN
- FOREST RETENTION AREA
- NRD — NATURAL RESOURCE DISTRICT
- WETLANDS LIMITS
- WETLAND BUFFER LINE
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- NoB2 / GcB2 — SOILS LINE
- EXISTING MONITORING WELL
- EXISTING WELL
- PERC TESTS

FACILITY LOCATION MAP

SCHUCKS ROAD ELEMENTARY SCHOOL & SCHUCKS ROAD REGIONAL PARK

REVISIONS

SITE RESOURCES
ENGINEERING
Comprehensive Land Planning & Site Design Services
14135 Jarrettsville Pike • Phoenix, Maryland 21131
(410) 683-3300 • fax (410) 683-3399

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 09916, EXPIRATION DATE: 09/24/2011.

DRAWN BY: AM	CONTRACT NO.:
DESIGNED BY: JLH	SCALE: 1"=40'
CHECKED BY: SSC	SRI PROJECT NO. 08055
DATE: MAY 28, 2009	SHEET 1 OF 1

Z:\08\08055-Schucks Rd Elementary School\Dwg\Groundwater_Discharge_Permit_Plan.dwg, 5/19/2009 3:55:53 PM

EMERGENCY/TEMP NO. IF ANY

B 1 | 2446 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA – 95 – 1004

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION

Harford Co. Public Schools (Last Name / First Name)

102 S. Hickory St. (Street or RFD)

Bel Air md 21014 (Town / State / Zip)

DRILLER INFORMATION

David Kelly — MWD 304 (Driller's Name / License No.)

Jones Well Drilling Inc (Firm Name)

3700 Rush Rd. Jarrettsville md 21084 (Address)

David Kelly — 2-20-08 (Signature / Date)

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 0

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- (T) TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 4 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) — JETTED — Jetted & DRIVEN

AIR-ROTary — (AIR-PERcussion) — ROTARY (Hydraulic Rotary)

CABLE — REVerse-ROTary — DRive-POINT

other

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- (N) THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER ------G---

PERMIT No. HA – 95 – 1004

B 3 LOCATION OF WELL

Harford (COUNTY)

L/O Shucks Corner (SUBDIVISION)

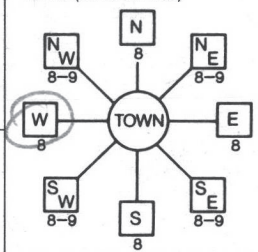
SECTION ____ LOT 13 MF-UMW1

Churchville (NEAREST TOWN)

MILES FROM TOWN (enter 0 if in town): 2 MI

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



103 Schucks Rd. (NEAR WHAT ROAD)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

DISTANCE FROM ROAD: 545 FT

ENTER FT OR MI: 0338663

TAX MAP: 42 BLK: 4B PARCEL 454

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford — 12 (COUNTY NAME / COUNTY NO.)

STATE SIGNATURE _____ INSERT S

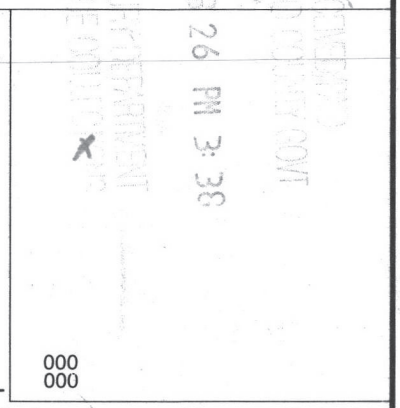
DATE ISSUED 2/29/2008 — Carol S Beane — 03/01/2009 (DATE ISSUED / CO SIGNATURE / EXP. DATE)

NORTH GRID 0626000 EAST GRID 1001000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER

1.
2.
3.



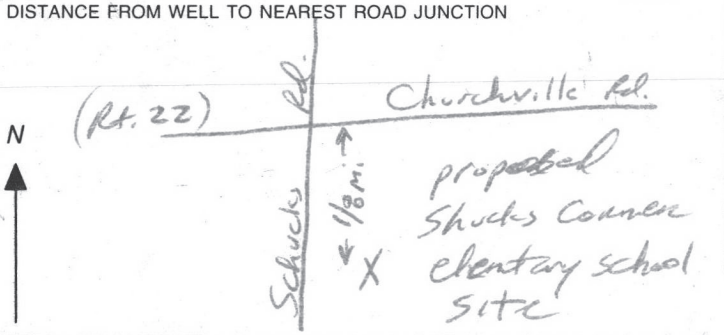
WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000

N 620

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

MAP 18 E6

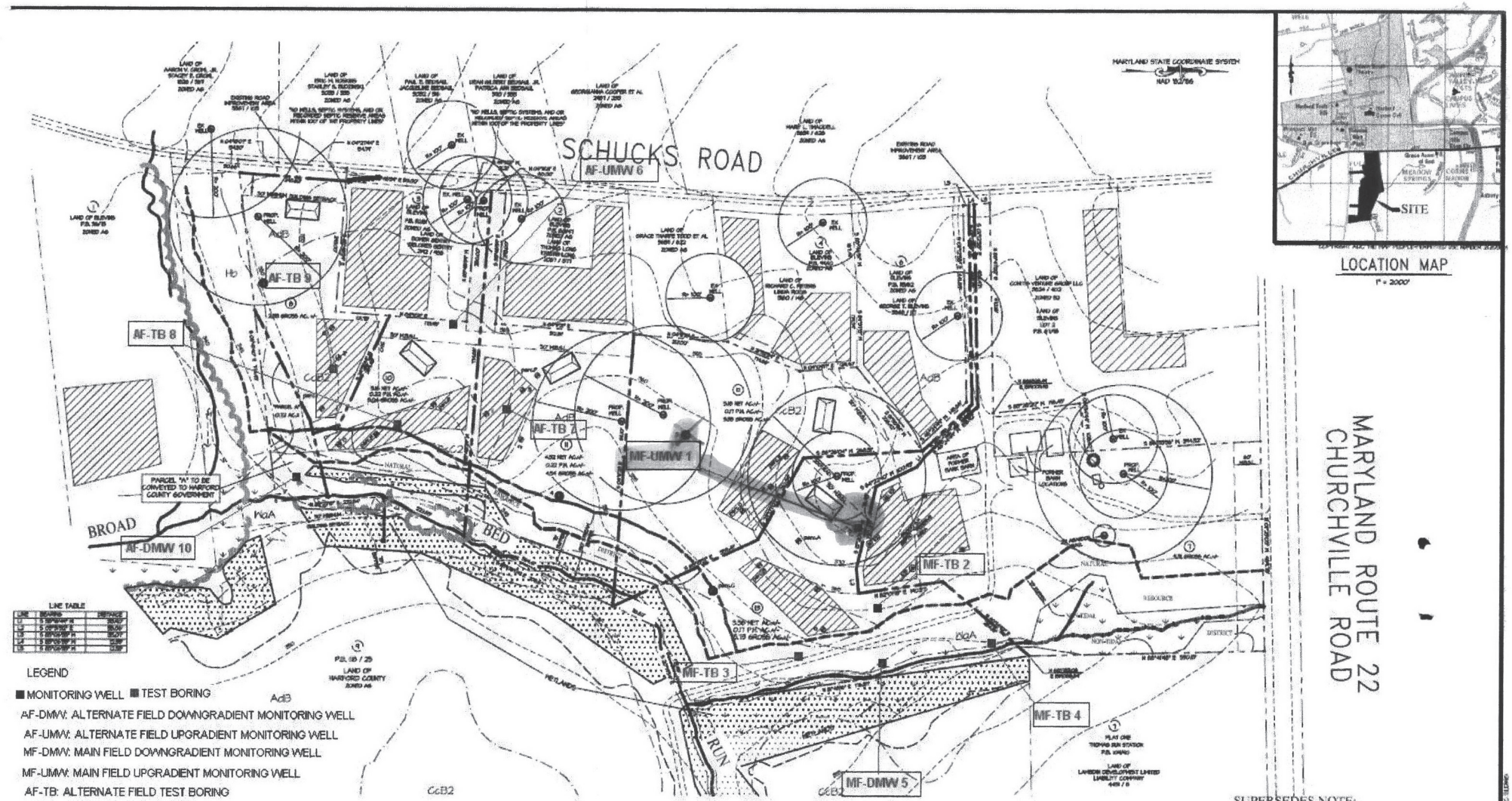


SPECIAL CONDITIONS

NOTE – APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

DENV-Permit 97

② COUNTY



NOTES

DENOTES THE 20,000 SQUARE FOOT WASTE DISPOSAL SYSTEM AREA UNLESS OTHERWISE DENOTED HEREON NO CONSTRUCTION IS PERMITTED WITHIN 50' OF THE WASTE DISPOSAL SYSTEM AREA AND ANY AREA WITHOUT PRIOR APPROVAL OF THE COUNTY HEALTH DEPARTMENT, EXCEPTIONS UP TO 10' WASTE DISPOSAL SYSTEM AREA BUT NOT WITHIN 7', ARE PERMITTED FOR DRIVEWAYS, UTILITIES, AND SMALL PHYSICAL STRUCTURES (SHED, SHEDS, ETC.)

DRIVEWAY ENTRANCE CONSTRUCTION AND LOCATION TO BE APPROVED BY THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS/BOARD ROADS COMMISSION, WHEREVER APPLICABLE.

THE SUBDIVISION MUST COMPLY WITH STATE REGULATIONS FOR UNDERGROUND ELECTRIC DISTRIBUTION AND TELEPHONE SERVICES.

THIS SUBDIVISION MUST COMPLY WITH THE 2000 DESIGN MANUAL FOR STORM WATER MANAGEMENT.

THIS SUBDIVISION IS SUBJECT TO A FOREST CONSERVATION PLAN.

THIS SUBDIVISION IS SUBJECT TO REVISIONS.

THE MINIMUM BUILDING SETBACK LINES ARE ESTABLISHED BY THE HARFORD COUNTY ZONING CODE AND MAY VARY OR BE MODIFIED IN ACCORDANCE WITH PROVISIONS OF THE CODE.

PRIOR TO THE ISSUANCE OF A BUILDING PERMIT

A WELL SHALL BE DRILLED AND APPROVED BY THE HARFORD COUNTY HEALTH DEPARTMENT PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.

SUBMIT A PLOT PLAN WITH THE SANITARY APPLICATION THAT INDICATES THE APPROVED WELL SITE, PROPOSED DWELLING SITE, PROPOSED SEWERAGE SYSTEM AREA, EXISTING WELLS AND/OR SEWERAGE SYSTEMS, LOCATED WITHIN 100 FEET OF THE BOUNDARY OF THE LOT.

OWNER

SCHUCKS CORNER LLC
P.O. BOX 63
CHURCHVILLE, MD 21028

SITE DATA

1. TOTAL ENCLOSED AREA: 91.60 Ac.±
2. TOTAL ROAD IMPROVEMENT AREA: N/A
3. PROPOSED NUMBER OF LOTS: 5
4. PRESENT ZONING: Ag
5. DEED REFERENCE: Sidwell
6. (5) INDICATES LOT NUMBER.
7. TAX MAP 042 , PARCEL 105
8. LOTS CREATED AFTER 2/6/71.

SUPERSEDES NOTE:

THE PURPOSE OF THIS PLAT IS TO REVISE PREVIOUSLY RECORDED PLAT #10-25, TITLED " FINAL PLAT LOT 8 AND 9, LAND OF BLEVINS, INSOMUCH AS RE-SUBDIVIDING LOT 8 INTO FIVE LOTS AND CONVEY PARCEL "A" TO HARFORD COUNTY.

REVISIONS
REV. 5/9/05 SUBDIVIDE LOT 8
REV. 8/26/05 REV. LOTS 5 R.A.
REV. 7/9/05 REV. LOTS 4 5 R.A.

DAC PLAN-SERIES III
LOTS 8, 10, 11, 12, 13, AND REVISED LOT 7
LANDS OF
SCHUCKS CORNER LLC
(FORMERLY LOT 8 LANDS OF BLEVINS)
THIRD ELECTION DISTRICT — HARFORD COUNTY, MARYLAND

BAY STATE LAND SERVICES
P.O. Box 858
Bel Air, Maryland 21014
Phone: 410-879-4147
Fax: 410-420-9441

SCALE:	DATE:
1" = 100'	10/5/04
DRAWN BY: DMD	DESIGN BY: CDC
CHECKED BY: CDC	JOB NO.: 04055

SCHUCKS CORNER LLC © BAY STATE LAND SERVICES

EMERGENCY/TEMP NO. IF ANY

B 1 | 2447 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA – 95 – 1005

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION
Harford Co. Public Schools (Last Name / Owner / First Name)
102 S. Hickory St. (Street or RFD)
Bel Air | MD | 21014 (Town | State | Zip)

DRILLER INFORMATION
David Kelly (Driller's Name) | MWD 304 (License No.)
Jones Well Drilling Inc. (Firm Name)
3700 Rush Rd. Jarrettsville, MD 21084 (Address)
David Kelly (Signature) | 2-20-08 (Date)

B 2 WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 0
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- T TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERCussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other

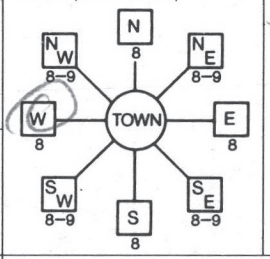
REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)
APPROP. PERMIT NUMBER ------G---
PERMIT No. HA – 95 – 1005

B 3 LOCATION OF WELL
COUNTY: HARFORD
SUBDIVISION: L/O Shucks Corner
SECTION | LOT: 13 | MF-TB2
NEAREST TOWN: Churchville
MILES FROM TOWN (enter 0 if in town): 2 M I

B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



NEAR WHAT ROAD: 103 Schucks Rd.

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH | WEST | 32 | EAST | SOUTH

DISTANCE FROM ROAD: 908 FT

ENTER FT OR MI

03386635

TAX MAP: 42 BLK: 4B PARCEL: 454

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
COUNTY NAME: Harford | COUNTY NO.: 12
STATE SIGNATURE | INSERT S
DATE ISSUED: 02/29/2008 | Carl L Bricca | EXP. DATE: 03/01/2009
NORTH GRID: 0626 000
EAST GRID: 1001 000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

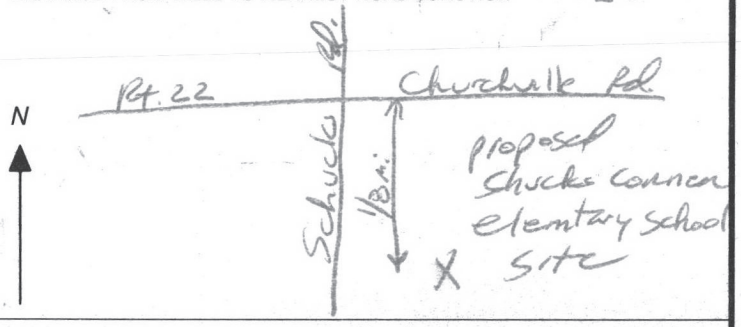
SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 1000
N 620

HARFORD COUNTY, MD
FEB 26 PM 3:30
INSPECTION DEPT.

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

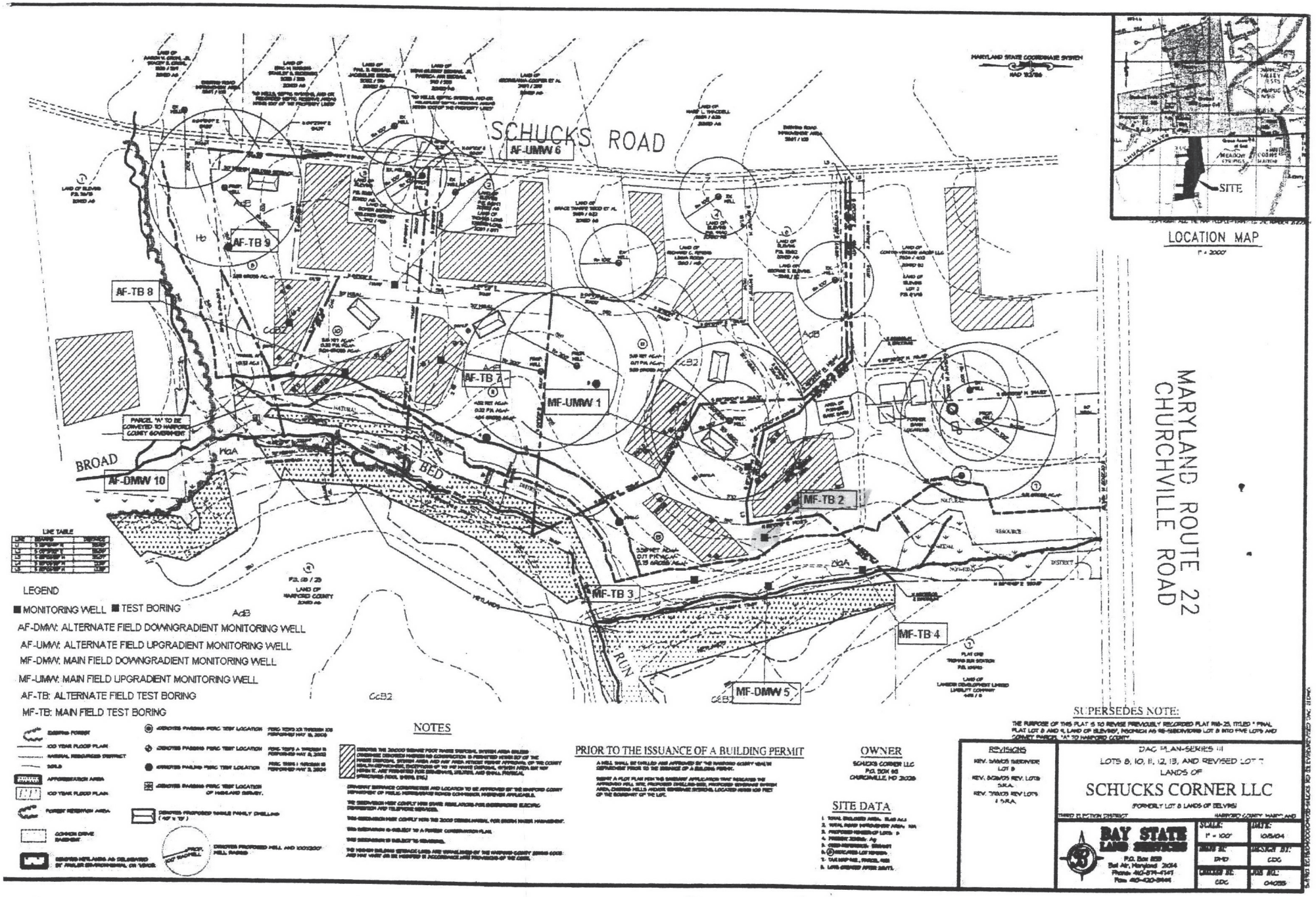
MAP 18 E6



SPECIAL CONDITIONS
NOTE – APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED –

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

EMERGENCY/TEMP NO. IF ANY

B 1 | 2450 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA - 95 - 1006

fill in this form completely

Date Received (APA): 2/24/08

OWNER INFORMATION

Harford C. Public Schools
Last Name Owner First Name

102 S. Hickory St.
Street or RFD

Bel Air Md 21014
Town State Zip

DRILLER INFORMATION

DAVID KELLY MW D 304
Driller's Name License No.

Jones Well Drilling Inc.
Firm Name

3700 Rush Rd Jarrettsville, Md 21084
Address

David Kelly 2-20-08
Signature Date

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 0

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- (T) TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN
AIR-ROTary (AIR-PERcussion) ROTARY (Hydraulic Rotary)
CABLE REVerse-ROTary DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- (N) THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE): ___ - ___ - ___

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER ___ ___ ___ ___ ___ G ___ ___

PERMIT No. HA - 95 - 1006

B 3 LOCATION OF WELL

COUNTY: HARFORD

SUBDIVISION: L/O Shucks Corner

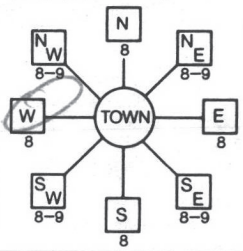
SECTION ___ LOT 13 MF-TB3

NEAREST TOWN: Churchville

MILES FROM TOWN (enter 0 if in town): 2 M I

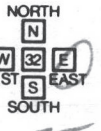
B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



103 Schucks Rd.
NEAR WHAT ROAD

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)



DISTANCE FROM ROAD: 1025 FT

ENTER FT OR MI

TAX MAP: 42 BLK: 4B PARCEL 454

03386635

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford 12
COUNTY NAME COUNTY NO.

STATE SIGNATURE ___ INSERT S

DATE ISSUED 2/29/2008 Carl S. Bisse 3/01/2009
DATE ISSUED CO SIGNATURE EXP. DATE

NORTH GRID 0626 000 EAST GRID 1001 000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

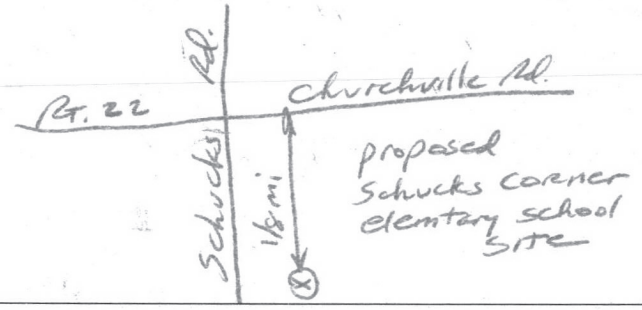
E 1000

N 620

000
000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

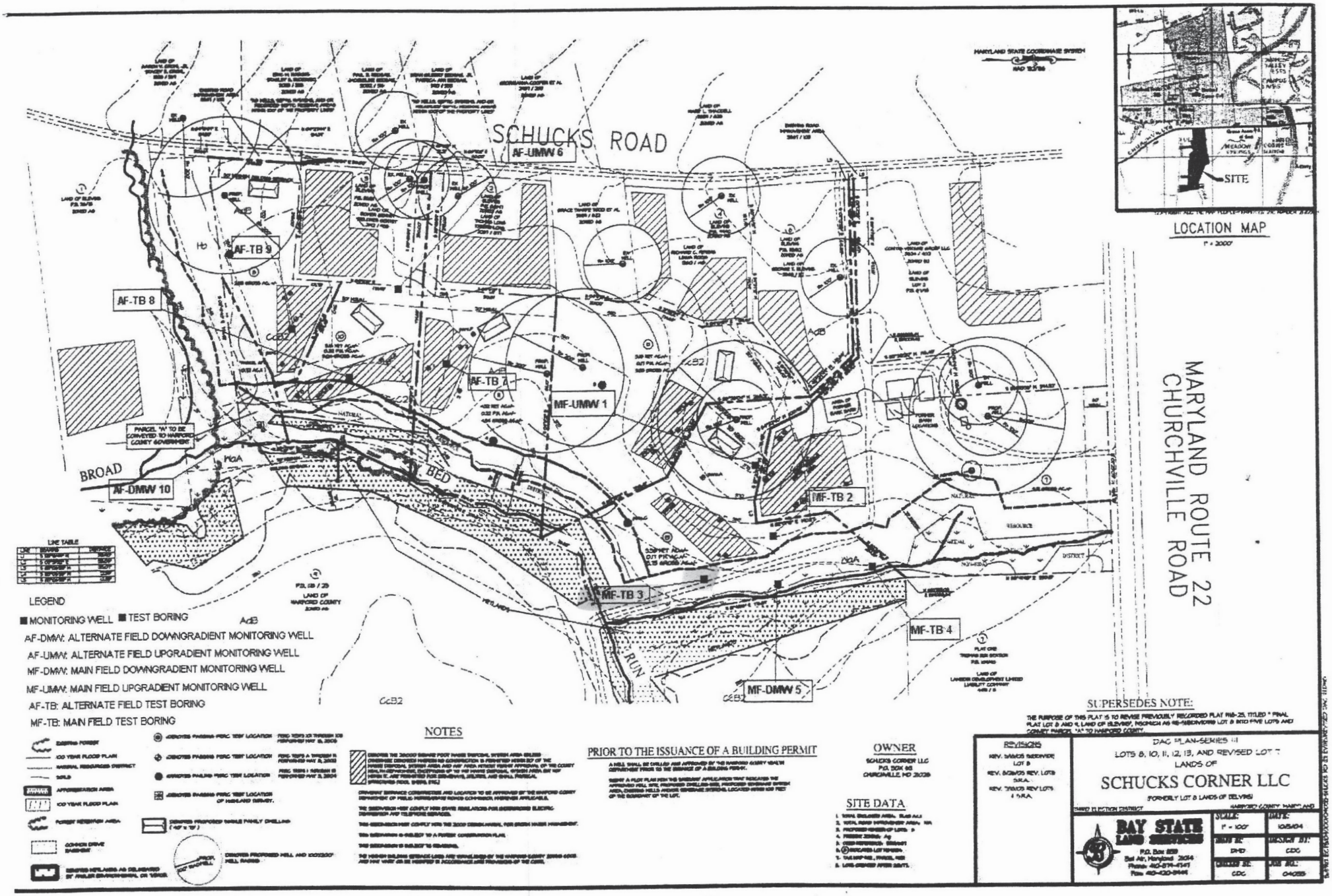
MAP 18 E6



SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

EMERGENCY/TEMP. NO. IF ANY

B 1 | 2448 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA - 95 - 1007

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION

Harford Co. Public Schools (Last Name / Owner / First Name)

102 S. Hickory St. (Street or RFD)

Bel Air | Md | 21014 (Town | State | Zip)

DRILLER INFORMATION

David Kelly | MW D 304 (Driller's Name | License No.)

Jones Well Drilling Inc. (Firm Name)

3700 Rush Rd. Jarrettsville, Md 21084 (Address)

David Kelly | 2-20-08 (Signature | Date)

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 0

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

LOCATION OF WELL

B 3

COUNTY: Harford

SUBDIVISION: HO Shucks Corner

SECTION: | LOT: 13 | MF-TB4

NEAREST TOWN: Churchville

MILES FROM TOWN (enter 0 if in town): 2 MI

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX): NW 8-9 | N 8 | NE 8-9 | W 8 | TOWN | E 8 | SW 8-9 | S 8 | SE 8-9

NEAR WHAT ROAD: 103 Schucks Rd.

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH N | WEST W | 32 | E EAST | S SOUTH

DISTANCE FROM ROAD: 1023 FT

ENTER FT OR MI: 03386635

TAX MAP: 42 BLK: 4B PARCEL: 454

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- T TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford | 12 (COUNTY NAME | COUNTY NO.)

STATE SIGNATURE: _____ INSERT S

DATE ISSUED: 2/29/2008 | Cari S Biscoe | 3/01/09 (DATE ISSUED | CO SIGNATURE | EXP. DATE)

NORTH GRID: 0626 000 | EAST GRID: 1001 000

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) | JETTED | Jetted & DRIVEN

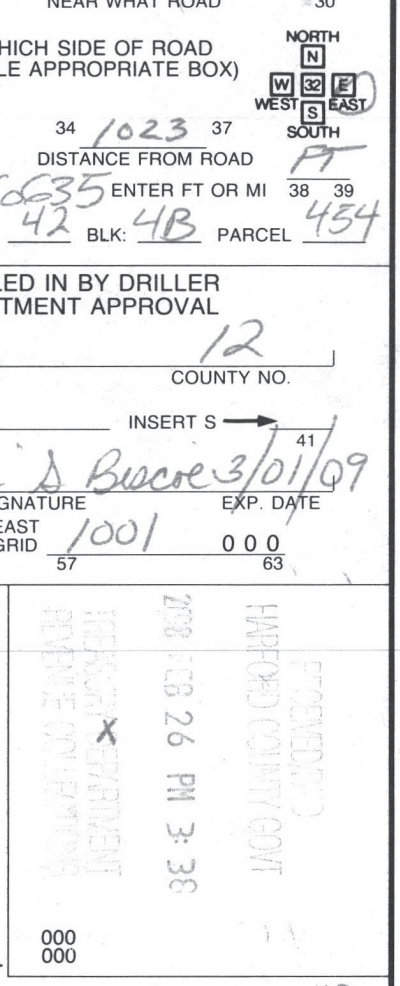
AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)

CABLE | REVerse-ROTary | DRive-POINT

other _____

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.



WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000

N 620

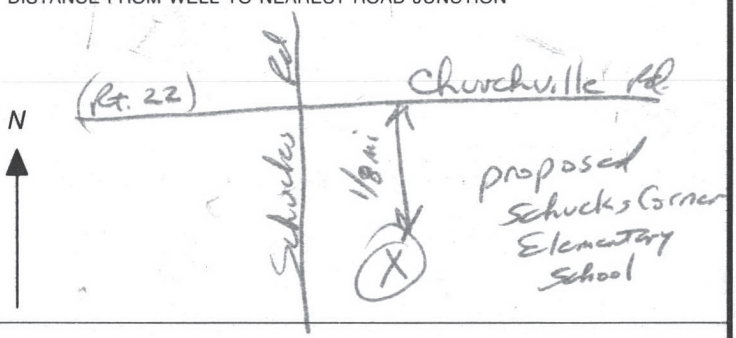
REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) _ _ - _ _ - _ _ _ _

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

MAP 18 E6



Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER _ _ _ _ _ _ G _ _ _

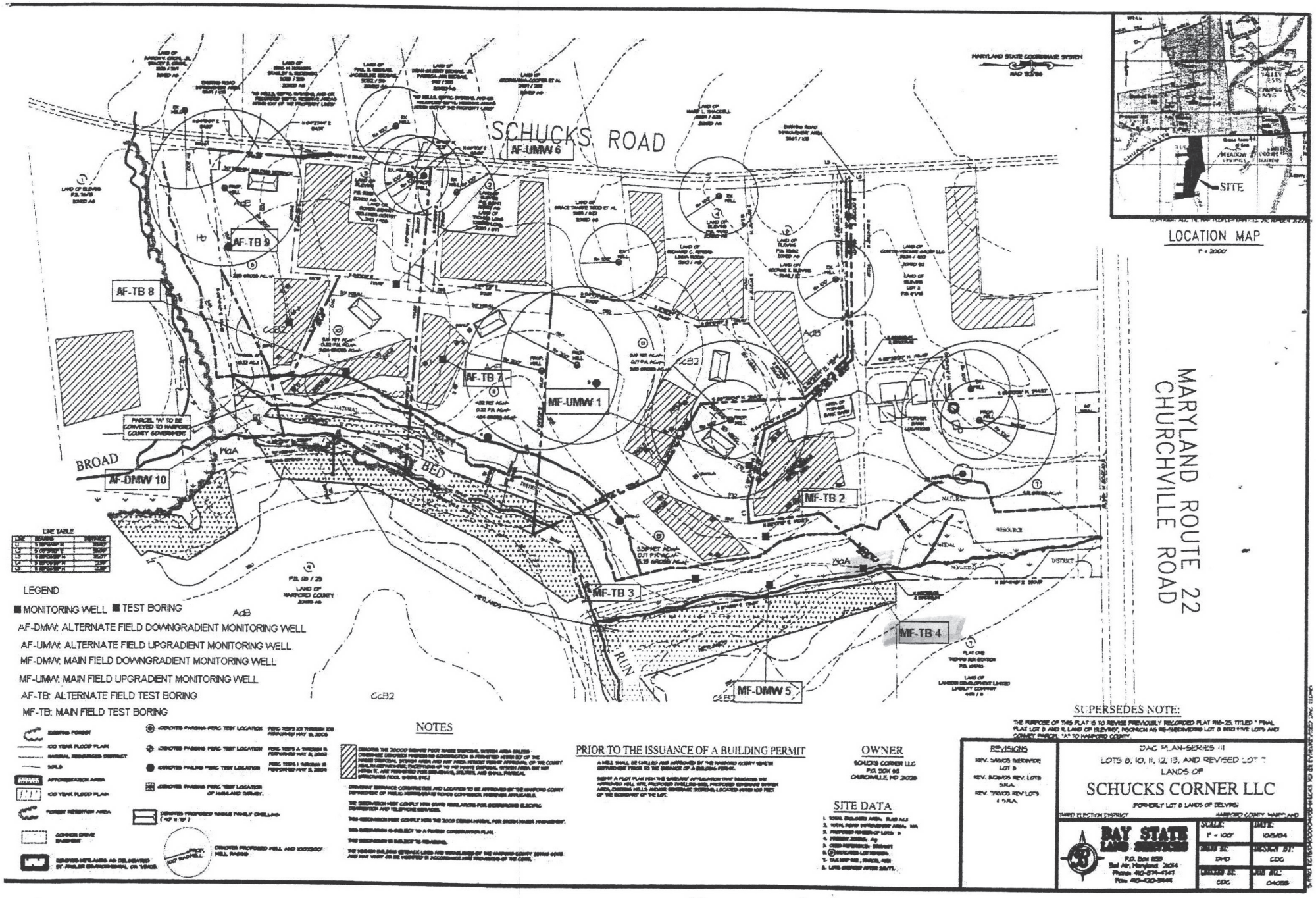
PERMIT No. HA-95-1007

SPECIAL CONDITIONS

NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

EMERGENCY/TEMP NO. IF ANY

B 1 | 2449 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA - 95 - 1008

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION
Harford Co. Public Schools (Last Name / Owner / First Name)
102 S. Hickory St. (Street or RFD)
Bel Air | md | 21014 (Town | State | Zip)

DRILLER INFORMATION
David Kelly (Driller's Name) | MWD 304 (License No.)
Jones Well Drilling Inc (Firm Name)
3700 Rush Rd. Jarrettsville, md 21084 (Address)
David Kelly (Signature) | 2-20-08 (Date)

B 3 LOCATION OF WELL
HARFORD (COUNTY)
L/O Shucks Corner (SUBDIVISION)
SECTION | LOT 13 | MF-DMW5
Churchville (NEAREST TOWN)
MILES FROM TOWN (enter 0 if in town): 2 M I

B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX): NW 8-9 | N 8 | NE 8-9 | W 8 | TOWN | E 8 | SW 8-9 | S 8 | SE 8-9

103 Schucks Rd. (NEAR WHAT ROAD)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH | WEST | 32 | EAST | SOUTH

DISTANCE FROM ROAD: 1040 FT

ENTER FT OR MI: 03386635

TAX MAP: 42 BLK: 4B PARCEL 454

B 2 WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 0
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- T TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
Harford | 12 (COUNTY NAME | COUNTY NO.)
STATE SIGNATURE | INSERT S
DATE ISSUED: 2/29/2008 | Carl L. Bosco | 3/01/2009 (CO SIGNATURE | EXP. DATE)
NORTH GRID: 06260 00 | EAST GRID: 1001 00

APPROXIMATE DEPTH OF WELL: 30 FEET
APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other

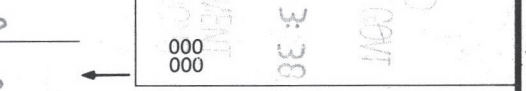
REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

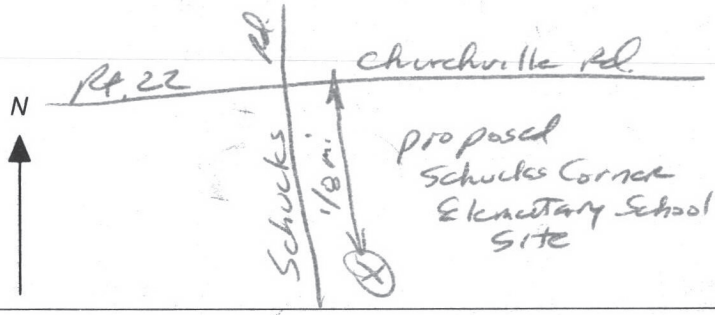
SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 1000
N 620



DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

MAP 18 E6

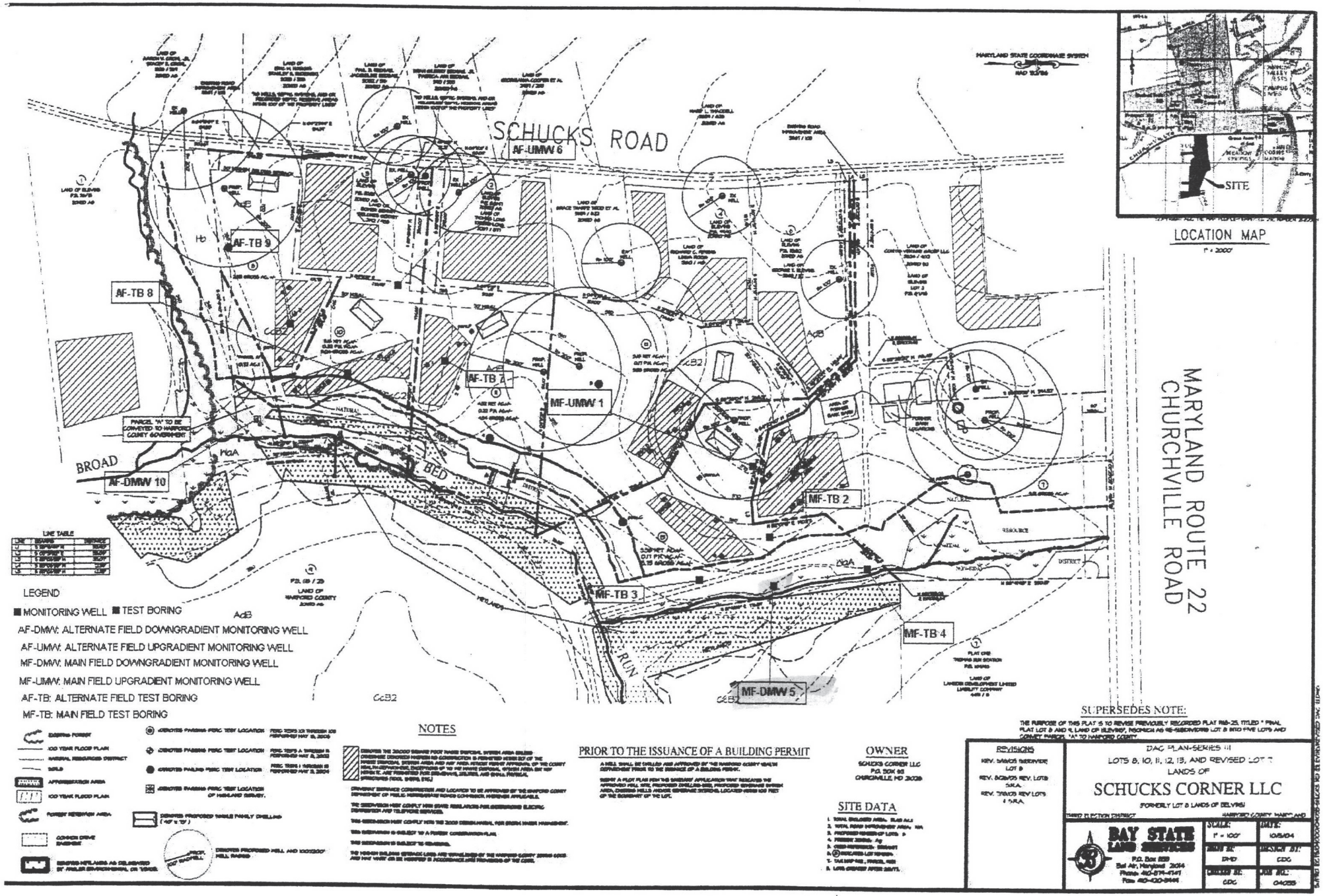


Not to be filled in by driller (MDE OR COUNTY USE ONLY)
APPROP. PERMIT NUMBER: G
PERMIT No. HA - 95 - 1008

SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

EMERGENCY/TEMP NO. IF ANY

B 1 | 2451 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA – 95–1009

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION

Harford Co. Public Schools (Last Name / Owner / First Name)

102 S. Hickory St. (Street or RFD)

Bel Air | Md | 21014 (Town | State | Zip)

DRILLER INFORMATION

David Kelly | MWD 304 (Driller's Name | License No.)

Jones Well Drilling Inc. (Firm Name)

3700 Rush Rd Jarrettsville, md 21084 (Address)

David Kelly | 2-20-08 (Signature | Date)

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 0

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- T TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) | JETTED | Jetted & DRIVEN

AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)

CABLE | REVerse-ROTary | DRive-POINT

other

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: ------G---

PERMIT No. HA – 95 – 1009

B 3 LOCATION OF WELL

Harford (COUNTY)

40 Shucks Corner (SUBDIVISION)

SECTION | LOT 10 | AF-UMW6

Churchville (NEAREST TOWN)

MILES FROM TOWN (enter 0 if in town): 2 M I

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX): NW 8–9 | N 8 | NE 8–9 | W 8 | TOWN | E 8 | SW 8–9 | S 8 | SE 8–9

123 Schucks Rd. (NEAR WHAT ROAD)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH | WEST | 32 | EAST | SOUTH

DISTANCE FROM ROAD: 347 FT

ENTER FT OR MI: 03386600

TAX MAP: 42 BLK: 4B PARCEL: 454

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford | 12 (COUNTY NAME | COUNTY NO.)

STATE SIGNATURE: _____ INSERT S

DATE ISSUED: 2/29/2008 | CO SIGNATURE: Carl S Bricker | EXP. DATE: 3/01/2009

NORTH GRID: 0626 000 | EAST GRID: 1001 000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

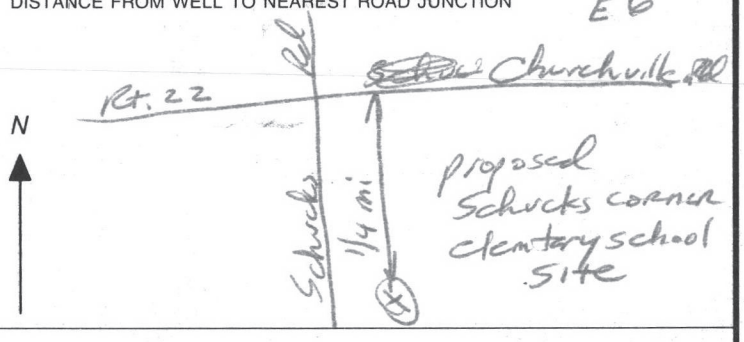
E 1000

N 620

000
000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

MAP 18 E6

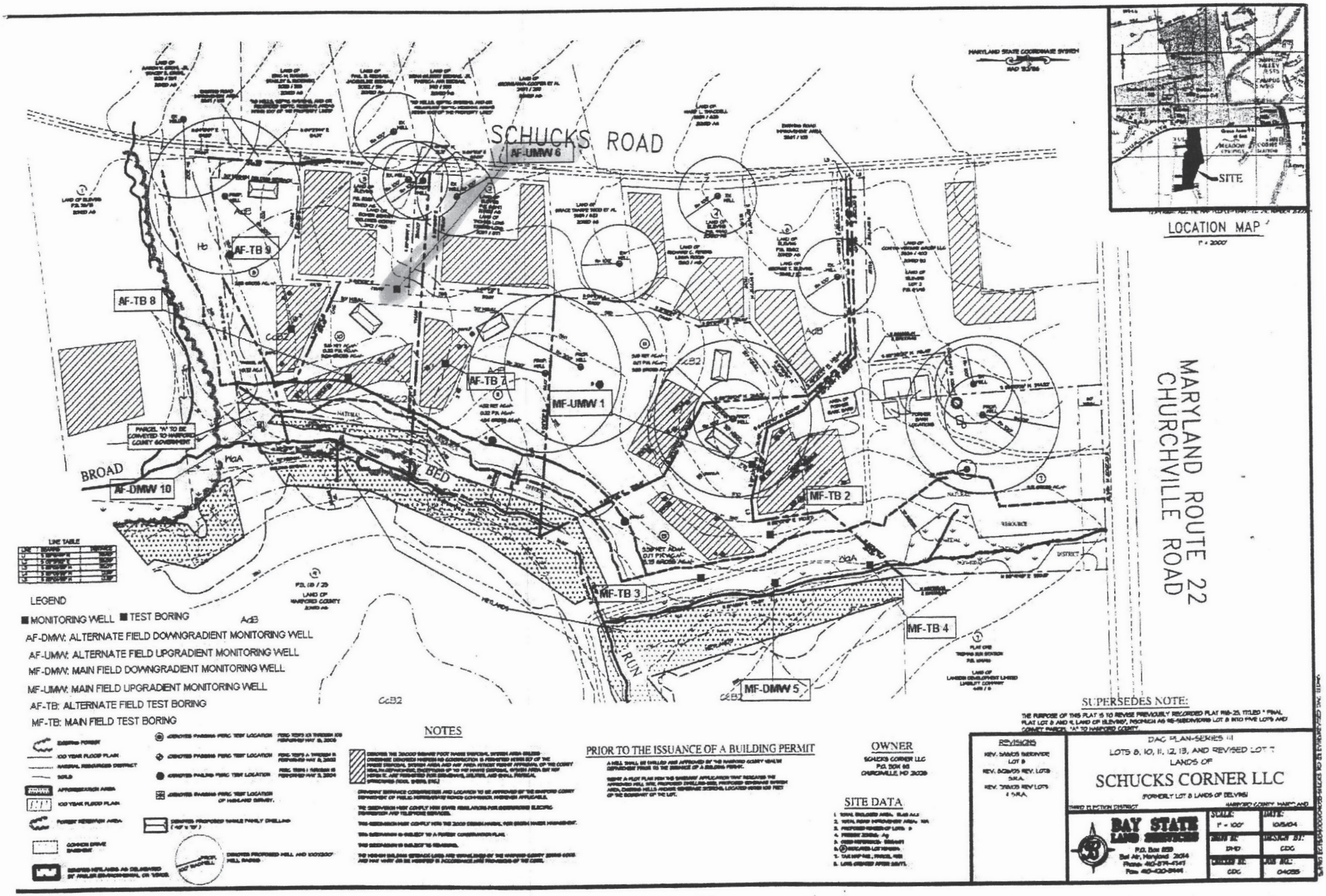


SPECIAL CONDITIONS

NOTE – APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED –

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

EMERGENCY/TEMP NO. IF ANY

B 1 | 2452 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA - 95 - 1010

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION
Harford Co. Public Schools (Last Name / Owner / First Name)
102 S. Hickory St. (Street or RFD)
Bel Air | Md | 21014 (Town | State | Zip)

DRILLER INFORMATION
David Kelly (Driller's Name) | MWD 304 (License No.)
Jones Well Drilling Inc. (Firm Name)
3700 Rush Rd. Jarrettsville, Md 21084 (Address)
David Kelly | 2-20-08 (Signature | Date)

B 2 WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 0
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- D — DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F — FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I — INDUSTRIAL, COMMERICIAL, DEWATERING
- P — PUBLIC WATER SUPPLY WELL
- T — TEST, OBSERVATION, MONITORING
- G — GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- N — THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y — THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S — THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D — THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

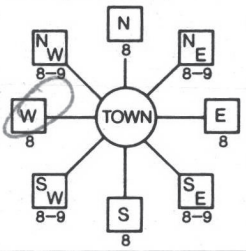
Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: G

PERMIT No. HA - 95 - 1010

B 3 LOCATION OF WELL
HARFORD (COUNTY)
L/O Shucks Corner (SUBDIVISION)
SECTION | LOT 11 | AF-TB7
Churchville (NEAREST TOWN)
MILES FROM TOWN (enter 0 if in town): 2 M I

B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



121 Schucks Rd. (NEAR WHAT ROAD)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

DISTANCE FROM ROAD: 495 FT

ENTER FT OR MI

03386619

TAX MAP: 42 BLK: 4B PARCEL 454

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
COUNTY NAME | COUNTY NO.
STATE SIGNATURE | INSERT S
DATE ISSUED
MM DD YY | CO SIGNATURE | EXP. DATE
NORTH GRID: 000 | EAST GRID: 000

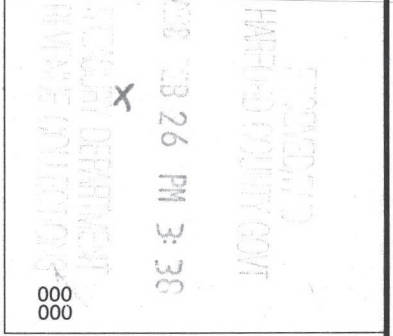
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

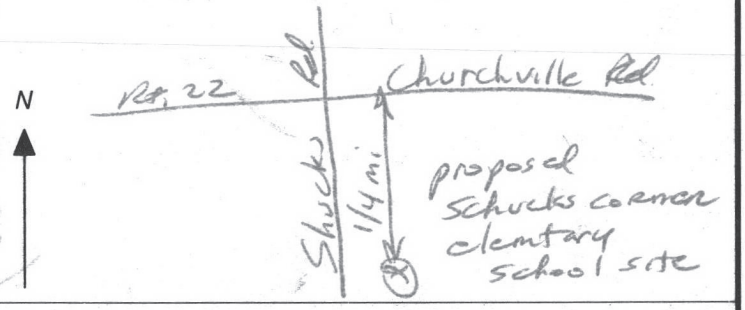
E 1000

N 620



DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

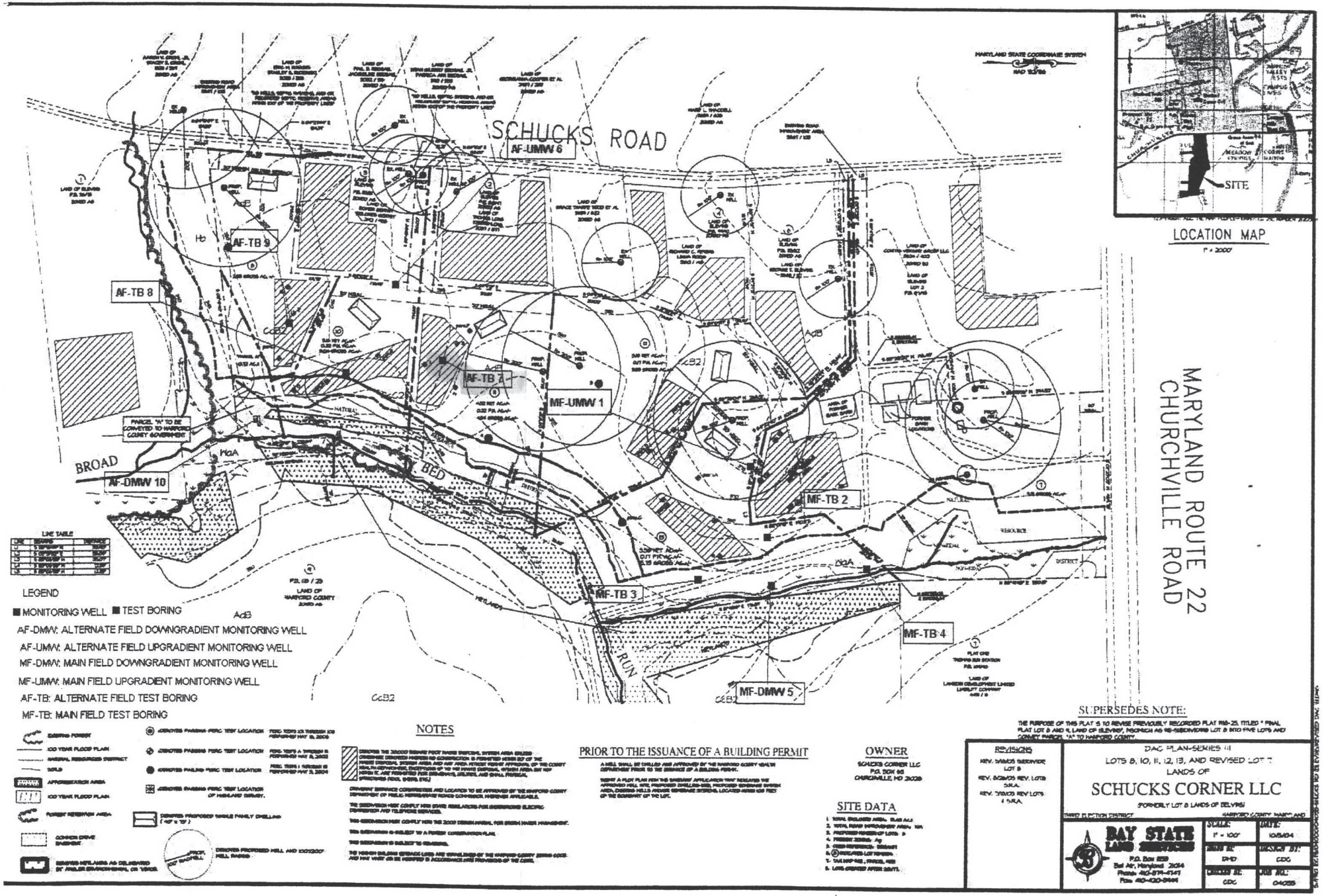
MAP 18 E6



SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

EMERGENCY/TEMP NO. IF ANY

B 1 | 2453 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-95-1011

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION

Harford Co. Public Schools (Last Name / Owner / First Name)

102 S. Hickory St. (Street or RFD)

Bel Air Md 21014 (Town / State / Zip)

DRILLER INFORMATION

David Kelly — MWD 304 (Driller's Name / License No.)

Jones Well Drilling Inc. (Firm Name)

3700 Rush Rd. Jarrettsville, md 21084 (Address)

David Kelly — 2-20-08 (Signature / Date)

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 0

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D — DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F — FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I — INDUSTRIAL, COMMERICIAL, DEWATERING
- P — PUBLIC WATER SUPPLY WELL
- T — TEST, OBSERVATION, MONITORING
- G — GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) — JETTED — Jetted & DRIVEN

AIR-ROTary — AIR-PERcussion — ROTARY (Hydraulic Rotary)

CABLE — REVerse-ROTary — DRive-POINT

other

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- N — THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y — THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S — THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D — THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER ----G---

PERMIT No. HA-95-1011

B 3 LOCATION OF WELL

COUNTY: HARFORD

SUBDIVISION: Lo Shucks Corner

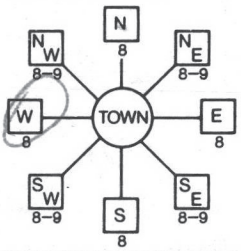
SECTION: | LOT: 10 | AF-TB 8

NEAREST TOWN: Churchville

MILES FROM TOWN (enter 0 if in town): 2 M I

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



NEAR WHAT ROAD: 123 Schucks Rd

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH / WEST / EAST / SOUTH

DISTANCE FROM ROAD: 561 FT

ENTER FT OR MI

TAX MAP: 42 BLK: 4B PARCEL: 454

03386600

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford / 12 (COUNTY NAME / COUNTY NO.)

STATE SIGNATURE: _____ INSERT S

DATE ISSUED: 2/29/2008 — CO SIGNATURE: Carl S. Bosse — EXP. DATE: 3/01/2009

NORTH GRID: 0626000 EAST GRID: 1001000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER

1.

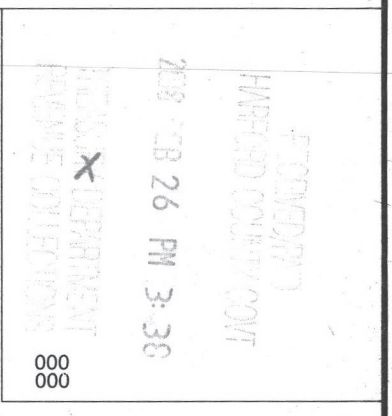
2.

3.

WRITE THE BOX NUMBER FROM THE MAP HERE

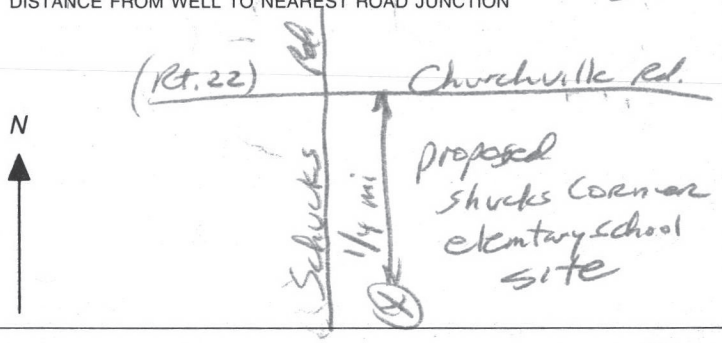
E 1000

N 620



DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

MAP 18 E6

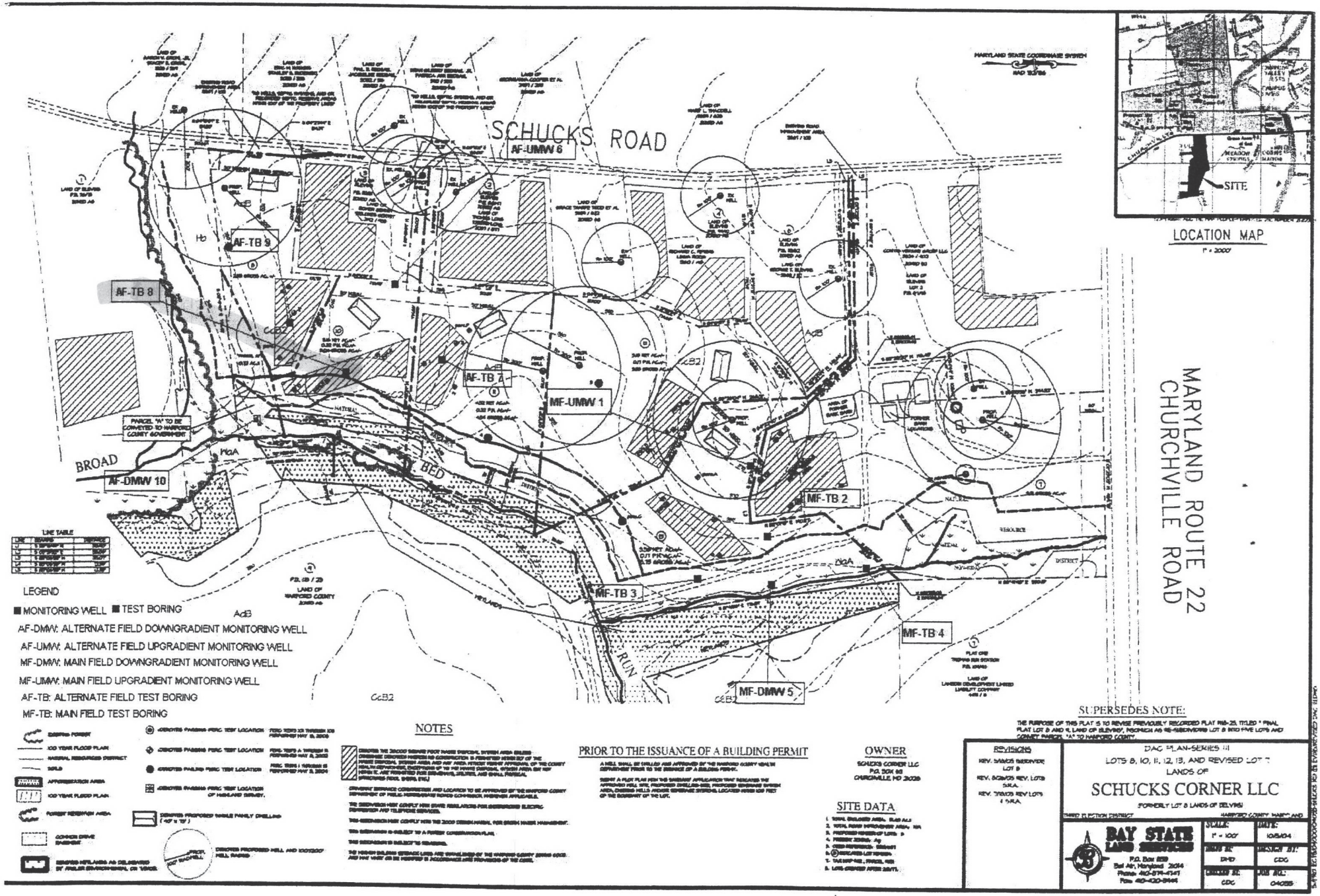


SPECIAL CONDITIONS

NOTE – APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED –

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

EMERGENCY/TEMP NO. IF ANY

B 1 | 2455 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-95-1012

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION
Last Name / Owner / First Name: Harford Co. Public Schools
Street or RFD: 102 S. Hickory St.
Town: Bel Air | State: Md | Zip: 21014

DRILLER INFORMATION
Driller's Name: David Kelly | License No.: MWD 304
Firm Name: Jones Well Drilling Inc.
Address: 3700 Rush Rd Jarrettsville, Md 21084
Signature: David Kelly | Date: 2-20-08

B 2 WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 0
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION, MONITORING
- [G] GEO-THERMAL

TAG RETURNED

APPROXIMATE DEPTH OF WELL: 30 FEET
APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- [N] THIS WELL WILL NOT REPLACE AN EXISTING WELL
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- [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

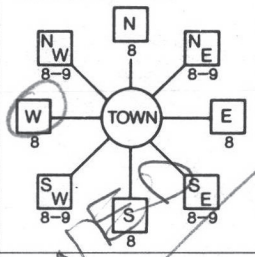
Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: ------G---

PERMIT No. HA-95-1012

B 3 LOCATION OF WELL
COUNTY: Harford
SUBDIVISION: Lo Shucks Corner
SECTION: | LOT: 8 | AF-TB9
NEAREST TOWN: Churchville
MILES FROM TOWN (enter 0 if in town): 2 M I

B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



NEAR WHAT ROAD: 201 Schucks Rd.

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

DISTANCE FROM ROAD: 264 FT
ENTER FT OR MI: 03377520
TAX MAP: 42 BLK: 48 PARCEL: 454

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
COUNTY NAME: Harford | COUNTY NO.: 12
STATE SIGNATURE: | INSERT S
DATE ISSUED: 2/29/08 | CO SIGNATURE: Cari's Bisco | EXP. DATE: 3/01/2009
NORTH GRID: 0626 000 | EAST GRID: 1001 000

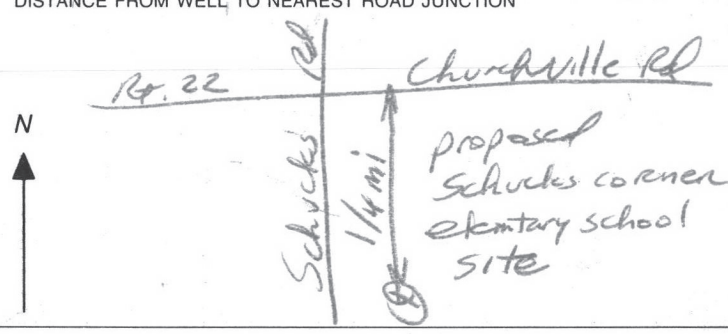
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 1000
N 620

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

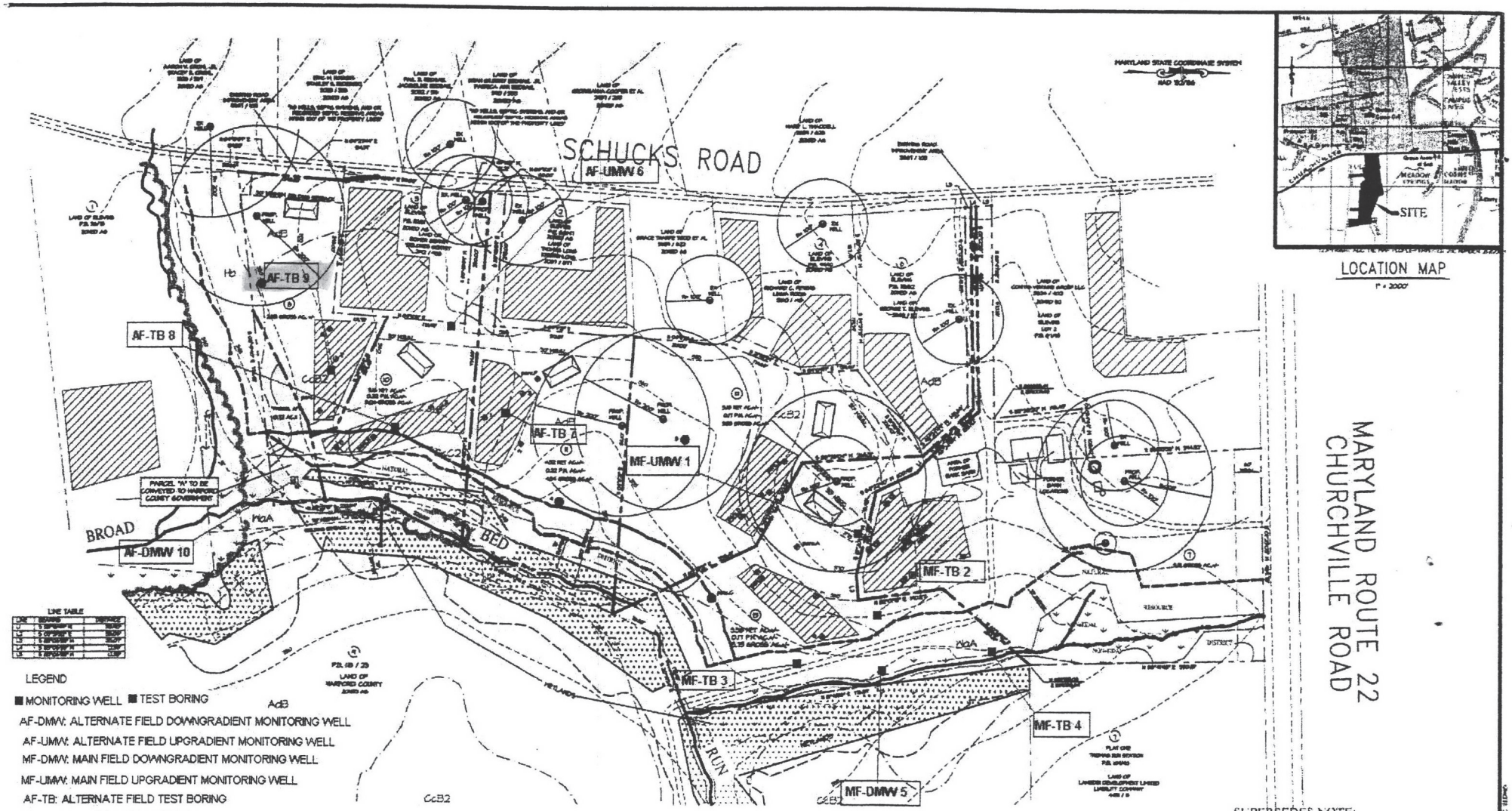
MAP 18 E6



SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED -

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

EMERGENCY/TEMP NO. IF ANY

B 1 | 2454 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-95-1013

fill in this form completely

Date Received (APA): 2/21/08

OWNER INFORMATION

Harford Co. Public Schools (Last Name / First Name)

102 S. Hickory St.

Bel Air Md 21014 (Town / State / Zip)

DRILLER INFORMATION

David Kelly — MWD 304 (Driller's Name / License No.)

Jones Well Drilling Inc. (Firm Name)

3700 Rush Rd. Jarrettsville md 21084 (Address)

David Kelly 2-20-08 (Signature / Date)

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 0

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- T TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

TAG RETURNED

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN

AIR-ROTary AIR-PERcussion ROTARY (Hydraulic Rotary)

CABLE REVerse-ROTary DRive-POINT

other

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
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- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER ---G---

PERMIT No. HA-95-1013

B 3 LOCATION OF WELL

Harford (COUNTY)

L/O Shucks Corner (SUBDIVISION)

SECTION | LOT PARA

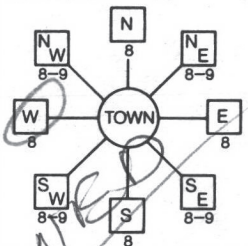
AF-DMW 10

Churchville (NEAREST TOWN)

MILES FROM TOWN (enter 0 if in town): 2 M I

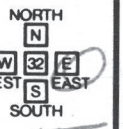
B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



Schucks Rd. (NEAR WHAT ROAD)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)



DISTANCE FROM ROAD: 710 FT

ENTER FT OR MI

TAX MAP: 42 BLK: 4B PARCEL 454

03386643

NOT TO BE FILLED IN BY DRILLER HEALTH DEPARTMENT APPROVAL

Harford 12 (COUNTY NAME / COUNTY NO.)

STATE SIGNATURE

INSERT S

DATE ISSUED 2/29/08 Carl S Bucce 3/01/2009 (DATE ISSUED / CO SIGNATURE / EXP. DATE)

NORTH GRID 06260 00 0 EAST GRID 1001 00 0

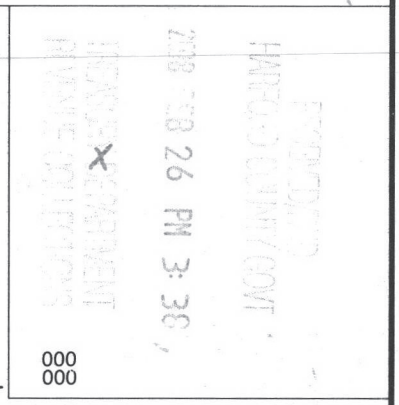
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER

1.

2.

3.



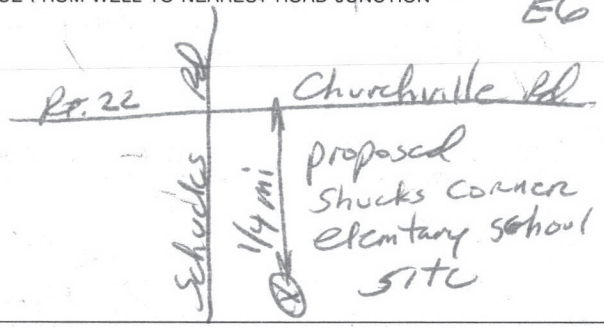
WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000

N 620

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

MAP 18 E6

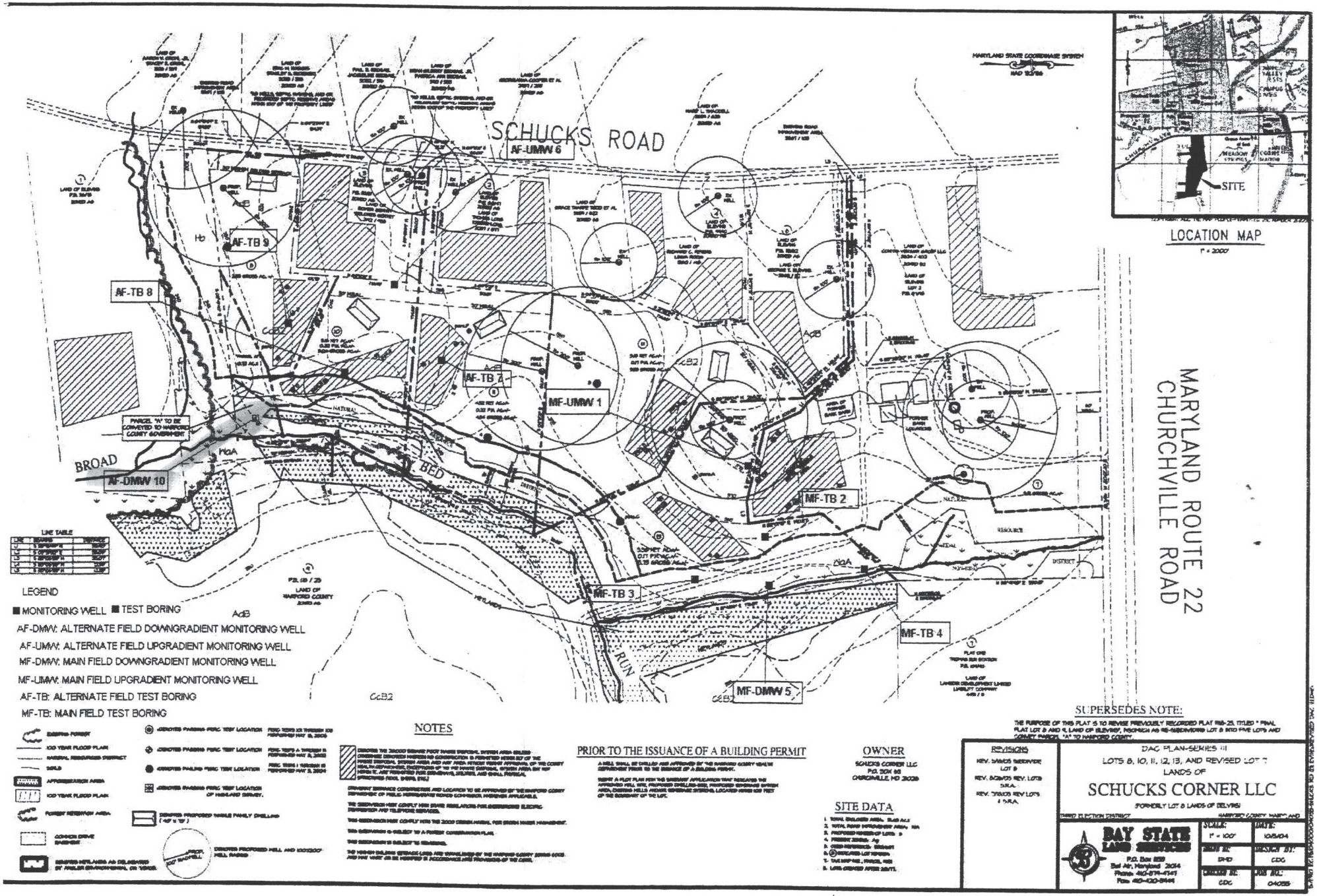


SPECIAL CONDITIONS

NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

DENV-Permit 97

② COUNTY



Scale is off 1" = 333'

C 1 9372 — SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY — 8 13

DATE WELL COMPLETED MM 4 DD 9 YY 08 — 15 20

Depth of Well 30 (TO NEAREST FOOT) — 22 26

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-95-1004 — 28 29 30 31 32 33 34 35 36 37

OWNER Harford County Public Schools

STREET OR RFD 102 Schucks Road (last name / first name) TOWN Churchville

SUBDIVISION L/O Schucks Corner SECTION LOT 13

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Logged by Chesapeake Environmental Management Inc			
Fill	0	1	
Silty brown med. loose fine	1	15	
Weathered rock	15	30	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes Y / no N

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MD 3041

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: IWD 376

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y / no N — 44

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT CM — BENTONITE CLAY BC — 45 46

NO. OF BAGS 3 NO. OF POUNDS 252

GALLONS OF WATER 15

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 8 (54 BOTTOM 56) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

ST STEEL — CO CONCRETE — PL PLASTIC — OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	4	10
60 61	63 64	66 70

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

ST STEEL — BR BRASS BRONZE — HO OPEN HOLE — PL PLASTIC — OT OTHER

C 2

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL	10	30
2			
3			

SLOT SIZE 1 .020 2 ____ 3 ____

DIAMETER OF SCREEN 4 (NEAREST INCH) — 56 60

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 — from 8 to 30 — 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

70 ____ TELESCOPE CASING — 72 ____ LOG INDICATOR — 74 75 76 OTHER DATA

C 3 MF-UNW1

PUMPING TEST
HOURS PUMPED (nearest hour) 1 — 8 9

PUMPING RATE (gal. per min.) 10 — 11 15

METHOD USED TO MEASURE PUMPING RATE trace

WATER LEVEL (distance from land surface)

BEFORE PUMPING 20 ft. — 17 20

WHEN PUMPING 27 ft. — 22 25

TYPE OF PUMP USED (for test)

A air (27) — P piston (27) — T turbine (27)

C centrifugal (27) — R rotary (27) — O other (describe below) (27)

J jet (27) — S submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES / NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. — 29

CAPACITY: GALLONS PER MINUTE (to nearest gallon) — 31 35

PUMP HORSE POWER — 37 41

PUMP COLUMN LENGTH (nearest ft.) — 43 47

CASING HEIGHT (circle appropriate box and enter casing height)

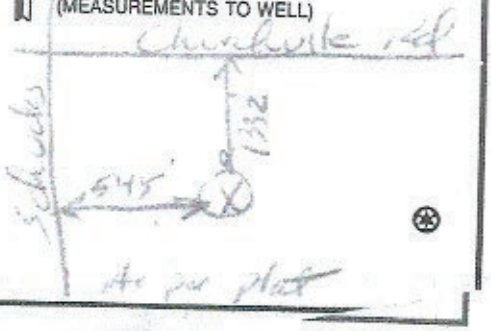
+ (49) above LAND SURFACE

− (49) below

2 (nearest foot) — 50 51

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



At pin flag

DENV-CR00

DRILLER

C 1 9373 — SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY (8–13)

DATE WELL COMPLETED MM 4 DD 4 YY 08 (15–20)

Depth of Well 22 29 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA - 95 - 1005 (28–37)

OWNER Harford County Public Schools (last name / first name)

STREET OR RFD 103 Schucks Road TOWN Churchville

SUBDIVISION c/o Schucks Road Center SECTION _____ LOT 13

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Logged by Chesapeake Environmental Management Inc.			
clay	0	1	
soft brown	1	13	
med hard tan/gray	13	29	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M D 2 0 H — Thad Fenn

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: I D 3 7 6 — Jon Marian

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] (44) no [N] (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] (45 46) BENTONITE CLAY [BC] (45 46)

NO. OF BAGS 3 NO. OF POUNDS 50#

GALLONS OF WATER 15

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48–52 TOP) ft. to 7 (54–58 BOTTOM) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	4 (63 64)	9 (66–70)

OTHER CASING (if used) — EACH CASING

	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2

EACH SCREEN	DEPTH (nearest ft.)	
1	9 (11–15)	29 (17–21)
2	(23 24)	(26–30) (32–36)
3	(38 39)	(41–45) (47–51)

SLOT SIZE 1 .020 2 ____ 3 ____

DIAMETER OF SCREEN 4 (NEAREST INCH) (56–60)

GRAVEL PACK — from 7 to 29

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3 MF-TB2

PUMPING TEST
HOURS PUMPED (nearest hour) 1 (8 9)

PUMPING RATE (gal. per min.) 10 (11–15)

METHOD USED TO MEASURE PUMPING RATE Timed

WATER LEVEL (distance from land surface)

BEFORE PUMPING 19 (17–20) ft.

WHEN PUMPING 28 (22–25) ft.

TYPE OF PUMP USED (for test)

[A] air (27) [P] piston (27) [T] turbine (27)

[C] centrifugal (27) [R] rotary (27) [O] other (describe below) (27)

[J] jet (27) [S] submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31–35)

PUMP HORSE POWER (37–41)

PUMP COLUMN LENGTH (nearest ft.) (43–47)

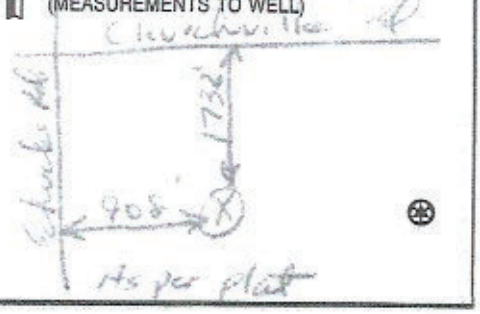
CASING HEIGHT (circle appropriate box and enter casing height)

[+] (49) above LAND SURFACE

[–] (49) below

2 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

DRILLER

C 1 9374 (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY (8–13)

DATE WELL COMPLETED: MM 4 DD 9 YY 98 (15–20)

Depth of Well: 30 (22–26) (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA - 95 - 1006 (28–37)

OWNER (last name) Harford County Public Schools (first name)

STREET OR RFD 102 Schucks Road TOWN Churchville

SUBDIVISION C/O Schucks Corner SECTION _____ LOT B

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Logged by Chesapeake Environmental Management Inc			
dirt	0	1	
soft brown	1	17	
red hard rock	17	30	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no [N] (44)

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M W D 2 0 4 _ _ _

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: I W D 2 7 6 _ _ _

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N] (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] (45 46) BENTONITE CLAY [BC] (45 46)

NO. OF BAGS 3 NO. OF POUNDS _____

GALLONS OF WATER 15

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 8 (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	4 (63 64)	10 (66 70)

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD

screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2 (1 2)

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL (8 9)	10 (11 15)	30 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 .020 2 _____ 3 _____

DIAMETER OF SCREEN 4 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 5 to 30 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3 MF-TB3 (1 2)

PUMPING TEST

HOURS PUMPED (nearest hour): 1 (8 9)

PUMPING RATE (gal. per min.): 1.0 (11 15)

METHOD USED TO MEASURE PUMPING RATE: Timed

WATER LEVEL (distance from land surface)

BEFORE PUMPING: 20 (17 20) ft.

WHEN PUMPING: 29 (22 25) ft.

TYPE OF PUMP USED (for test)

[A] air (27) [P] piston (27) [T] turbine (27)

[C] centrifugal (27) [R] rotary (27) [O] other (describe below) (27)

[J] jet (27) [S] submersible (27)

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)

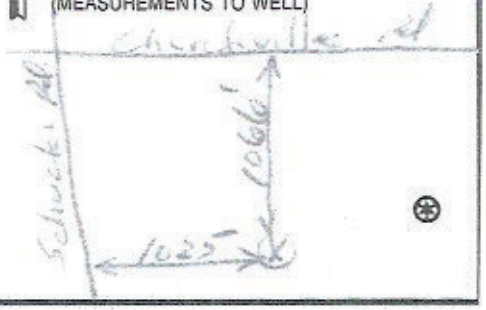
[+] above (49) LAND SURFACE

[–] below (49)

2 (nearest foot) (50 51)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DRILLER

DENV-CR00

C 1 9375 — SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY — 8 13

DATE WELL COMPLETED MM DD YY: 4 9 03 — 15 20

Depth of Well: 30 (TO NEAREST FOOT) — 22 26

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA-95-1007 — 28 29 30 31 32 33 34 35 36 37

OWNER Harford County Public Schools (last name / first name)

STREET OR RFD 109 Schucks Road — TOWN Churchville

SUBDIVISION 110 Schucks Corner — SECTION — LOT 12

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Logged by Aquatake & Williams Well Management, Inc			
clay	0	1	
soft brown	1	16	
med hard tan	16	30	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no [N] (44)

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M D 204 — David Fisher
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: W D 376 — Tom Mercer

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] (44) no [N] (44)

TYPE OF GROUTING MATERIAL (Circle one): CEMENT [CM] (45 46) BENTONITE CLAY [BC] (45 46)

NO. OF BAGS 3 NO. OF POUNDS 282

GALLONS OF WATER 15

DEPTH OF GROUT SEAL (to nearest foot): from 0 (48 TOP 52) ft. to 8 (54 BOTTOM 58) ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: STEEL [ST] CONCRETE [CO] PLASTIC [PL] OTHER [OT]

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	4 (63 64)	10 (66 70)

OTHER CASING (if used)
EACH CASING

	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below: STEEL [ST] BRASS BRONZE [BR] OPEN HOLE [HO] PLASTIC [PL] OTHER [OT]

C 2

DEPTH (nearest ft.)

EACH SCREEN

1	PL (8 9)	10 (11 15)	30 (17 21)
2		(23 24 26)	(30 32 36)
3		(38 39 41)	(45 47 51)

SLOT SIZE 1 .020 2 ____ 3 ____

DIAMETER OF SCREEN 4 (56 60) (NEAREST INCH)

from	to
8	30

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
70 72 74 75 76
TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3 MF-TBH

PUMPING TEST
HOURS PUMPED (nearest hour): 1 (8 9)

PUMPING RATE (gal. per min.): 10 (11 15)

METHOD USED TO MEASURE PUMPING RATE: timed

WATER LEVEL (distance from land surface)

BEFORE PUMPING: 20 (17 20) ft.

WHEN PUMPING: 29 (22 25) ft.

TYPE OF PUMP USED (for test)
- A air (27)
- P piston (27)
- T turbine (27)
- C centrifugal (27)
- R rotary (27)
- O other (describe below) (27)
- J jet (27)
- S submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

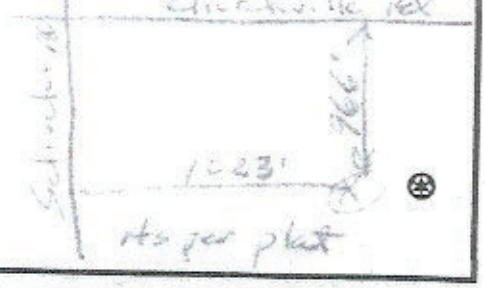
PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)
- [+] above (49) LAND SURFACE
- [−] below (49)

2 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

DRILLER

C 1 9376 SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM 4 DD 9 YY 05
15 20

Depth of Well 22 23 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-45-1006
28 29 30 31 32 33 34 35 36 37

OWNER Hartford County Public Schools (last name / first name)

STREET OR RFD 153 Schucks Road TOWN Churchville

SUBDIVISION Ha Schucks Corner SECTION LOT 12

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Logged by Chesapeake Environmental Management Inc.			
dirt	0	1	
soft brown	1	18	✓
med hard tan	18	23	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes Y / no N

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M D 2 0 4 1

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: I D 3 7 6 1

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y / no N (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT C M (45 46) BENTONITE CLAY B C (45 46)

NO. OF BAGS 1 NO. OF POUNDS 94

GALLONS OF WATER 5

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 2 (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

S T STEEL | C O CONCRETE | P L PLASTIC | O T OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	4 (63 64)	3 (66 70)

EACH CASING — OTHER CASING (if used)

	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

S T STEEL | B R BRASS BRONZE | H O OPEN HOLE | P L PLASTIC | O T OTHER

C 2

EACH SCREEN	DEPTH (nearest ft.)		
1	PL (8 9)	3 (11 15)	23 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 .020 2 ____ 3 ____

DIAMETER OF SCREEN 4 (56 60) (NEAREST INCH)

	from	to
GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68	2	23 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3 MF-DMW5 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) 1 (8 9)

PUMPING RATE (gal. per min.) 2.0 (11 15)

METHOD USED TO MEASURE PUMPING RATE Timer

WATER LEVEL (distance from land surface)

BEFORE PUMPING 13 (17 20) ft.

WHEN PUMPING 22 (22 25) ft.

TYPE OF PUMP USED (for test)

A air (27) | P piston (27) | T turbine (27) | C centrifugal (27) | R rotary (27) | O other (describe below) (27) | J jet (27) | S submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES / NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)

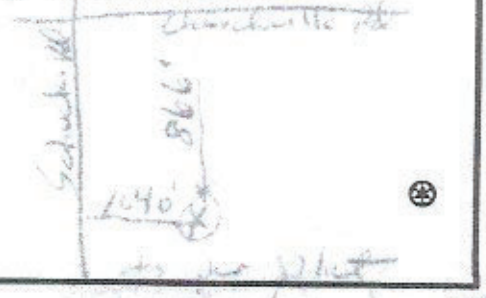
+ above (49) / – below (49) LAND SURFACE

2 (50 51) (nearest foot)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

N



DENV-CR00

DRILLER

C 1 9377 — SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY — 8 13

DATE WELL COMPLETED MM 4 DD 7 YY 08 — 15 20

Depth of Well 22 25 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-95-1001 — 28 29 30 31 32 33 34 35 36 37

OWNER Harford County Public Schools (last name / first name)

STREET OR RFD 133 Schucks Road TOWN Churchville

SUBDIVISION Wm Schucks Corner SECTION LOT 10

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
logged by Chesapeake Environmental Management Inc			
dirt	0	1	
silt brown	1	12	
med hard rock	12	25	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M D 2214

Travis Kelly
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: IW D 3276

John Mancini
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] 44 no [N] 44

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] 45 46 BENTONITE CLAY [BC] 45 46

NO. OF BAGS 1 NO. OF POUNDS 94

GALLONS OF WATER 5

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (TOP) 48 52 ft. to 3 (BOTTOM) 54 58 ft.

(enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	4	5
60 61	63 64	65 70

OTHER CASING (if used) — EACH CASING

	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD

screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2 — DEPTH (nearest ft.)

EACH SCREEN

1	PL (8 9)	5 (11 15)	25 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 .020 2 3

DIAMETER OF SCREEN 4 (NEAREST INCH) 56 60

	from	to
GRAVEL PACK	3	25
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68		68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

70 72 74 75 76

TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3 AF-UMW

PUMPING TEST

HOURS PUMPED (nearest hour) 1 (8 9)

PUMPING RATE (gal. per min.) 1.0 (11 15)

METHOD USED TO MEASURE PUMPING RATE Timer

WATER LEVEL (distance from land surface)

BEFORE PUMPING 15 (17 20) ft.

WHEN PUMPING 24 (22 25) ft.

TYPE OF PUMP USED (for test)

[A] air (27) [P] piston (27) [T] turbine (27)

[C] centrifugal (27) [R] rotary (27) [O] other (describe below) (27)

[J] jet (27) [S] submersible (27)

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

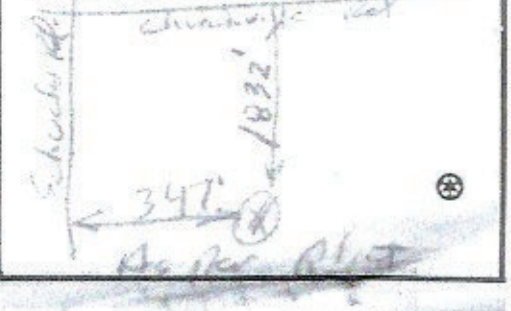
CASING HEIGHT (circle appropriate box and enter casing height)

[+] above (49) / [–] below (49) LAND SURFACE

2 (nearest foot) (50 51)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DRILLER

DENV-CR00

Maryland

Heidi Simmons -MDH- <heidi.simmons@maryland.gov>

Schucks Rd - Schucks Corner

2 messages

Jones Well Drilling <water@joneswelldrilling.com> Wed, Jun 8, 2022 at 9:30 AM
To: "heidi.simmons@maryland.gov" <heidi.simmons@maryland.gov>

Good Morning,

I have located the well completion s reports for HA-95-1004, 1005, 1006, 1007, 1008, 1009 and 1010. (attached).

HA-94-1011, 1012 and 1013 were not drilled and turned in.

If you have any questions let me know.

Sandy Roberts

Jones Well Drilling

water@joneswelldrilling.com

3700 Rush Road

Jarrettsville, MD 21084

410-692-6981

Schucks Rd 6-8-22.pdf
6651K

Heidi Simmons -MDH- <heidi.simmons@maryland.gov> Wed, Jun 8, 2022 at 10:12 AM
To: Jones Well Drilling <water@joneswelldrilling.com>

Thank you!!!!

Heidi Simmons
Environmental Health
PIA - Property Records
MDH - HCHD
120 S. Hays Street
Bel Air, MD 21014
(T) 410-877-2347
heidi.simmons@maryland.gov

Maryland
DEPARTMENT OF HEALTH

C 1 9379 (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY (8–13)

DATE WELL COMPLETED MM 4 DD 9 YY 03 (15–20)

Depth of Well 30 (22–26) (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-95-1010 (28–37)

OWNER Harford County Public Schools (last name / first name)

STREET OR RFD 127 Schucks Road TOWN Churchville

SUBDIVISION Ha Schucks Corner SECTION LOT 11

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
logged by Severn Environmental Management LLC			
dk brn sandy loam	0	1	
dk brn sandy clay loam	1	11	
tan sandy clay	11	23	
red brn sandy clay	23	30	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [ ] no [N]

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M D 3 11

David Kelly
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: W D 376

Sean Morgan
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] (44) no [N] (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] (45 46) BENTONITE CLAY [BC] (45 46)

NO. OF BAGS 3 NO. OF POUNDS 282

GALLONS OF WATER 15

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48–52 TOP) ft. to 8 (54–58 BOTTOM) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60–61)	4 (63–64)	10 (66–70)

OTHER CASING (if used) — EACH CASING

	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS [BRONZE] [PL] PLASTIC [HO] OPEN HOLE [OT] OTHER

C 2 DEPTH (nearest ft.)

EACH SCREEN

1 (8–9)	PL	10 (11–15)	30 (17–21)	
2 (23–24)		(26–30)	(32–36)	
3 (38–39)		(41–45)	(47–51)	

SLOT SIZE 1 .020 2 ____ 3 ____

DIAMETER OF SCREEN 4 (56–60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68	from	to
	8	30

(68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

(70) (72) (74 75 76)

TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3 AF-TB7 (1–2)

PUMPING TEST

HOURS PUMPED (nearest hour) 1 (8–9)

PUMPING RATE (gal. per min.) 1.0 (11–15)

METHOD USED TO MEASURE PUMPING RATE Timer

WATER LEVEL (distance from land surface)

BEFORE PUMPING 20 (17–20) ft.

WHEN PUMPING 29 (22–25) ft.

TYPE OF PUMP USED (for test)

- [A] air (27)
- [P] piston (27)
- [T] turbine (27)
- [C] centrifugal (27)
- [R] rotary (27)
- [O] other (describe below) (27)
- [J] jet (27)
- [S] submersible (27)

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31–35)

PUMP HORSE POWER (37–41)

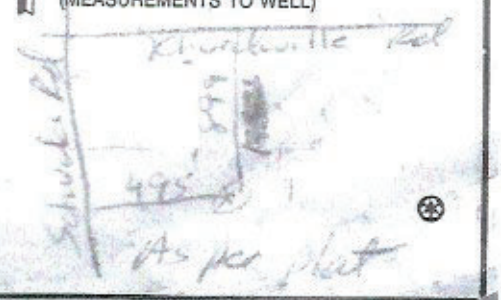
PUMP COLUMN LENGTH (nearest ft.) (43–47)

CASING HEIGHT (circle appropriate box and enter casing height)

[+] above (49) / [–] below (49) LAND SURFACE

2 (50–51) (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV.

DRILLER

SITE RESOURCES
incorporated
Comprehensive Land Planning & Site Design Services

14315 Jarrettsville Pike
P.O. Box 249
Phoenix, MD 21131-0249
(410) 683-3388
(410) 683-3389 Fax

LETTER OF TRANSMITTAL

To: Harford County Health Department
119 S. Hays Street
Bel Air, Maryland 21014

Date: January 16, 2009
SRI Project #: 08035
SRI Billing Group: A.1
SRI Phase: DD

Attn: Gary Browning

Re: Campus Hills Elementary School Groundwater Appropriation Permit Application

We are sending you:
☐ Shop Drawings ☐ Prints ☐ Specifications ☐ Plans
☐ Electronic Files ☐ Report ☒ As Noted Below

COPIES	DESCRIPTION
1	Application to Appropriate and Use Waters of the State
1	Project Location Plan

These are transmitted:
☐ Approved As Submitted ☐ For Approval ☐ For Your Use
☐ Approved As Noted ☐ Returned for Corrections ☐ As Requested
☒ For Review & Comment ☐ Resubmit

Remarks:

Gary – Please feel free to contact me regarding this project. This project is not included on Harford County's Master Water and Sewer Plan. We are corresponding with Harford County Public Schools at this time. They have indicated to us that they are exempt from listing their projects on the W&S plan.
After you have signed the application, it will need to be forwarded to MDE. Please let me know if you will do that or if we will do that.

Cc:

Signed: Jennifer Harrington, P.E.

Delivery Method: ☐ Same Day ☐ Next Day ☐ AM ☐ PM ☐ 2nd Day ☒ U.S. Mail ☐ In House
Delivery By: Date: Time:

CONFIDENTIALITY NOTICE: The information herein is confidential and is intended for the use of the individual to whom this cover is addressed. Any use of this information by other than the addressee is prohibited. If you receive this transmission in error, please contact us immediately to arrange the return of this material.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Water Management Administration - Water Rights Division
1800 Washington Blvd. • Baltimore, Maryland 21230
(410) 537-3591 • 1-800-633-6101 • http://www.mde.state.md

APPLICATION TO APPROPRIATE AND USE WATERS OF THE STATE

☒ New Application ☐ Change in Existing Permit Application Number _____

APPLICATION

Harford County Public Schools 410.809.6124
(Owners Name) (Daytime Phone Number)

102 South Hickory Avenue Bel Air MD 21014
(Mailing Address) (Street) (City) (State) (Zip Code)

WITHDRAWAL of GROUNDWATER

Appropriate and use an annual average of

15,520 Gallons per day, and
(Total Annual Use / 365)

19,400 gallons per day during
(Highest Monthly Use / 30)

month of maximum use, from 2 wells, having a

diameter of 6 inches, and a depth of 200 feet
(Estimate) (Estimate)

WITHDRAWAL of SURFACE WATER

Appropriate and use an annual average of

_____ gallons per day, and a maximum use
(Total Annual Use / 365)

of _____ gallons in any one day, from

_____
(Name of Stream or Waterway)

_____
(Exact Location of Intake)

PROJECT LOCATION

100-400 block Schucks Road Bel Air, MD 21015 (ADC PG.18, Grid E6)
(STREET ADDRESS – MAP DIRECTIONS – ADC PAGE/GRID – TAX MAP PAGE/GRID/PARCEL)

County HA Subdivision or Town Bel Air Phone Number _____

Name and Type of Business Educational Institution

SUBDIVISIONS MUST INCLUDE PLAT - ALL PROJECTS MUST INCLUDE LOCATION MAP

PURPOSE

The water will be used for:

- ☐ Community Water Supply
- ☐ Non-Potable Supply (sanitary non Drinking Water)
- ☒ Potable Supply
- ☐ Cooling Water
- ☐ Irrigation
- ☐ Process Water Firesuppression
- ☒ Other, explain water storage tank

WASTEWATER TREATMENT AND DISPOSAL

- ☐ Public Sewer
- ☒ Groundwater
  - ☒ Subsurface (Tilefield, Seepage Pit etc.)
  - ☐ Spray Irrigation
  - ☐ Other, Explain _____
- ☐ Surface Water _____
  (Name of stream)

DISCHARGE PERMIT # _____

SIGNATURE

Angela Harrington, Agent for:

Ronald Kauffman Facilities Planner 1.13.09
PRINT (NAME) (TITLE) (DATE)

THIS APPLICATION WILL NOTBE PROCESSED WITHOUT A SIGNATURE AND LOCATION MAP

REVIEW BY COUNTY ENVIRONMENTAL HEALTH OR DESIGNATED AGENCY

THIS SECTION NOT TO BE COMPLETED BY APPLICANT

IS PROJECT CONSISTANT WITH THE COUNTY WATER AND SEWER PLAN AND LOCAL PLANNING AND ZONING?

☐ YES ☐ NO, Explain _____

Signature of County Representative _____
(Signature) (Title) (Date)

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Water Management Administration - Water Rights Division
1800 Washington Blvd. • Baltimore, Maryland 21230
(410) 537-3591 • 1-800-633-6101 • http://www.mde.state.md

APPLICATION TO APPROPRIATE AND USE WATERS OF THE STATE

☒ New Application ☐ Change in Existing Permit Application Number _____

APPLICATION

Harford County Public Schools 410.809.6124
(Owners Name) (Daytime Phone Number)

102 South Hickory Avenue Bel Air MD 21014
(Mailing Address) (Street) (City) (State) (Zip Code)

WITHDRAWAL of GROUNDWATER

Appropriate and use an annual average of

15,520 Gallons per day, and
(Total Annual Use / 365)

19,400 gallons per day during
(Highest Monthly Use / 30)

month of maximum use, from 2 wells, having a

diameter of 6 inches, and a depth of 200 feet
(Estimate) (Estimate)

WITHDRAWAL of SURFACE WATER

Appropriate and use an annual average of

_____ gallons per day, and a maximum use
(Total Annual Use / 365)

of _____ gallons in any one day, from

_____
(Name of Stream or Waterway)

_____
(Exact Location of Intake)

PROJECT LOCATION

100-400 block Schucks Road Bel Air, MD 21015 (ADC PG.18, Grid E6)
(STREET ADDRESS – MAP DIRECTIONS – ADC PAGE/GRID – TAX MAP PAGE/GRID/PARCEL)

County HA Subdivision or Town Bel Air Phone Number _____

Name and Type of Business Educational Institution

SUBDIVISIONS MUST INCLUDE PLAT - ALL PROJECTS MUST INCLUDE LOCATION MAP

PURPOSE

The water will be used for:

- ☐ Community Water Supply
- ☐ Non-Potable Supply (sanitary non Drinking Water)
- ☒ Potable Supply
- ☐ Cooling Water
- ☐ Irrigation
- ☐ Process Water Firesuppression
- ☒ Other, explain water storage tank

WASTEWATER TREATMENT AND DISPOSAL

- ☐ Public Sewer
- ☒ Groundwater
  - ☒ Subsurface (Tilefield, Seepage Pit etc.)
  - ☐ Spray Irrigation
  - ☐ Other, Explain _____
- ☐ Surface Water _____ (Name of stream)

DISCHARGE PERMIT # _____

SIGNATURE

Jennifer Harrington, Agent for:

Ronald Kauffman Facilities Planner 1.13.09
PRINT (NAME) (TITLE) (DATE)

THIS APPLICATION WILL NOTBE PROCESSED WITHOUT A SIGNATURE AND LOCATION MAP

REVIEW BY COUNTY ENVIRONMENTAL HEALTH OR DESIGNATED AGENCY

THIS SECTION NOT TO BE COMPLETED BY APPLICANT

IS PROJECT CONSISTANT WITH THE COUNTY WATER AND SEWER PLAN AND LOCAL PLANNING AND ZONING?

☐ YES ☐ NO, Explain _____

Signature of County Representative _____
(Signature) (Title) (Date)

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Water Management Administration - Water Rights Division
1800 Washington Blvd. • Baltimore, Maryland 21230
(410) 537-3591 • 1-800-633-6101 • http://www.mde.state.md

APPLICATION TO APPROPRIATE AND USE WATERS OF THE STATE

☒ New Application ☐ Change in Existing Permit Application Number _____

APPLICATION

Harford County Public Schools 410.809.6124
(Owners Name) (Daytime Phone Number)

102 South Hickory Avenue Bel Air MD 21014
(Mailing Address) (Street) (City) (State) (Zip Code)

WITHDRAWAL of GROUNDWATER

Appropriate and use an annual average of

15,520 Gallons per day, and
(Total Annual Use / 365)

19,400 gallons per day during
(Highest Monthly Use / 30)

month of maximum use, from 2 wells, having a

diameter of 6 inches, and a depth of 200 feet
(Estimate) (Estimate)

WITHDRAWAL of SURFACE WATER

Appropriate and use an annual average of

_____ gallons per day, and a maximum use
(Total Annual Use / 365)

of _____ gallons in any one day, from

_____
(Name of Stream or Waterway)

_____
(Exact Location of Intake)

PROJECT LOCATION

100-400 block Schucks Road Bel Air, MD 21015 (ADC PG.18, Grid E6)
(STREET ADDRESS – MAP DIRECTIONS – ADC PAGE/GRID – TAX MAP PAGE/GRID/PARCEL)

County HA Subdivision or Town Bel Air Phone Number _____

Name and Type of Business Educational Institution

SUBDIVISIONS MUST INCLUDE PLAT - ALL PROJECTS MUST INCLUDE LOCATION MAP

PURPOSE

The water will be used for:

- ☐ Community Water Supply
- ☐ Non-Potable Supply (sanitary non Drinking Water)
- ☒ Potable Supply
- ☐ Cooling Water
- ☐ Irrigation
- ☐ Process Water Firesuppression
- ☒ Other, explain water storage tank

WASTEWATER TREATMENT AND DISPOSAL

- ☐ Public Sewer
- ☒ Groundwater
  - ☒ Subsurface (Tilefield, Seepage Pit etc.)
  - ☐ Spray Irrigation
  - ☐ Other, Explain _____
- ☐ Surface Water _____
  (Name of stream)

DISCHARGE PERMIT # _____

SIGNATURE

_____

Ronald Kauffman Facilities Planner 1.13.09
PRINT (NAME) (TITLE) (DATE)

THIS APPLICATION WILL NOT BE PROCESSED WITHOUT A SIGNATURE AND LOCATION MAP

REVIEW BY COUNTY ENVIRONMENTAL HEALTH OR DESIGNATED AGENCY

THIS SECTION NOT TO BE COMPLETED BY APPLICANT

IS PROJECT CONSISTANT WITH THE COUNTY WATER AND SEWER PLAN AND LOCAL PLANNING AND ZONING?

☐ YES ☐ NO, Explain _____

Signature of County Representative _____
(Signature) (Title) (Date)

EXHA 5

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Water Management Administration - Water Supply Program
1800 Washington Boulevard • Baltimore, Maryland 21230
(410) 537-3590 • 1-800-633-6101 • fax (410) 537-3157 • http://www.mde.state.md.us

NOTICE OF EXEMPTION TO APPROPRIATE AND USE GROUND WATER

See Instructions on Page 2 to complete this form

☐ New Exemption ☒ Change Existing Permit to an Exemption (Provide permit # HA2009 6001

Provide Name of Existing Permit Holder: HARFORD CO. PUBLIC SCHOOLS

CONTACT INFORMATION

RONALD KAUFFMAN (410) 809-6124 Ronald.Kauffman@hcps.org
(Name) (Daytime Telephone Number(s)) (E-mail Address)

102 E. Hickory Ave., BEL AIR, MD 21014
(Mailing Address) (Street) (City) (State) (Zip Code)

WITHDRAWAL of GROUNDWATER

Quantity to be Used

(1) 4,600 gallons per day based on an annual average (Total Annual Use ÷ 365)

(2) 8,200 gallons per day during month of maximum use (highest monthly total ÷ 30)

Quantities should reflect highest anticipated demand.

Submitted with Application

WELL INFORMATION

_____ Planned or existing Wells to be used (Number)

_____ Diameter of Well(s) (Inches)

_____ Depth of Well(s) (Feet)

_____ Tag Number(s) of Well(s) (Number)

_____ Aquifer to be used if known (Name)

LOCATION & MAP of WITHDRAWAL WELL(S)

(STREET ADDRESS & ADC PAGE/GRID – TAX MAP PAGE/GRID/PARCEL)

County _____ Subdivision or Town _____

Name and Type of Business ELEMENTARY SCHOOL

~~PROPOSED SUBDIVISIONS REQUIRE PLAT~~

PURPOSE

The water will be used for:

- ☑ Potable Supply
- ☐ Cooling Water Check if: ___ Contact ___ Non-Contact
- ☐ Irrigation Check if: ___ Lawn ___ Garden ___ Landscape
- ☐ Process Water
- ☑ Non-Potable Supply (sanitary non-Drinking Water)
- ☐ Other, explain _____

CHECK APPLICABLE BOX

The proposed water withdrawal

☐ Will ☒ Will Not

occur within a Water Management Strategy Area.

To the best of my knowledge, the information submitted on this form is true, accurate, and complete. I am aware that submitting false, inaccurate or incomplete information may subject me to penalties allowed under Maryland law.

SIGNATURE Ronald Kauffman

RONALD KAUFFMAN FACILITIES PLANNER 2/3/09
PRINT (Name) (Title) (Date)

NOTE: THIS NOTICE OF EXEMPTION WILL NOT BE ACCEPTED WITHOUT A SIGNATURE ~~AND LOCATION MAP~~

Form Number MDE/WMA/PER.077-2
Revision Date 12/19/2007
TTY Users 1-800-735-2258

Feb 2009

EMERGENCY/TEMP NO. IF ANY

B 1 | 6252 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-95-1542

fill in this form completely

Date Received (APA): 10/19/09

OWNER INFORMATION

Harford County Public Schools
Last Name / Owner / First Name

102 South Hickory Ave
Street or RFD

Bel Air MD 21014
Town / State / Zip

LOCATION OF WELL

B 3

Harford
COUNTY

Land of Blessing
SUBDIVISION

SECTION ____ LOT 3

Proposed Campus Hills Elem. School

Churchville
NEAREST TOWN

MILES FROM TOWN (enter 0 if in town): 2 MI

DRILLER INFORMATION

David Kelly — MWD 304
Driller's Name / License No.

Jones Well Drilling Inc
Firm Name

3700 Rush Rd. Jarrettsville MD 2084
Address

David Kelly — 9/17/09
Signature / Date

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX): NW 8-9, N 8, NE 8-9, W 8-9, TOWN, E 8, SW 8-9, S 8, SE 8-9

125 Shucks Rd
NEAR WHAT ROAD

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH, WEST, 32, EAST, SOUTH

03296504 — 58
DISTANCE FROM ROAD

ENTER FT OR MI: FT

TAX MAP: 42 BLK: D4 PARCEL 381

WELL INFORMATION

B 2

APPROX. PUMPING RATE (GAL. PER MIN.): 0

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)

22
- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- T TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford — 12
COUNTY NAME / COUNTY NO.

STATE SIGNATURE _____ INSERT S

DATE ISSUED 10-20-09 — Carl A Bruce — 10-20-09
DATE ISSUED / CO SIGNATURE / EXP. DATE

NORTH GRID 625 000 — EAST GRID 1001 000

APPROXIMATE DEPTH OF WELL: 400 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

30 BORED (or Augered) — JETTED — Jetted & DRIVEN
AIR-ROTary — AIR-PERcussion — ROTARY (Hydraulic Rotary)
37 CABLE — REVerse-ROTary — DRive-POINT
other _____

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000
N 620

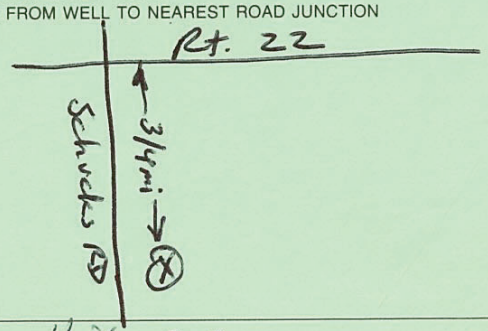
000 000

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- 39 S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) 41 HA-93-0154 52

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER _____G_____

PERMIT No. HA-95-1542
70 71 72 73 74 75 76 77 78 79

SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED: F/k under Campus Hills E.S.

DENV-Permit 97

① ORIGINAL

C 1 **2864** — SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM 1 DD 26 YY 11 (8–13)

DATE WELL COMPLETED: MM 9 DD 17 YY 09 (15–20)

Depth of Well: 500 (TO NEAREST FOOT) (22–26)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA - 95 - 1542 (28–36)

OWNER: HARFORD County Public Schools (last name / first name)

STREET OR RFD: 102 South Hickory Ave TOWN: Bel Air

SUBDIVISION: Land of Blenns SECTION: LOT: 3

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
dirt	0	1	
Soft brown	1	20	
hard tan	20	50	
soft brown	50	55	✓
hard tan/gray rock	55	73	
m. hard brown w/chips	73	80	
hard gray rock	80	145	
med gray rock	145	150	✓
hard gray rock	150	230	
med gray rock	230	240	✓
hard gray rock	240	455	
hard green rock	455	470	✓
hard light gray rock	470	500	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no (N)

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M W D 3 0 4 — David Kelly
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M W D 5 6 4 — Matt Moffett

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] (44) no [N] (44)

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [C M] (45 46) BENTONITE CLAY [B C] (45 46)

NO. OF BAGS 18 NO. OF POUNDS 1692

GALLONS OF WATER 90

DEPTH OF GROUT SEAL (to nearest foot)
from 0 (48 TOP 52) ft. to 62 (54 BOTTOM 58) ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below:
- [S T] STEEL
- [C O] CONCRETE
- [P L] PLASTIC
- [O T] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	6 (63 64)	63 (66 70)

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below:
- [S T] STEEL
- [B R] BRASS / BRONZE
- [H O] OPEN HOLE
- [P L] PLASTIC
- [O T] OTHER

C 2

EACH SCREEN	DEPTH (nearest ft.)		
1	PL (8 9)	60 (11 15)	100 (17 21)
2	HO (23 24)	100 (26 30)	500 (32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 .020 2 ____ 3 ____

DIAMETER OF SCREEN 5 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from ____ to ____ (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) (E.R.O.S.) (72) W Q (74 75 76)
TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3

PUMPING TEST
HOURS PUMPED (nearest hour): 6 (8 9)

PUMPING RATE (gal. per min.): 30.0 (11 15)

METHOD USED TO MEASURE PUMPING RATE: timer

WATER LEVEL (distance from land surface)

BEFORE PUMPING: 16 (17 20) ft.

WHEN PUMPING: 129 (22 25) ft.

TYPE OF PUMP USED (for test)
- [A] air (27)
- [P] piston (27)
- [T] turbine (27)
- [C] centrifugal (27)
- [R] rotary (27)
- [O] other (describ below) (27)
- [J] jet (27)
- [S] submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

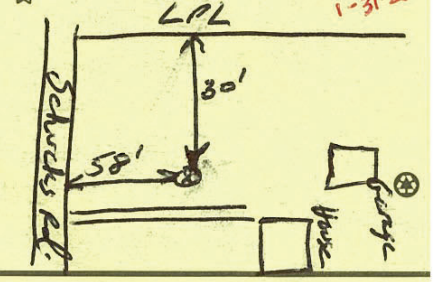
PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)
- [+] above (49)
- [–] below (49)

LAND SURFACE: 1 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

CSB 1-31-2011



DENV-CR00

ORIGINAL

EMERGENCY/TEMP NO. IF ANY

B 1 01821 (1 2 3 6) SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER (70 ... 79): HA - 94 - 3848
fill in this form completely

Date Received (APA) (8 MM DD YY 13): 08-09-00

OWNER INFORMATION

PETERS (15 Last Name) Richard (Owner First Name 34)

15 PROSPECT Mill Rd. (36 Street or RFD 55)

BEL AIR, Md. 21015 (57 Town 70 State 72 Zip 76)

DRILLER INFORMATION

GURVIS JONES (Driller's Name) MWD 047 (76 License No. 81)

GURVIS JONES WELL Drilling INC (Firm Name)

1220 PROSPECT Mill Rd. BEL Air, Md. 21015 (Address)

Gurvis Jones 8-8-00 (Signature Date)

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.) (1 2 / 8 12): 5

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) (14 20): 500

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- (D) DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING (22)
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION, MONITORING
- [G] GEO-THERMAL

APPROXIMATE DEPTH OF WELL (24 28): 200 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) — JETTED — Jetted & DRIVEN

(30) AIR-ROTary — (AIR-PERcussion) — ROTARY (Hydraulic Rotary)

(37) CABLE — REVerse-ROTary — DRive-POINT

other

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- (N) THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- (39) [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) (41 ... 52): _ _ - _ _ - _ _ _ _

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER (54 ... 63): GAP

PERMIT No. (70 71 72 73 74 75 76 77 78 79): HA - 94 - 3848

B 3 LOCATION OF WELL

HARFORD (8 COUNTY 21)

LAND OF BLEVINS (23 SUBDIVISION 42)

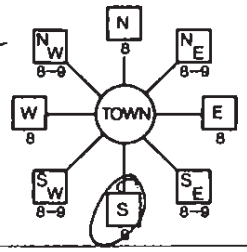
SECTION (44 46): LOT (48 50): 4

FULFORD (52 NEAREST TOWN 71)

MILES FROM TOWN (enter 0 if in town) (73 / 76 77 78): 1 M I

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



311 Shucks Rd. (11 NEAR WHAT ROAD 30)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH (N) WEST (W) (X) EAST (E) SOUTH (S)

Barb - Please check 0333960 Comp. for ID

DISTANCE FROM ROAD (34 37): 62

ENTER FT OR MI (38 39): FT.

TAX MAP: 42 BLK: 4B PARCEL 331

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Harford COUNTY NO.: 12

STATE SIGNATURE: _____ INSERT S →

DATE ISSUED (43 MM DD YY 48): 08/10/00

CO SIGNATURE: Woody Williams EXP. DATE: 8/10/01

NORTH GRID (50 55): 626000

EAST GRID (57 63): 1000 000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

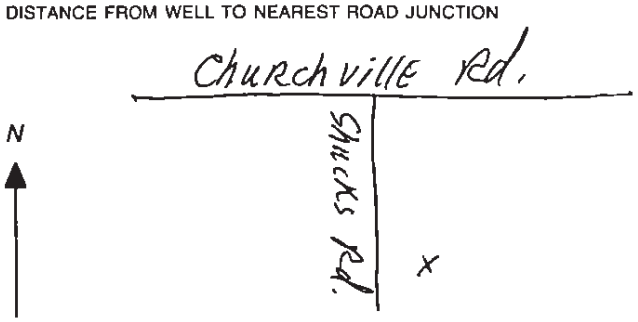
WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000

N 620

000
000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

DENV-Permit 97

① ORIGINAL

C 1 | 8348 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED AFTER WELL IS COMPLETED.

COUNTY NUMBER [redacted] 12

ST/CO USE ONLY
DATE Received NOV 13 2000

DATE WELL COMPLETED: MM 11 DD 06 YY 00

Depth of Well: 200 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA-94-3848

OWNER PETERS, RICHARD (last name, first name)

STREET OR RFD _____ TOWN _____

SUBDIVISION LAND OF RLEVINS SECTION _____ LOT 4

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
BROWN SANDY SOIL	0	8	
SOFT GREEN WEATHERED ROCK	8	20	
BROWN WEATHERED ROCK	20	29	
WEATHERED ROCK	29	45	
HARD GRAY + GREEN GRANITE	45	200	✓
WATERBEARING AT: 120', 152', + 169'			

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE

DRILLERS LIC. NO.: MWD 047
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION) [signature]

LIC. NO.: MSD 137
[signature]

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [CM] BENTONITE CLAY [BC]

NO. OF BAGS 15 NO. OF POUNDS 1410
GALLONS OF WATER 90

DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. (TOP) to 48 ft. (BOTTOM)
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below:
[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	6	48

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole — insert appropriate code below:
[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	HO	48	200
2			
3			

SLOT SIZE 1 _____ 2 _____ 3 _____

DIAMETER OF SCREEN _____ (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 3

PUMPING RATE (gal. per min.) 10

METHOD USED TO MEASURE PUMPING RATE BUCKET

WATER LEVEL (distance from land surface)

BEFORE PUMPING 28 ft.

WHEN PUMPING 68 ft.

TYPE OF PUMP USED (for test)
- [A] air
- [P] piston
- [T] turbine
- [C] centrifugal
- [R] rotary
- [O] other (describe below)
- [J] jet
- [S] submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES [NO]

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

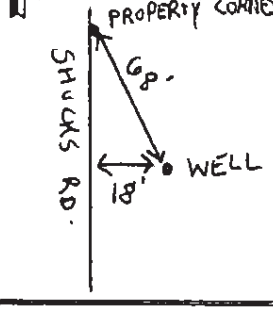
PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)
- [+] above LAND SURFACE
- [–] below

(nearest) foot

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURES AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



EMERGENCY/TEMP NO. IF ANY

B 1 — 1 2 3 — 6256 — 6 — SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA - 95 - 1564 (70 – 79)
fill in this form completely

Date Received (APA): 10/19/09 (8 MM DD YY 13)

OWNER INFORMATION
Harford Co. Public Schools (15 Last Name — Owner — First Name 34)
102 South Hickory Ave (36 Street or RFD 55)
Bel Air (57 Town) MD (70 State) 21014 (72 Zip 76)

DRILLER INFORMATION
David Kelly (Driller's Name) MWD 304 (76 License No. 81)
Jones Well Drilling Inc (Firm Name)
3700 Rush Rd. Jarrettsville, MD 21084 (Address)
David Kelly (Signature) 10/15/09 (Date)

B 2 — 1 2 — WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 0 (8 – 12)
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0 (14 – 20)

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- 22 [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST/OBSERVATION, MONITORING
- [G] GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 500 (24 – 28) FEET
APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) — JETTED — Jetted & DRIVEN
30 AIR-ROTary — AIR-PERcussion — ROTARY (Hydraulic Rotary)
37 CABLE — REVerse-ROTary — DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- [N] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- 39 [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) 41 ____ - ____ - ____ 52

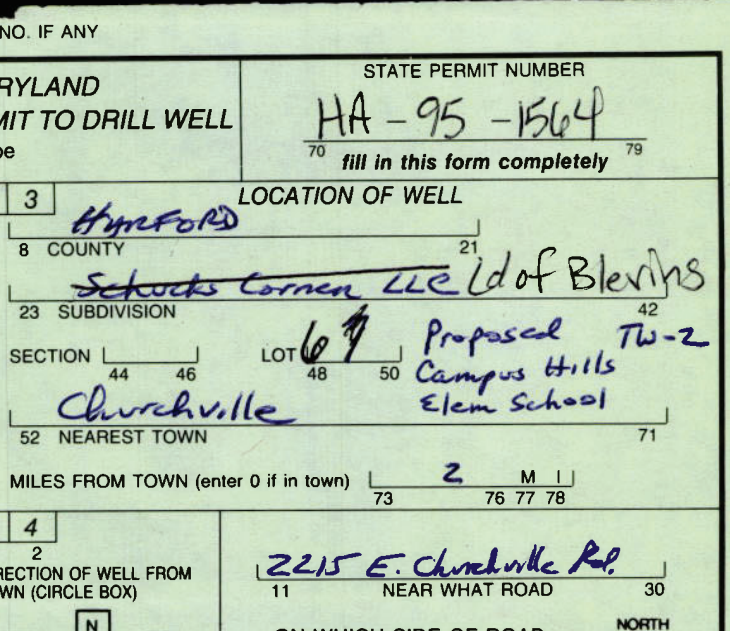
Not to be filled in by driller (MDE OR COUNTY USE ONLY)
APPROP. PERMIT NUMBER ____ G ____
PERMIT No HA - 95 - 1564 (70 71 72 73 74 75 76 77 78 79)

B 3 — LOCATION OF WELL
Harford (8 COUNTY 21)
~~Schucks Corner LLC~~ Ld of Blevins (23 SUBDIVISION 42)
SECTION (44 46) LOT 69 (48 50) Proposed Campus Hills Elem School TM-2
Churchville (52 NEAREST TOWN 71)
MILES FROM TOWN (enter 0 if in town): 2 M (73 76 77 78)

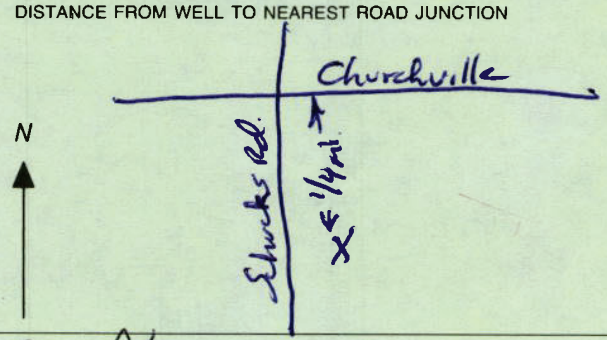
B 4 — 1 2
DIRECTION OF WELL FROM TOWN (CIRCLE BOX): NW 8-9 | N 8 | NE 8-9 | W 8 | TOWN | E 8 | SW 8-9 | S 8 | SE 8-9
2215 E. Churchville Rd. (11 NEAR WHAT ROAD 30)
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH | WEST | EAST | SOUTH
3373150 (34) 110 (37) DISTANCE FROM ROAD: FT (ENTER FT OR MI 38 39)
TAX MAP: 42 BLK: 4B PARCEL 454

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
Harford (COUNTY NAME) 12 (COUNTY NO.)
STATE SIGNATURE ____ INSERT S → 2010
DATE ISSUED 10-21-09 (43 MM DD YY 48) Carl J Bloxom 10-21-09 (CO SIGNATURE — EXP. DATE)
NORTH GRID 628 000 (50 – 55) EAST GRID 1000 000 (57 – 63)

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X
SOURCES OF DRILLING WATER
1.
2.
3.
WRITE THE BOX NUMBER FROM THE MAP HERE
E 1000 000 000
N 620



DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS
NOTE – APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED
Campus Hills E.S. file

DENV-Permit 97

① ORIGINAL

C 1 2861 — SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM 12 DD 11 YY 13

DATE WELL COMPLETED MM 7 DD 31 YY 09

Depth of Well 500 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA - 95 - 1564

OWNER Hills (last name) HARFORD County Public Schools (first name)

STREET OR RFD 2215 E. Churchville Rd. TOWN Churchville

SUBDIVISION Schucks Corner LLC SECTION LOT FW-2

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
dirt	0	1	
soft brown	1	20	
hard gray rock	20	27	
hard tan rock	27	52	
hard gray rock	52	54	
hard tan rock	54	64	
hard gray rock	64	76	
hard tan rock	76	78	
hard brown rock	78	80	
hard gray rock	80	86	
M. hard tan "	86	88	✓
hard gray rock	88	357	
M. hard gray rock	357	355	✓
hard gray rock	355	500	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes Y / no N

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MWD 304

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MWD 910

SITE SUPERVISOR (sign of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y / no N

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT CM — BENTONITE CLAY BC

NO. OF BAGS 6 NO. OF POUNDS 564

GALLONS OF WATER 30

DEPTH OF GROUT SEAL (to nearest foot)
from 0 (TOP) ft. to 25 (BOTTOM) ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
- ST STEEL
- CO CONCRETE
- PL PLASTIC
- OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	6	26

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below
- ST STEEL
- BR BRASS BRONZE
- HO OPEN HOLE
- PL PLASTIC
- OT OTHER

DEPTH (nearest ft.) — EACH SCREEN

		from	to
1	HO	25	500
2			
3			

SLOT SIZE 1 ____ 2 ____ 3 ____

DIAMETER OF SCREEN ____ (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

TELESCOPE CASING — LOG INDICATOR — OTHER DATA

PUMPING TEST
HOURS PUMPED (nearest hour) 1

PUMPING RATE (gal. per min.) 2.0

METHOD USED TO MEASURE PUMPING RATE Timer

WATER LEVEL (distance from land surface)

BEFORE PUMPING 30 ft.

WHEN PUMPING 500 ft.

TYPE OF PUMP USED (for test)
- A air
- P piston
- T turbine
- C centrifugal
- R rotary
- O other (describe below)
- J jet
- S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES / NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

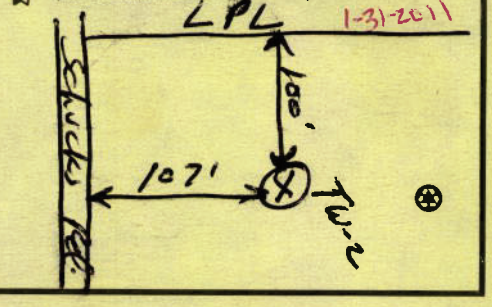
PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)
- + above LAND SURFACE
- – below

(nearest) foot

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



ORIGINAL

DENV-CR00

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

DATE WELL COMPLETED: 12 23 93

Depth of Well: 150 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA-93-0206

OWNER: Long, Tom (last name / first name)

STREET OR RFD: 119 Schucks Rd TOWN: Churchville

SUBDIVISION: Ld of Blenkas SECTION: M12 3331 LOT: 2

WELL LOG
Not required for driven wells

- STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	Check if water bearing
Red Clay Soil	0	15	
Brown Sandy Soil	15	40	
		55	V
		115	V
		130	V
Gray Granite Rock	40	150	

No Grout Call as of 12/23/93 Woody

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): YES (Y) NO (N)

TYPE OF GROUTING MATERIAL: CEMENT (CM) BENTONITE CLAY (BC)

NO. OF BAGS 14 NO. OF POUNDS 432

GALLONS OF WATER 84

DEPTH OF GROUT SEAL (to nearest foot): from 0 ft. to 49 ft. (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: STEEL (ST) CONCRETE (CO) PLASTIC (PL) OTHER (OT)

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	6	50

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below: STEEL (ST) BRASS BRONZE (BR) OPEN HOLE (HO) PLASTIC (PL) OTHER (OT)

C 2

	DEPTH (nearest ft.)	
1	40	49 / 156
2		
3		

SLOT SIZE 1 ____ 2 ____ 3 ____

DIAMETER OF SCREEN ____ (NEAREST INCH)

GRAVEL PACK from ____ to ____

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

DEP USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T ____ (E.R.O.S.) ____ W Q ____

TELESCOPE CASING / LOG INDICATOR / OTHER DATA

C 3

PUMPING TEST
HOURS PUMPED (nearest hour): 3

PUMPING RATE (gal. per min. to nearest gal.): 12

METHOD USED TO MEASURE PUMPING RATE: 1 HP Sub

WATER LEVEL (distance from land surface)

BEFORE PUMPING: 17

WHEN PUMPING: 53

TYPE OF PUMP USED (for test)

A air; P piston; T turbine; C centrifugal; R rotary; O other (describe below); J jet; S submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS EXCEPT HOME USE

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX - SEE ABOVE:

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height): (+) above / (−) below LAND SURFACE: 1 (nearest foot)

CIRCLE APPROPRIATE LETTER
A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

E ELECTRIC LOG OBTAINED

P TEST WELL CONVERTED TO PRODUCTION WELL

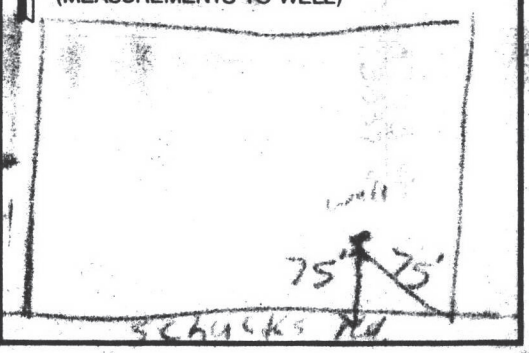
I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION GIVEN HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS IDENT. NO. 368

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION) Cindy C. Barber

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND/OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



COUNTY

C 1 2853 — SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM 1 DD 31 YY 2017

DATE WELL COMPLETED MM 9 DD 14 YY 09

Depth of Well 400' (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-93-0206

OWNER Harford County Public Schools (last name / first name)

STREET OR RFD 102 South Hickory Ave TOWN Bel Air

SUBDIVISION Lands of Blevins SECTION Map 301 / Parcel 878 LOT 2

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Deepened existing well			
hard gray rock	150	180	
m. hard gray rock	180	200	
hard gray rock	200	220	
m. hard gray rock	220	240	
hard gray rock	240	400	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MW D 3304

David Kelly
DRILLERS SIGNATURE
(MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MW D 5564

Matt Mylett

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [C M] BENTONITE CLAY [B C]

NO. OF BAGS ____ NO. OF POUNDS ____

GALLONS OF WATER ____

DEPTH OF GROUT SEAL (to nearest foot)

from ____ ft. TOP to ____ ft. BOTTOM (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[S T] STEEL [C O] CONCRETE [P L] PLASTIC [O T] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below

[S T] STEEL [B R] BRASS BRONZE [H O] OPEN HOLE [P L] PLASTIC [O T] OTHER

C 2 — DEPTH (nearest ft.)

EACH SCREEN		
1	8 9	11 15 17 21
2	23 24	26 30 32 36
3	38 39	41 45 47 51

SLOT SIZE 1 ____ 2 ____ 3 ____

DIAMETER OF SCREEN ____ (NEAREST INCH) (56 60)

from ____ to ____

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 6 (8 9)

PUMPING RATE (gal. per min.) 23.0 (11 15)

METHOD USED TO MEASURE PUMPING RATE timer

WATER LEVEL (distance from land surface)

BEFORE PUMPING 17 ft. (17 20)

WHEN PUMPING 51 ft. (22 25)

TYPE OF PUMP USED (for test)

[A] air [P] piston [T] turbine [C] centrifugal [R] rotary [O] other (describe below) [J] jet [S] submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)

[+] above [−] below (49) LAND SURFACE (nearest) foot (50 51)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

N

drill existing well deeper

DENV-CR00

COUNTY

EMERGENCY/TEMP NO. IF ANY

B 1 | 07928 | SEQUENCE NO. (DP USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please print or type

STATE PERMIT NUMBER: HA-93-0754
fill in this form completely

893-9557

Date Received (APA): 07/06/94

OWNER INFORMATION
Last Name: GENTRY | Owner First Name: BOWER
Street or RFD: 1123 DROYSTON PL
Town: BEL AIR | State: Md | Zip: 21015

DRILLER INFORMATION
Driller's Name: GURVIS JONES | License No: MWD 47
Firm Name: GURVIS JONES WELL DRILLING INC.
Address: 1220 PROSPECT MILL RD. BELAIR MD 21015
Signature: Gurvis Jones | Date: 7-2-92

WELL INFORMATION
B 2
APPROX. PUMPING RATE (GAL. PER MIN.): 5
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 500

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- (D) HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- (F) FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
- (I) INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOV. OTHER (REQUIRES APPROPRIATION PERMIT)
- (P) PUBLIC OR PRIVATE WATER COMPANY (REQUIRES APPROPRIATION PERMIT AND STATE HEALTH DEPARTMENT APPROVAL)
- (T) TEST, OBSERVATION, MONITORING (MAY REQUIRE APPROPRIATION PERMIT)

APPROXIMATE DEPTH OF WELL: 150 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- (N) THIS WELL WILL NOT REPLACE AN EXISTING WELL
- (Y) THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- (S) THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY
- (D) THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENDED (IF AVAILABLE)

Not to be filled in by driller (OEP USE ONLY)
APPROP. PERMIT NUMBER: HA93GAP0386(02)
FORCE (WRITE INITIALS IN BOX) PERMIT No. HA-93-0754

B 3
LOCATION OF WELL/M 42, B4, 8331
COUNTY: HARFORD
SUBDIVISION: LANDS OF BLEVINS | Sylvia
SECTION | LOT: 3
NEAREST TOWN: FULFORD
MILES FROM TOWN (enter 0 if in town): 1 MI

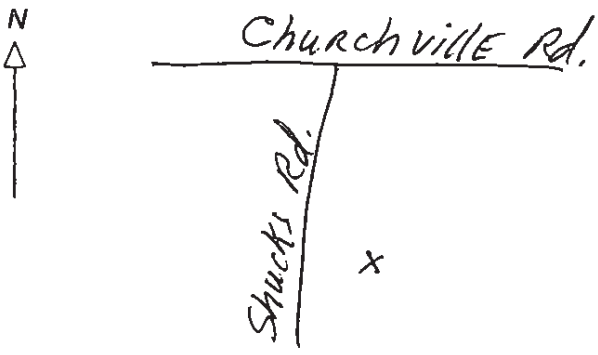
B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX)
NW 8-9 | N 8 | NE 8-9 | W 8 | TOWN | E 8 | SW 8-9 | S 8 | SE 8-9

NEAR WHAT ROAD: Shucks Rd.
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH (N) | WEST (W) | EAST (E) | SOUTH (S)
DISTANCE FROM ROAD: 25
ENTER FT or MI: FT.

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
COUNTY NAME: Harford | COUNTY NO.: 12
STATE SIGNATURE | INSERT S
DATE ISSUED: 072994 | CO SIGNATURE: Randy Mark W. | EXP. DATE: 7/29/95
NORTH GRID: 624000 | EAST GRID: 1001000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X
SOURCES OF DRILLING WATER
1.
2.
3.
WRITE THE BOX NUMBER FROM THE MAP HERE
E 1000
N 620
000 000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS

ORIGINAL

C 1 6800 (1 2 3 6) (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

SEQUENCE NO. (DENV USE ONLY)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received AUG 4 1994 (8 13)

DATE WELL COMPLETED 08 03 94 (15 20)

Depth of Well 150 (22 26) (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-93-0754 (28 29 30 31 32 33 34 35 36 37)

OWNER Gentry, Bower (last name / first name)

STREET OR RFD Schucks Rd TOWN Milford

SUBDIVISION L of Sylvia Blevins SECTION Map 42, P4, p331 LOT 3

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	Check if water bearing
BROWN SANDY CLAY SOIL	0	15	
SOFT BROWN WEATHERED SAND ROCK	15	50	
FRACTURED SAND ROCK	50	60	
HARD GRAY GRANITE	60	150	✓

IN HARD ROCK AREAS, IDENTIFY SPECIFICALLY WHERE SATURATED FRACTURES WERE OBSERVED.

WELL HYDROFRACTURED (yes Y / no N)

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS IDENT. NO. 47

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION) Gwin Jones

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) (yes Y / no N) (43 44)

TYPE OF GROUTING MATERIAL

CEMENT C M (45 46) BENTONITE CLAY B C (45 46)

NO. OF BAGS 18 NO. OF POUNDS 1692

GALLONS OF WATER 108

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 52) ft. to 63 (54 58) ft. (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: S T STEEL; C O CONCRETE; P L PLASTIC; O T OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
P L (80 81)	6 (83 84)	63 (86 70)

EACH CASING — OTHER CASING (if used)

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below: S T STEEL; B R BRASS BRONZE; H O OPEN HOLE; P L PLASTIC; O T OTHER

C 2 (1 2)

EACH SCREEN

	DEPTH (nearest ft.)	
1	40 (8 9)	63 (11 15) / 150 (17 21)
2	(23 24)	(26 30) / (32 36)
3	(38 39)	(41 45) / (47 51)

SLOT SIZE 1 ____ 2 ____ 3 ____

DIAMETER OF SCREEN (56 60) (NEAREST INCH)

from ____ to ____

GRAVEL PACK

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 (68)

MDE USE ONLY
(NOT TO BE FILLED IN BY DRILLER)

T (70) TELESCOPE CASING

(E.R.O.S.) (72) LOG INDICATOR

W Q (74 75 76) OTHER DATA

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) 3 (8 9)

PUMPING RATE (gal. per min. to nearest gal.) 15 (11 15)

METHOD USED TO MEASURE PUMPING RATE BUCKET + WATCH

WATER LEVEL (distance from land surface)

BEFORE PUMPING 18 (17 20)

WHEN PUMPING 36 (22 25)

TYPE OF PUMP USED (for test)
- A air (27)
- P piston (27)
- T turbine (27)
- C centrifugal (27)
- R rotary (27)
- O other (describe below) (27)
- J jet (27)
- S submersible (27)

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO) NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS EXCEPT HOME USE

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX - SEE ABOVE: (28)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

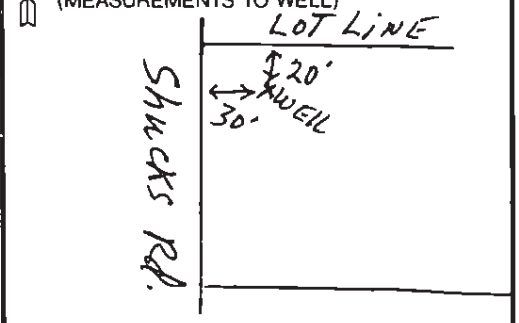
PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)
- + above (49)
- − below (49)

LAND SURFACE 1 (50 51) (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND/OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



ORIGINAL - STATE

C 1 2862 — SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY DATE Received MM DD YY

DATE WELL COMPLETED: MM 9 DD 15 YY 07

Depth of Well: 265 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA - 93 - 0754

OWNER: HARFORD COUNTY Public Schools

STREET OR RFD: 102 South Hickory Ave (last name / first name) TOWN: Bel Air

SUBDIVISION: Land of Blevins SECTION: Map 30 Parcel 878 LOT: 3

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Deepened existing well			
hard gray rock	150	236	
m. hard gray rock	236	240	
hard gray rock	240	263	
m. hard gray rock	263	265	
6" hammer shanked off in the bottom of the hole			

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MWD 304

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MWD 564

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] BENTONITE CLAY [BC]

NO. OF BAGS ____ NO. OF POUNDS ____

GALLONS OF WATER ____

DEPTH OF GROUT SEAL (to nearest foot)

from ____ ft. TOP to ____ ft. BOTTOM

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2

DEPTH (nearest ft.)

EACH SCREEN

1 ____ from ____ to ____

2 ____ from ____ to ____

3 ____ from ____ to ____

SLOT SIZE 1 ____ 2 ____ 3 ____

DIAMETER OF SCREEN ____ (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

from	to

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

70 TELESCOPE CASING ____ 72 LOG INDICATOR ____ 74 75 76 OTHER DATA ____

C 3

PUMPING TEST
HOURS PUMPED (nearest hour): 1

PUMPING RATE (gal. per min.): 15.0

METHOD USED TO MEASURE PUMPING RATE: timer

WATER LEVEL (distance from land surface)

BEFORE PUMPING: 16 ft.

WHEN PUMPING: 265 ft.

TYPE OF PUMP USED (for test)

[A] air [P] piston [T] turbine

[C] centrifugal [R] rotary [O] other (describe below)

[J] jet [S] submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. ____

CAPACITY: GALLONS PER MINUTE (to nearest gallon) ____

PUMP HORSE POWER ____

PUMP COLUMN LENGTH (nearest ft.) ____

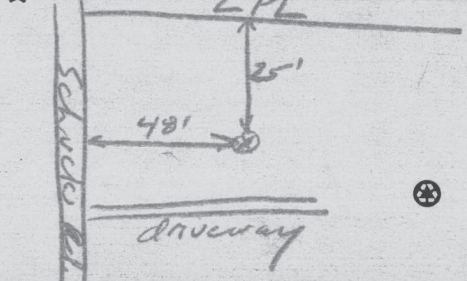
CASING HEIGHT (circle appropriate box and enter casing height)

[+] above [−] below LAND SURFACE

1 (nearest) foot

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

COUNTY

EMERGENCY/TEMP NO. IF ANY

B 1 | 3625 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-94-5276

fill in this form completely

734-4038

Date Received (APA): 8/19/02

OWNER INFORMATION

Last Name: BLEVINS FAMILY PARTNERSHIP
Owner / First Name
Street or RFD: 107 ~~Shucks~~ Schucks Rd.
Town: BEL AIR State: MD Zip: 21015

DRILLER INFORMATION

Driller's Name: GURVIS JONES License No: MWD047
Firm Name: GURVIS JONES WELL DRILLING INC
Address: 1220 PROSPECT MILL Rd. BELAIR, Md. 21015
Signature: Gurvis Jones Date: 8-19-02

B 2 WELL INFORMATION

APPROX PUMPING RATE (GAL PER MIN): 5
AVERAGE DAILY QUANTITY NEEDED (GAL PER DAY): 500

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- ~~X~~ F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- T TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 260 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX) S-3

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- ~~X~~ THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

Hand Dug

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

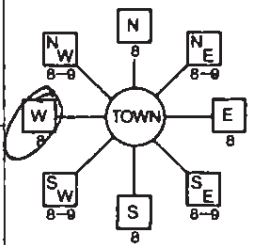
APPROP PERMIT NUMBER: G
PERMIT No: HA-94-5276

B 3 LOCATION OF WELL

COUNTY: Harford
SUBDIVISION:
SECTION: LOT:
NEAREST TOWN: Churchville
MILES FROM TOWN (enter 0 if in town): 1 M

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



107 Schucks Rd.
NEAR WHAT ROAD

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

DISTANCE FROM ROAD: 200 FT.
ENTER FT OR MI
TAX MAP: 42 BLK. 4B PARCEL 331
03177939

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Harford COUNTY NO: 12
STATE SIGNATURE
INSERT S
DATE ISSUED: 8/29/02 CO SIGNATURE: Peter D. Smith EXP DATE: 8/29/03
NORTH GRID: 626 000 EAST GRID: 1003 000

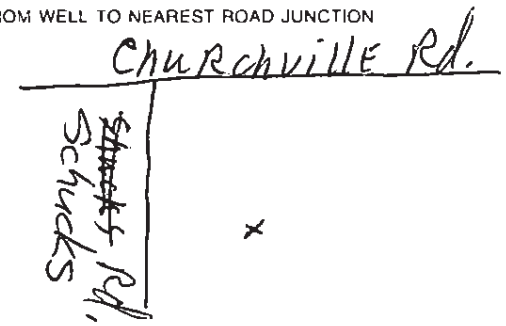
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000
N 620
000
000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS

DENV-Permit 97

ORIGINAL

C 1 | 12988 | SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER: 12 Tax # 03177939

ST/CO USE ONLY
DATE Received: MM 08 DD 0 YY 13

DATE WELL COMPLETED: MM 09 DD 21 YY 02

Depth of Well: 400 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA-94-5276

OWNER: Blevins Family Partnership (last name)
STREET OR RFD: 107 Schucks Rd. (numbering) TOWN: Churchville
SUBDIVISION: Map 42, Parcel 331 SECTION: LOT:

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
BROWN SOIL	0	21	
WEATHERED GRAY ROCK	21	60	
HARD GRAY ROCK	60	400	✓
WATER BEARING AT: 75', + 340'			

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes (Y) no (N)

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT. AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MWD047
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MSD137
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes (Y) no (N)

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT (CM) BENTONITE CLAY (BC)

NO. OF BAGS: 20 NO. OF POUNDS: 1880

GALLONS OF WATER: 120

DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. (TOP) to 63 ft. (BOTTOM)
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below:
ST STEEL | CO CONCRETE | PL PLASTIC | OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	6	63

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below:
ST STEEL | BR BRASS BRONZE | NO OPEN HOLE | PL PLASTIC | OT OTHER

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	NO	63	400
2			
3			

SLOT SIZE 1 ____ 2 ____ 3 ____

DIAMETER OF SCREEN ____ (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

from	to

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

PUMPING TEST
HOURS PUMPED (nearest hour): 3

PUMPING RATE (gal. per min.): 5

METHOD USED TO MEASURE PUMPING RATE: BUCKET

WATER LEVEL (distance from land surface)
BEFORE PUMPING: 32 ft.
WHEN PUMPING: 122 ft.

TYPE OF PUMP USED (for test)
A air | P piston | T turbine | C centrifugal | R rotary | O other (describe below) | J jet | S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

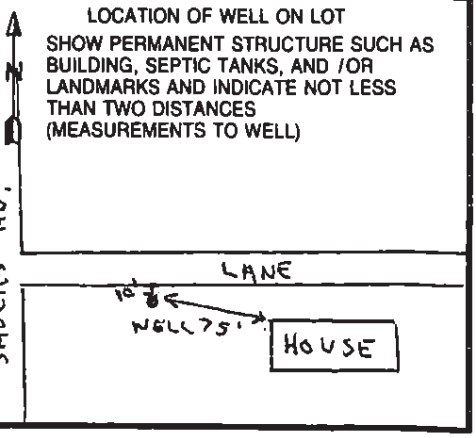
CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)
(+) above / (−) below LAND SURFACE
1 (nearest) foot

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 STATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION
2500 BROENING HIGHWAY, BALTIMORE, MARYLAND 21224, (410) 631-3784

****

WATER WELL ABANDONMENT-SEALING REPORT FORM

****

2004 ...nd Water

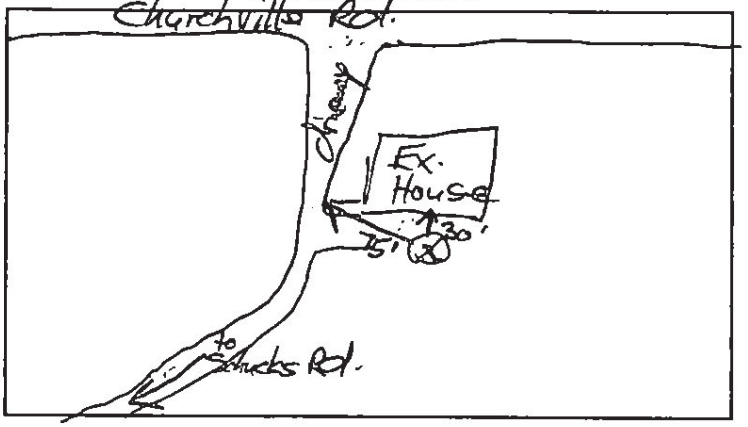
SUBMIT COPIES OF COMPLETED FORM TO:

* COUNTY ENVIRONMENT AGENCY (contact MDE, WMA if address needed)
* WELL OWNER
* MDE, WATER MANAGEMENT ADMINISTRATION, WELL PROGRAM

DATE WELL ABANDONED: 5/7/04 (month/day/year)

* PERMIT NUMBER OF ABANDONED WELL (if any) NA - -
* PERMIT NUMBER OF REPLACEMENT WELL HA-94-5276
* PERSON ABANDONING WELL: George Thomas Blevins WELL DRILLERS LICENSE NUMBER: _____
* OWNER'S NAME: Blevins Family Limited Partnership CIRCLE: MWD/MSD/MGD
* WELL LOCATION:
  COUNTY: Harford
  NEAREST TOWN: Fulford
  TAX MAP 42 BLOCK 4B PARCEL 331
  SUBDIVISION: _____
  SECTION: - LOT: -
  NEAREST ROAD: 2215 Churchville Rd
  Tax # 03177939

SITE LOCATION MAP



* TYPE OF WELL BEING ABANDONED:
  _____ DRILLED ___✓___ JETTED
  _____ BORED/AUGERED ___✓___ HAND DUG
  _____ OTHER (specify) _____
* USE CODE:
  ___✓___ DOMESTIC _____ MUNICIPAL/PUBLIC
  _____ IRRIGATION _____ INDUSTRIAL
  _____ TEST/OBSERVATION _____ GEOTHERMAL
* TYPE OF CASING:
  _____ STEEL ___✓___ PLASTIC
  _____ CONCRETE _____ OTHER (specify) stone
* SIZE OF CASING: 42 INCHES IN DIAMETER
* DEPTH OF WELL: 20 FEET DEEP
* WAS ANY CASING REMOVED? ___ YES ___✓___ NO
  if yes, length removed, in feet: _____
* WAS CASING RIPPED OR PERFORATED? ___ YES ___✓___ NO

LOG OF SEALING MATERIAL

MATERIAL	FEET FROM	FEET TO
Crush-n-Run	20	0

VOLUME OF MATERIAL USED: 22 tons

Peter J. Smith — MWD/MSD/MGD — 5/7/04
SIGNATURE-MASTER WELL DRILLER OR SUPERVISING SANITARIAN LICENSE # CIRCLE ONE DATE

C 1 | 4800 | SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN [illegible] DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM 07 DD 28 YY 09
15 20

Depth of Well 22 600 26
(TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-95-1458
28 29 30 31 32 33 34 35 36 37

OWNER Harford County Public Schools (last name)
STREET OR RFD 2215 E. Churchville Rd. (first name) TOWN Churchville
SUBDIVISION Schucks Corner LLC SECTION LOT TW-1

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Dirt	0	1	
Soft brown	1	20	
hard gray rock	20	78	
med tan rock	78	81	
hard gray rock	81	88	
m. hard tan "	88	89	
hard gray "	89	460	
m. hard gray "	460	462	
hard gray "	462	559	
m. hard gray "	559	560	✓
hard gray rock	560	600	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes Y no N

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MWD 304
David Kelly
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MWD 910
Scott Dy

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y 44 no N 44

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT CM 45 46 BENTONITE CLAY BC 45 46
NO. OF BAGS 6 NO. OF POUNDS 364
GALLONS OF WATER 30
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. 48 TOP 52 to 25 ft. 54 BOTTOM 58
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
ST STEEL CO CONCRETE PL PLASTIC OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	6 (63 64)	25 (66 70)

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below
ST STEEL BR BRASS BRONZE PL PLASTIC HO OPEN HOLE OT OTHER

C 2 (1 2)

DEPTH (nearest ft.)

EACH SCREEN			
1	40 (8 9)	25 (11 15)	600 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 ____ 2 ____ 3 ____
DIAMETER OF SCREEN ____ (NEAREST INCH) 56 60

	from	to
GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68		68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
70 72 74 75 76
TELESCOPE CASING LOG INDICATOR OTHER DATA

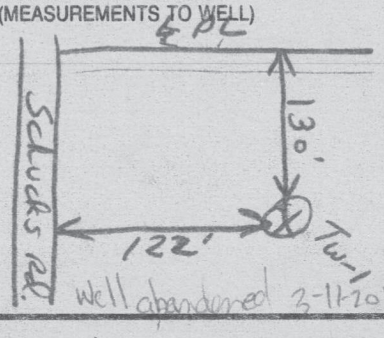
C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) 1 (8 9)
PUMPING RATE (gal. per min.) 0.5 (11 15)
METHOD USED TO MEASURE PUMPING RATE timer
WATER LEVEL (distance from land surface)
BEFORE PUMPING 28 ft. (17 20)
WHEN PUMPING 600 ft. (22 25)

TYPE OF PUMP USED (for test)
A air (27) P piston (27) T turbine (27)
C centrifugal (27) R rotary (27) O other (describe below) (27)
J jet (27) S submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)
CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)
PUMP HORSE POWER (37 41)
PUMP COLUMN LENGTH (nearest ft.) (43 47)
CASING HEIGHT (circle appropriate box and enter casing height)
+ above (49) LAND SURFACE
– below (49)
1 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

COUNTY

MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAG NT ADMINISTRATION
2500 BROENING HIGHWAY, BALTIMORE, MARYLAND 21224, (410) 631-3784

****

WATER WELL ABANDONMENT-SEALING REPORT FORM

****

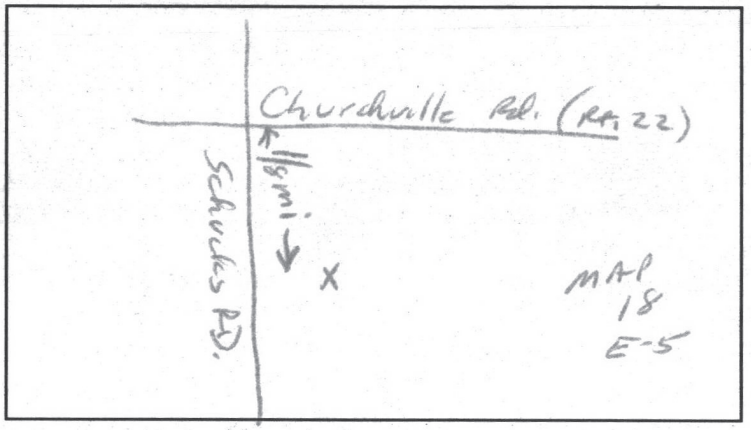
SUBMIT COPIES OF COMPLETED FORM TO:

* COUNTY ENVIRONMENT AGENCY (contact MDE, WMA if address needed)
* WELL OWNER
* MDE, WATER MANAGEMENT ADMINISTRATION, WELL PROGRAM

DATE WELL ABANDONED: Dec. 30, 09 (month/day/year)

* PERMIT NUMBER OF ABANDONED WELL (if any) HA -95- 1458
* PERMIT NUMBER OF REPLACEMENT WELL None - -
* PERSON ABANDONING WELL: David Kelly
  WELL DRILLERS LICENSE NUMBER: 304
  CIRCLE: MWD/MSD/MGD
* OWNER'S NAME: Harford Co. Public Schools
* WELL LOCATION:
  COUNTY: HARFORD
  NEAREST TOWN: Churchville
  TAX MAP 42 BLOCK 4B PARCEL 454
  SUBDIVISION: Schucks Corner LLC
  SECTION: _____ LOT: _____
  NEAREST ROAD: 2215 E. Churchville Rd

SITE LOCATION MAP



* TYPE OF WELL BEING ABANDONED:

  ✓ DRILLED _____ JETTED
  _____ BORED/AUGERED _____ HAND DUG
  _____ OTHER (specify) _____

* USE CODE:

  _____ DOMESTIC _____ MUNICIPAL/PUBLIC
  _____ IRRIGATION _____ INDUSTRIAL
  ✓ TEST/OBSERVATION _____ GEOTHERMAL

* TYPE OF CASING:

  _____ STEEL ✓ PLASTIC
  _____ CONCRETE _____ OTHER (specify)

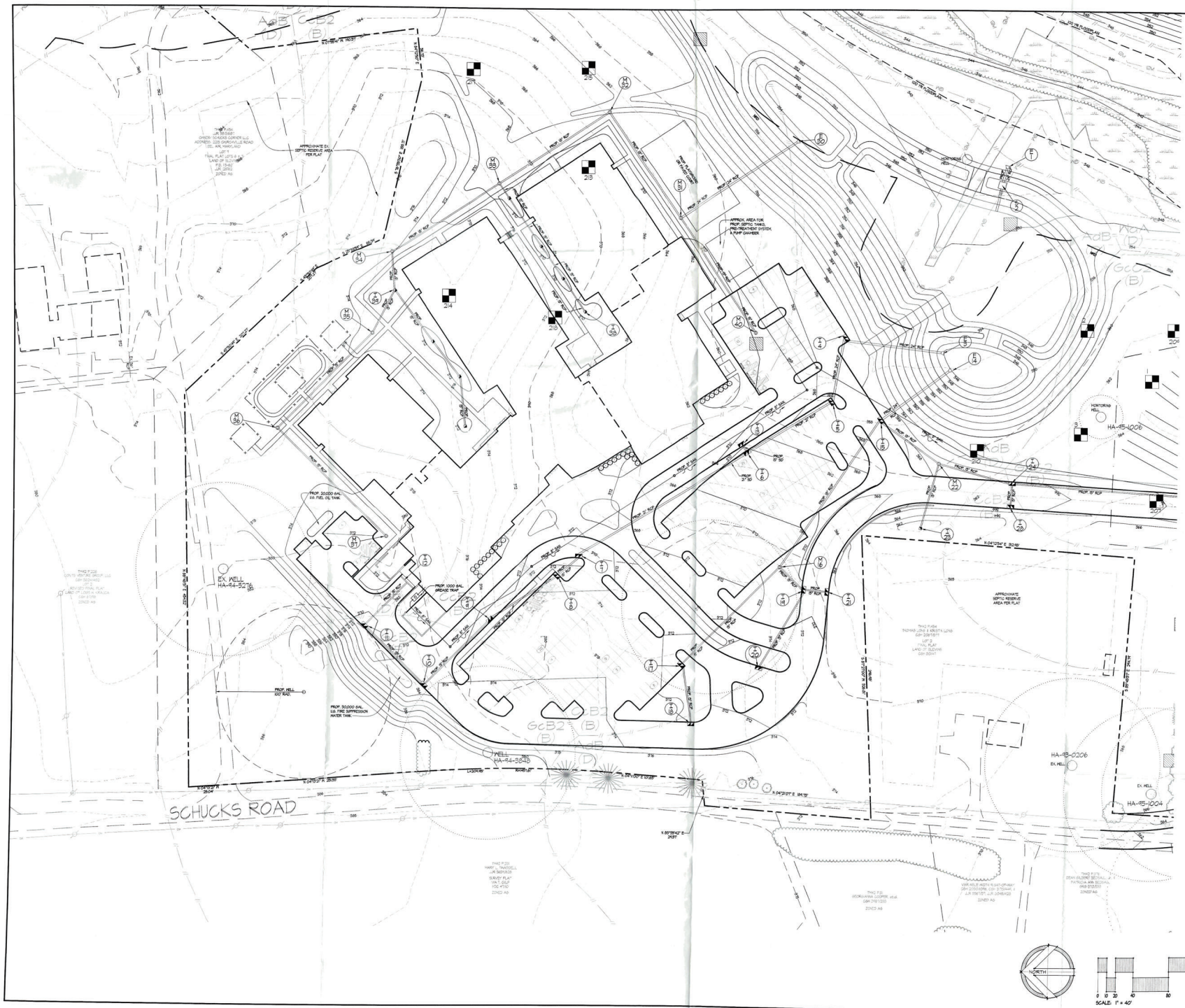
* SIZE OF CASING: 6 INCHES IN DIAMETER
* DEPTH OF WELL: 600 FEET DEEP
* WAS ANY CASING REMOVED? ✓ YES _____ NO
  if yes, length removed, in feet: 2
* WAS CASING RIPPED OR PERFORATED? ___ YES ✓ NO

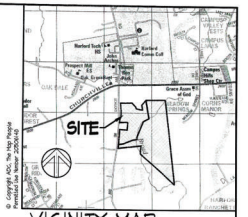
LOG OF SEALING MATERIAL

MATERIAL	FEET FROM	FEET TO
bentonite hole plug	0	50
clean fill	50	600

VOLUME OF MATERIAL USED: 10 cu. ft. bentonite

David Kelly — 304 — MWD/MSD/MGD — 12/30/09
SIGNATURE-MASTER WELL DRILLER OR SUPERVISING SANITARIAN — LICENSE # — CIRCLE ONE — DATE





VICINITY MAP 1"=2000'

LEGEND

- PROPERTY LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING TREES
- PROPOSED PLANTING
- EXISTING ROAD
- PROPOSED ROAD
- PROPOSED WALK
- EX. 15" SD — EXISTING STORM DRAIN
- PROP. 30" RCCP — PROPOSED STORM DRAIN
- EX. 8" WATER — EXISTING WATER
- PROP. 8" WATER — PROPOSED WATER
- EX. 8" SAN. — EXISTING SANITARY
- PROP. 8" SAN. — PROPOSED SANITARY
- EXISTING ELECTRIC
- PROPOSED ELECTRIC
- EXISTING FENCE
- PROPOSED FENCE
- EXISTING STREAM
- 100 YR FLOODPLAIN
- FOREST RETENTION AREA
- NRD — NATURAL RESOURCE DISTRICT
- WETLANDS LIMITS
- WB — WETLAND BUFFER LINE
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- NeB2 GcB2 — SOILS LINE
- EXISTING MONITORING WELL
- EXISTING WELL
- PERC TESTS

GROUNDWATER APPROPRIATION PROJECT LOCATION PLAN

SCHUCKS ROAD ELEMENTARY SCHOOL & SCHUCKS ROAD REGIONAL PARK

REVISIONS

SITE RESOURCES INCORPORATED
Comprehensive Land Planning & Site Design Services
14335 Jarrettsville Pike • Phoenix, Maryland 21131
(410) 683-3288 • Fax (410) 683-3289

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DRAWN BY: AM	CONTRACT NO.:
DESIGNED BY: JLH	SCALE: 1"=40'
CHECKED BY: SSC	SRI PROJECT NO. 08035
DATE: JULY 7, 2009	SHEET 1 OF 1

NORTH

0 10 20 40 80 100

SCALE: 1" = 40'

Z:\2008\08035-Schucks Rd Elementary School\Dwg\Groundwater_Appropriation_Permit_Plan.dwg, 7/7/2009 4:49:22 PM

LEGEND

- PROPERTY LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING TREES
- PROPOSED PLANTING
- EXISTING ROAD
- PROPOSED ROAD
- PROPOSED MAIL
- EX. 15" SD
- PROP. 30" RCCP
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- EX. 8" WATER
- PROP. 8" WATER
- EXISTING WATER
- PROPOSED WATER
- EX. 8" SAN
- PROP. 8" SAN
- EXISTING SANITARY
- PROPOSED SANITARY
- EXISTING ELECTRIC
- PROPOSED ELECTRIC
- EXISTING FENCE
- PROPOSED FENCE
- EXISTING STREAM
- 100 YR FLOODPLAIN
- FOREST RETENTION AREA
- NRD
- NATURAL RESOURCE DISTRICT
- WETLANDS LIMITS
- WD
- WETLAND BUFFER LINE
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- NeB2 GcB2
- SOILS LINE
- EXISTING MONITORING WELL
- EXISTING WELL
- PERC TESTS

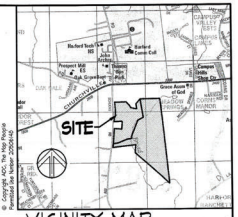
GROUNDWATER APPROPRIATION
PROJECT LOCATION PLAN

SCHUCKS ROAD
ELEMENTARY SCHOOL &
SCHUCKS ROAD REGIONAL PARK

REVISIONS

SITE RESOURCES
LAND PLANNING
Comprehensive Land Planning & Site Design Services
14015 Smith Rd. • Phoenix, Maryland 21131
(410) 329-1288 • fax (410) 592-2258

DRAWN BY: AM	CONTRACT NO.:
DESIGNED BY: JLR	SCALE: 1"=40'
CHECKED BY: SGC	SRI PROJECT NO. 08035
DATE: JANUARY 13, 2009	SHEET 1 OF 1



VICINITY MAP 1"=2000'

LEGEND

- PROPERTY LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING TREES
- PROPOSED PLANTING
- EXISTING ROAD
- PROPOSED ROAD
- PROPOSED WALK
- EX. 15" SD — EXISTING STORM DRAIN
- PROP. 30" RCP — PROPOSED STORM DRAIN
- EX. 8" WATER — EXISTING WATER
- PROP. 8" WATER — PROPOSED WATER
- EX. 8" SAN. — EXISTING SANITARY
- PROP. 8" SAN. — PROPOSED SANITARY
- EXISTING ELECTRIC
- PROPOSED ELECTRIC
- EXISTING FENCE
- PROPOSED FENCE
- EXISTING STREAM
- 100 YR FLOODPLAIN
- FOREST RETENTION AREA
- NRD — NATURAL RESOURCE DISTRICT
- WETLANDS LIMITS
- WB — WETLAND BUFFER LINE
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- NeB2 GcB2 — SOILS LINE
- EXISTING MONITORING WELL
- EXISTING WELL
- PERC TESTS

NORTH

0 10 20 40 80 100
SCALE: 1" = 40'

GROUNDWATER APPROPRIATION
PROJECT LOCATION PLAN

SCHUCKS ROAD ELEMENTARY SCHOOL & SCHUCKS ROAD REGIONAL PARK

REVISIONS

SITE RESOURCES Incorporated
Comprehensive Land Planning & Site Design Services
14315 Jarrettsville Pike • Phoenix, Maryland 21131
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I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21663, EXPIRATION DATE: 09/30/2011

DRAWN BY: AM	CONTRACT NO.:
DESIGNED BY: JLH	SCALE: 1"=40'
CHECKED BY: SSC	SRI PROJECT NO. 08035
DATE: JANUARY 13, 2009	SHEET 1 OF 1

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Z:\08\08035 Schools Rd Elementary School\Dwg\Groundwater_Appropriation_Permit_Plan.dwg, 1/13/2009 2:42:53 PM, JR

Map Scale: 1:3,790 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Harford County Area, Maryland
Survey Area Data: Version 15, Aug 26, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 23, 2020—Nov 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AdB	Aldino silt loam, 3 to 8 percent slopes	22.0	41.4%
CcB2	Chester silt loam, 3 to 8 percent slopes	12.5	23.5%
GcB2	Glenelg loam, 3 to 8 percent slopes	1.6	3.1%
GcC	Glenelg loam, 8 to 15 percent slopes	2.4	4.6%
GcD	Glenelg loam, 15 to 25 percent slopes	1.1	2.2%
Hb	Hatboro silt loam	5.0	9.4%
WaA	Watchung silt loam, 0 to 3 percent slopes	8.5	15.9%
Totals for Area of Interest		**53.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor

Kaitlin Geary

From: Amy M. Parrish
Sent: Wednesday, July 13, 2022 4:34 PM
To: Kaitlin Geary
Subject: FW: 22015 [External] JAS Site Planning Info Follow-up

Answer on Archer school only their students use the pool, but we waiting on how many

Amy M. Parrish, P.G., LEHS
Senior Managing Hydrogeologist
Environmental

Barton&Loguidice
Office: 410.795.4626
Mobile: 410.371.2586
Email: aparrish@bartonandloguidice.com
Website | LinkedIn | Twitter | Facebook | Vimeo

From: Peter Soprano [mailto:psoprano@siteresourcesinc.com]
Sent: Wednesday, July 13, 2022 2:36 PM
To: Zachary Klee <zklee@gparch.com>
Cc: Scott Eschbach <seschbach@gparch.com>; Kate Heil <kheil@siteresourcesinc.com>; Jennifer Harrington <jharrington@siteresourcesinc.com>; Amy M. Parrish <aparrish@bartonandloguidice.com>
Subject: RE: 22015 [External] JAS Site Planning Info Follow-up

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Hi Zak,

I believe the therapy pool is just for the student population moving over from John Archer. Can you please confirm?

Best,

Peter Soprano, PE

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DD 443.689.0438
www.siteresourcesinc.com

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From: Zachary Klee <zklee@gparch.com>
Sent: Wednesday, June 22, 2022 2:06 PM
To: Peter Soprano <psoprano@siteresourcesinc.com>
Cc: Scott Eschbach <seschbach@gparch.com>
Subject: FW: [External] JAS Site Planning Info Follow-up

Peter,

Please see response from HCPS below. There are still a couple of outstanding questions that their looking into.

Zak

Zachary A. Klee AIA, NCARB, LEED AP BD+C
Senior Associate
d 240.965.0742 | o 301.595.1000
11720 Beltsville Drive, Suite 600
Calverton, MD 20705
zklee@gparch.com | grimmandparker.com
Calverton | Tysons | Charlottesville

-------- Original message --------
From: "Miller, Harry" <Harry.Miller@hcps.org>
Date: 6/22/22 10:12 AM (GMT-05:00)
To: Zachary Klee <zklee@gparch.com>
Cc: Scott Eschbach <seschbach@gparch.com>, "Valentino, Missy" <Mary.Valentino@hcps.org>
Subject: RE: [External] JAS Site Planning Info Follow-up

See below.

Harry Miller
Assistant Supervisor
Planning & Construction
2209 Conowingo Rd.
Bel Air, MD 21015
410-809-6120
www.HCPS.org

From: Zachary Klee <zklee@gparch.com>
Sent: Tuesday, June 21, 2022 9:53 AM
To: Miller, Harry <Harry.Miller@hcps.org>
Cc: Scott Eschbach <seschbach@gparch.com>
Subject: [External] JAS Site Planning Info Follow-up

Harry,

Good talking with you yesterday.

Here'e the summary of outstanding info we're either looking for or looking to confirm. As discussed yesterday, you may not have all the answers yet but hopefully we can agree on some reasonable assumptions so we can proceed with the preliminary planning studies including sizing/locating the waste treatment facility and septic field, traffic analysis, etc.

Just to keep things together, I noted previous responses in red.

- *Percent impervious acres estimate, if available -*
    - *For another HCPS school project of a similar size, our total proposed impervious was about 38% of the total site/study area. This equated to about 9-10 acres of impervious. Until we have more detailed concepts to share with them, I intend to provide this number unless you disagree. This sounds okay to me as a starting point to make sure we are within target parameters for the site and proposed usage/population.*
- *Flow meter data from John Archer, if available -*
    - *Can you please request this from HCPS? If they monitor their water meter data, this info is hopefully easy to obtain and would help with design estimates. Water use data has been provided in Excel format.*
- *Population (estimated student enrollment) and Water use information, if available*
    - *From the RFP, the most conservative population number I'm seeing for JAS is the state rated capacity of 264. Could you please confirm for JAS and the new ES? I believe they are just looking for a conservative number at this point so they can estimate. Missy is working on this (with G+P and our stakeholders).*
    - *Assuming there will be showers with the therapy pool? Showers will be included.*
    - *Full food prep and cooking Kitchen or warming kitchen only? This is a warming kitchen. This is also an interesting question. In our warming kitchens, we handle lots of raw items, and prepare essentially ready to eat items. So, other than making bulk items from scratch, these kitchens look virtually similar.*
    - *Not sure if BKM could provide a conservative estimate on overall plumbing demands at this point?*
- *Turf / Ball playing fields management, if available*
    - *Do we know if HCPS intends to have the site/fields irrigated? Impacts well design/capacity. No irrigation.*
    - *Do we know if HCPS plans to use fertilizer/pesticides in the play field areas? Impacts service areas. Fertilizer and herbicide treatment info has been provided.*
- *Traffic Group has the current JAS population at 58 staff and 136 students for a total of 194. Based on our conversation yesterday, that number may be high. Please confirm. I just talked to the AP. They had 138 students, 100 staff, 36 in the infants and toddlers program, and 64 itinerants.*
- *For planning purposes, what's a reasonable growth factor? I rounded what we think is the current population up to 200 and then put 25% on it, which got me to 250. Based on our conversation yesterday and another I had with Kieran, that may be too much. I am going to have to defer to Missy on this one.*
- *Best guess on the ES population is 700 including students and staff. Does that sound about right? Again, this is for planning purposes, so a high estimate is better than a low one. That is the number I have heard for conversation purposed.*
- *Please confirm current JAS schedule is 8:40 to 3:00. Busses arrive at 8:40, and dismissal starts at 2:45. Also, let us know if you think that may change. No clue.I know AACPS just changed the start/end times for all their schools based on grade level. How they expect working parents to get middle schoolers on the bus for a 9:15 start is beyond me.*

- *Do you all expect the ES and JAS to run on the same schedule or will they have staggered start/dismissal times? Maybe it's too early to know for sure but what's the best guess? JAS is already different from elementary which is 9-3:30.*
- *How many busses currently service JAS. 15*

Thanks Harry,
Zak

Zachary A. Klee AIA, NCARB, LEED AP BD+C
Senior Associate
d 240.965.0742 | o 301.595.1000
11720 Beltsville Drive, Suite 600
Calverton, MD 20705
zklee@gparch.com | grimmandparker.com
Calverton | Tysons | Charlottesville

Kaitlin Geary

From: Amy M. Parrish
Sent: Friday, June 17, 2022 4:54 PM
To: Peter Soprano; Kaitlin Geary
Subject: RE: [External] Archer Site and Traffic Questions

Very good thank you. We are reviewing and will circle back here as well.

Amy M. Parrish, P.G., LEHS
Senior Managing Hydrogeologist
Environmental

Barton&Loguidice
Office: 410.795.4626
Mobile: 410.371.2586
Email: aparrish@bartonandloguidice.com
Website | LinkedIn | Twitter | Facebook | Vimeo

From: Peter Soprano [mailto:psoprano@siteresourcesinc.com]
Sent: Thursday, June 16, 2022 5:00 PM
To: Amy M. Parrish <aparrish@bartonandloguidice.com>; Kaitlin Geary <kgeary@bartonandloguidice.com>
Subject: FW: [External] Archer Site and Traffic Questions

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Amy and Kaitlin,

Please see below.

Best,

Peter Soprano, PE

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DD 443.689.0438
www.siteresourcesinc.com

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From: Zachary Klee <zklee@gparch.com>
Sent: Tuesday, June 14, 2022 4:27 PM
To: Peter Soprano <psoprano@siteresourcesinc.com>
Subject: FW: [External] Archer Site and Traffic Questions

Peter,

Please see below regarding the ball field fertilizer and chemical treatments. Still working on the rest of the questions.

Zak

Zachary A. Klee AIA, NCARB, LEED AP BD+C
Senior Associate
d 240.965.0742 | o 301.595.1000
11720 Beltsville Drive, Suite 600
Calverton, MD 20705
zklee@gparch.com | grimmandparker.com
Calverton | Tysons | Charlottesville
CELEBRATING 50 YEARS

-------- Original message --------
From: "Morton, Chris" <Chris.Morton@hcps.org>
Date: 6/14/22 3:43 PM (GMT-05:00)
To: Zachary Klee <zklee@gparch.com>
Cc: Scott Eschbach <seschbach@gparch.com>, "Miller, Harry" <Harry.Miller@hcps.org>, "Valentino, Missy" <Mary.Valentino@hcps.org>, "Hanzevack, Richard" <Richard.Hanzevack@hcps.org>, "Beard, Patti Jo" <PattiJo.Beard@hcps.org>, "Earle, Kenneth" <Kenneth.Earle@hcps.org>
Subject: FW: [External] Archer Site and Traffic Questions

Hi Zak,

Here is information regarding the turf/ball fields.

Chris

From: Hanzevack, Richard <Richard.Hanzevack@hcps.org>
Sent: Tuesday, June 14, 2022 3:40 PM
To: Morton, Chris <Chris.Morton@hcps.org>; Valentino, Missy <Mary.Valentino@hcps.org>; Miller, Harry <Harry.Miller@hcps.org>; Beard, Patti Jo <PattiJo.Beard@hcps.org>
Cc: Earle, Kenneth <Kenneth.Earle@hcps.org>
Subject: FW: [External] Archer Site and Traffic Questions

Please see about herbicide Pesticides below. Thanks.

Rich Hanzevack
Assistant Supervisor Facilities Management
Environmental Services

HCPS
Harford County Public Schools
Facilities Management Department
2209 Conowingo Road
Bel Air, Maryland 21015
Phone: 410.638.4087

Fax: 410.638.4205

From: Earle, Kenneth <Kenneth.Earle@hcps.org>
Sent: Wednesday, June 8, 2022 11:20 AM
To: Beard, Patti Jo <PattiJo.Beard@hcps.org>; Hanzevack, Richard <Richard.Hanzevack@hcps.org>; Paligo, Laura <Laura.Paligo@hcps.org>
Subject: RE: [External] Archer Site and Traffic Questions

Good morning,
Please find my response regarding herbicide and pesticide use in blue.

Turf / Ball playing fields management, if available

- *Do we know if HCPS intends to have the site/fields irrigated? Impacts well design/capacity.*
- *Do we know if HCPS plans to use fertilizer/pesticides in the play field areas? Impacts service areas.*

-Athletic fields are fertilized yearly with a preemergent weed and feed. Note: currently only two primary sites have playing fields that are fertilized RFES & HIES.
-Herbicide weed killer is used at the JAES's current location at an average rate of 10 gallons per year.

Please make me aware if more detail is needed and how I can support.

Regards,

Ken Earle
Custodial Services Coordinator
Facilities Management
…….
HARFORD COUNTY PUBLIC SCHOOLS
Facilities Management Department
2209 Conowingo Road
Bel Air, Maryland 21015
(410) 638-4088

From: Beard, Patti Jo <PattiJo.Beard@hcps.org>
Sent: Monday, June 6, 2022 8:15 AM
To: Hanzevack, Richard <Richard.Hanzevack@hcps.org>; Paligo, Laura <Laura.Paligo@hcps.org>; Earle, Kenneth <Kenneth.Earle@hcps.org>
Subject: FW: [External] Archer Site and Traffic Questions

Please see the information requested below

From: Morton, Chris <Chris.Morton@hcps.org>
Sent: Friday, June 3, 2022 9:43 AM
To: Beard, Patti Jo <PattiJo.Beard@hcps.org>

Cc: Valentino, Missy <Mary.Valentino@hcps.org>; Miller, Harry <Harry.Miller@hcps.org>
Subject: FW: [External] Archer Site and Traffic Questions

Good morning, PJ,

The design team has some questions regarding the John Archer/New Elementary School Project. Some of the information we can provide and some information we will need to get from you folks. I know you are off today, but if we could discuss next week and pull this together, I would appreciate it. Thanks!

Chris

From: Zachary Klee <zklee@gparch.com>
Sent: Friday, June 3, 2022 8:54 AM
To: Morton, Chris <Chris.Morton@hcps.org>
Cc: Scott Eschbach <seschbach@gparch.com>
Subject: [External] Archer Site and Traffic Questions

Good morning Chris. Thanks for offering to help me out with these SRI and Traffic Group questions while Harry's away. BTW, it was nice to hear your and Karen's voices on the phone. You both sound relaxed and happy. I guess it is Friday!

Here's what I got from SRI:

Good morning Zak,

Our well and septic design consultant is asking the below questions. They have been working through the health department records we received and have requested additional information from HCHD to help determine what other areas onsite may be feasible as septic areas. In the interim, can you please help me answer the below? I'm available to discuss if helpful.

Well and Septic Design Consultant Questions:

- *Percent impervious acres estimate, if available -*
    - *For another HCPS school project of a similar size, our total proposed impervious was about 38% of the total site/study area. This equated to about 9-10 acres of impervious. Until we have more detailed concepts to share with them, I intend to provide this number unless you disagree.*
- *Flow meter data from John Archer, if available -*
    - *Can you please request this from HCPS? If they monitor their water meter data, this info is hopefully easy to obtain and would help with design estimates.*
- *Population (estimated student enrollment) and Water use information, if available*
    - *From the RFP, the most conservative population number I'm seeing for JAS is the state rated capacity of 264. Could you please confirm for JAS and the new ES? I believe they are just looking for a conservative number at this point so they can estimate.*
    - *Assuming there will be showers with the therapy pool?*
    - *Full food prep and cooking Kitchen or warming kitchen only?*
    - *Not sure if BKM could provide a conservative estimate on overall plumbing demands at this point?*
- *Turf / Ball playing fields management, if available*

- *Do we know if HCPS intends to have the site/fields irrigated? Impacts well design/capacity.*
- *Do we know if HCPS plans to use fertilizer/pesticides in the play field areas? Impacts service areas.*

And this was the request from Traffic Group:

I am looking to confirm/obtain some information on the current and proposed future John Archer School:

Current Faculty / Staff: ***58***
Current Enrollment: ***136***
Current Bell Schedule: ***8:40-3:00***
Current Number of Buses: ***Please Provide***

Please confirm the above numbers are correct. In addition, please provide information on the future proposed conditions so we can incorporate into our report.

Those numbers obviously don't include the elementary school and they are current numbers, not future. Still, it's helpful to know if they're accurate and whether or not they will increase. We're currently expecting that they will increase.

Talking with Laura in my office, we're thinking the ES will have a total population of about 700 and Archer will be around 250. Can you verify or clarify those numbers? Maybe a breakdown of students and staff and/or bus and car for the two programs? If they're on the same bell schedule combined numbers will be fine. If they're different bell schedules, we'll want to have numbers and times for each.

Thanks,
Zak

Zachary A. Klee AIA, NCARB, LEED AP BD+C
Senior Associate
d 240.965.0742 | o 301.595.1000
11720 Beltsville Drive, Suite 600
Calverton, MD 20705
zklee@gparch.com | grimmandparker.com
Calverton | Tysons | Charlottesville

Jennifer L. Harrington

From: John S. Easterling [jeasterling@GWWOINC.com]
Sent: Thursday, January 08, 2009 4:51 PM
To: Jennifer L. Harrington
Cc: Steve Crowe; Bob Morelock; jhau@chesenv.com; Brian D. Eschman; Admin
Subject: FW: 0901Campus Hills ES Groundwater Appropriation and Use Permit

Jennifer,

Please see the anticipated water use averages below from Kibart.

Let me know if you need any other information.

Thanks,
John

John Easterling, AIA, LEED™ AP
Senior Associate
GWWO, Inc./Architects
800 Wyman Park Dr. Suite 300
Baltimore, MD 21211
P: 410.332.1009 ext. 1130
F: 410.332.0038
jeasterling@gwwoinc.com

*** Visit our new website at **www.gwwoinc.com**.

From: Farshad Kassiri [mailto:fk@kibart.com]
Sent: Thursday, January 08, 2009 4:52 PM
To: John S. Easterling
Cc: Steve Brzezenski
Subject: RE: 0901Campus Hills ES Groundwater Appropriation and Use Permit

John,
The following are the anticipated water use averages:

15,520 Gallons per day (for annual average, based on 20 GPD/person)
19,400 Gallons per day (for highest monthly use, based on 25 GPD/person)

Thanks,
Farshad

Farshad Kassiri, P.E.
Vice President - Principal

Kibart, Inc.
Consulting Engineers
901 Dulaney Valley Rd, Suite 301
Towson, Maryland 21204
410.494.1111 (Phone)
410.494.1112 (Fax)
www.kibart.com

From: John S. Easterling [mailto:jeasterling@GWWOINC.com]
Sent: Wednesday, January 07, 2009 3:56 PM
To: Farshad Kassiri
Cc: Brian D. Eschman; Admin
Subject: FW: 0901Campus Hills ES Groundwater Appropriation and Use Permit

Farshad,

Can you help me answer Site Resources' question below? Note that the state rated capacity is still 696 students plus 80 staff.

Thanks,
John

John Easterling, AIA, LEED™ AP
Senior Associate
GWWO, Inc./Architects
800 Wyman Park Dr. Suite 300
Baltimore, MD 21211
P: 410.332.1009 ext. 1130
F: 410.332.0038
jeasterling@gwwoinc.com

*** Visit our new website at **www.gwwoinc.com.**

From: Jennifer L. Harrington [mailto:jharrington@siteresourcesinc.com]
Sent: Wednesday, January 07, 2009 2:46 PM
To: John S. Easterling
Cc: Steve Crowe; Bob Morelock; Joe Hau
Subject: 08035_Campus Hills ES Groundwater Appropriation and Use Permit

John -- We are preparing the permit application for GW appropriation for this project. Joe Hau, of CEM, has indicated to me that the two existing wells north of the proposed site have a yield of 15 and 17 gpm. Joe recommends that we try to use these wells. We may be able to transfer the permits on these wells and as long as water quality testing results are acceptable; these wells should be fine. We will also include in the permit that we are proposing a new well. For the permit, I need the anticipated average annual use in gallons per day and the estimated highest monthly use in gallons per day? Do you have this information?

thank you,

Jennifer Harrington, P.E.
Project Engineer

Site Resources, Inc.
14315 Jarrettsville Pike
Phoenix, Maryland 21131-0249
jharrington@siteresourcesinc.com
ph. 410.683.3388
fx. 410.683.3389

Jennifer L. Harrington

From: Craig Williams [CWilliams@mde.state.md.us]
Sent: Thursday, February 12, 2009 1:20 PM
To: Joseph Hau
Cc: Kevin Barnaba; Jennifer L. Harrington
Subject: Campus Hills Elem MW locations

Joe,

Elaborating on the voice message I just left you, I discussed the MW location map with Dr. Tien. He suggests upslope wells intended as permanent sampling stations be at least 50 feet from the related OSDS. Two are needed.

By that measure, the location of MW 1 looks OK, at least in Jennifer's larger scale exhibit. On your smaller scale exhibit (the one we would publish), it looks like it could be directly on the neighboring property line (10 feet to property line being the applicable standard.)

MWs 2 and 3 are the other potential candidates for upslope wells. Use of either as a water quality sampling location would require some carving of the potential OSDS area.

The adjustment relative to MW 2 would be to establish reasonable separation; the adjustment for MW 3 would be for reasonable landscape position.

Carving the OSDS to make room for either of these wells is potentially viable but would entail both generation and review of a revised OSDS exhibit. Designating a new upslope MW location would seem the simpler and more expedient solution.

As to downslope MW locations, MW 6 looks fine; we've already agreed one more location needs to be designated "somewhere" downslope of R1. It does not necessarily have to be 50' from the OSDS, but keeping it at or very close to the 350' contour interval would maximize flexibility for OSDS installation.

In light of these comments, I look forward to receiving from either you or Jennifer, a revised (8 1/2" by 11") exhibit of the potential OSDS area and the existing and/or intended locations of just those 4 monitoring wells intended for permanent water quality sampling points.

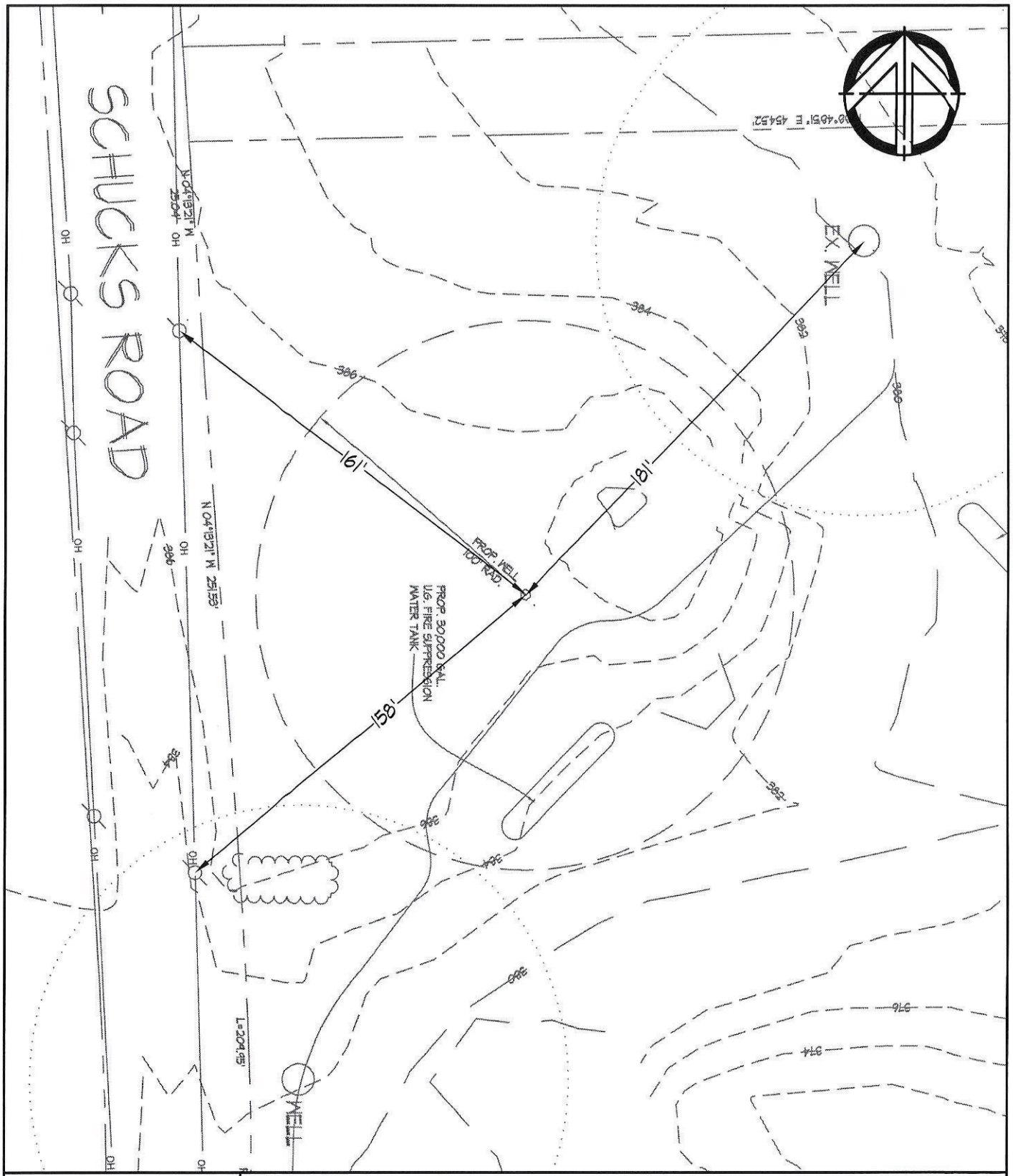
At that pont I can turn over the Discharge Permit Application to Dr. Tien for initial processing. Note that in this initial processing phase, a determination is made as to whether or not the application is eligible to move forward on the criteria of its consistency with the County Master Water and Sewer Plan. (Anticipate two to three week turn-around time on just this and any related administrative points of which I am not aware.)

Once that determination is made, receipt of the application can be published.

At that point, finally (Jennifer et al), I believe it is reasonable to consider the projected timelines for permit processing as being applicable here.

Thanks,

Craig Williams, Regional Consultant
On-site Systems Division
Wastewater Permits Program
410-537-3783 office
410-537-3163 fax



SITE RESOURCES

Comprehensive Land Planning & Site Design Services

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PROPOSED WELL LOCATION EXHIBIT
CAMPUS HILLS ELEMENTARY SCHOOL

SRI PROJ. NO.:	08035	DATE:	5/5/09		SCALE:	1" = 50'	
DESIGNED BY: sri		DRAWN BY: sri		CHECKED BY: sri		SHEET 1 OF 1	