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**PLANNING & ZONING COMMISSION**

ROBERT C. WHEATLEY, CHAIRMAN  
KIM HOEY STEVENSON, VICE-CHAIRMAN  
R. KELLER HOPKINS  
J. BRUCE MEARS  
HOLLY J. WINGATE



**Sussex County**

DELAWARE  
sussexcountyde.gov  
302-855-7878 T  
302-854-5079 F  
JAMIE WHITEHOUSE, MRTPI, AICP  
DIRECTOR

**PLANNING AND ZONING AND COUNTY COUNCIL INFORMATION SHEET**  
Planning Commission Public Hearing Date: April 22, 2021

Application: CZ 1922 (Baywood, LLC – Robert Tunnell, III)

Applicant: Baywood, LLC – Mr. Robert Tunnell, III  
34026 Anna’s Way, Suite 1  
Long Neck, DE 19966

Owner: ABC Woodlands, LLC  
P.O. Box 1389  
Easton, MD 21601

Site Location: Northern and southern sides of Long Neck Road (Route 23),  
approximately 500 feet east of John J. Williams Highway (Route 24)

Current Zoning: C-1 (General Commercial), B-1 (Neighborhood Business), CR-1  
(Commercial Residential)

Proposed Zoning: HR-1 – RPC (High Density Residential – Residential Planned  
Community)

Comprehensive Land  
Use Plan Reference: Coastal Area and Commercial

Councilmanic  
District: Mr. Hudson

School District: Indian River School District

Fire District: Indian River Fire District

Sewer: Sussex County

Water: Private Provider – Tidewater Utilities

Site Area: 54.38 ac. +/-

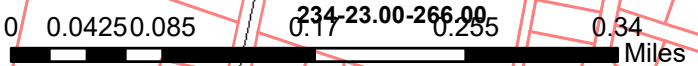
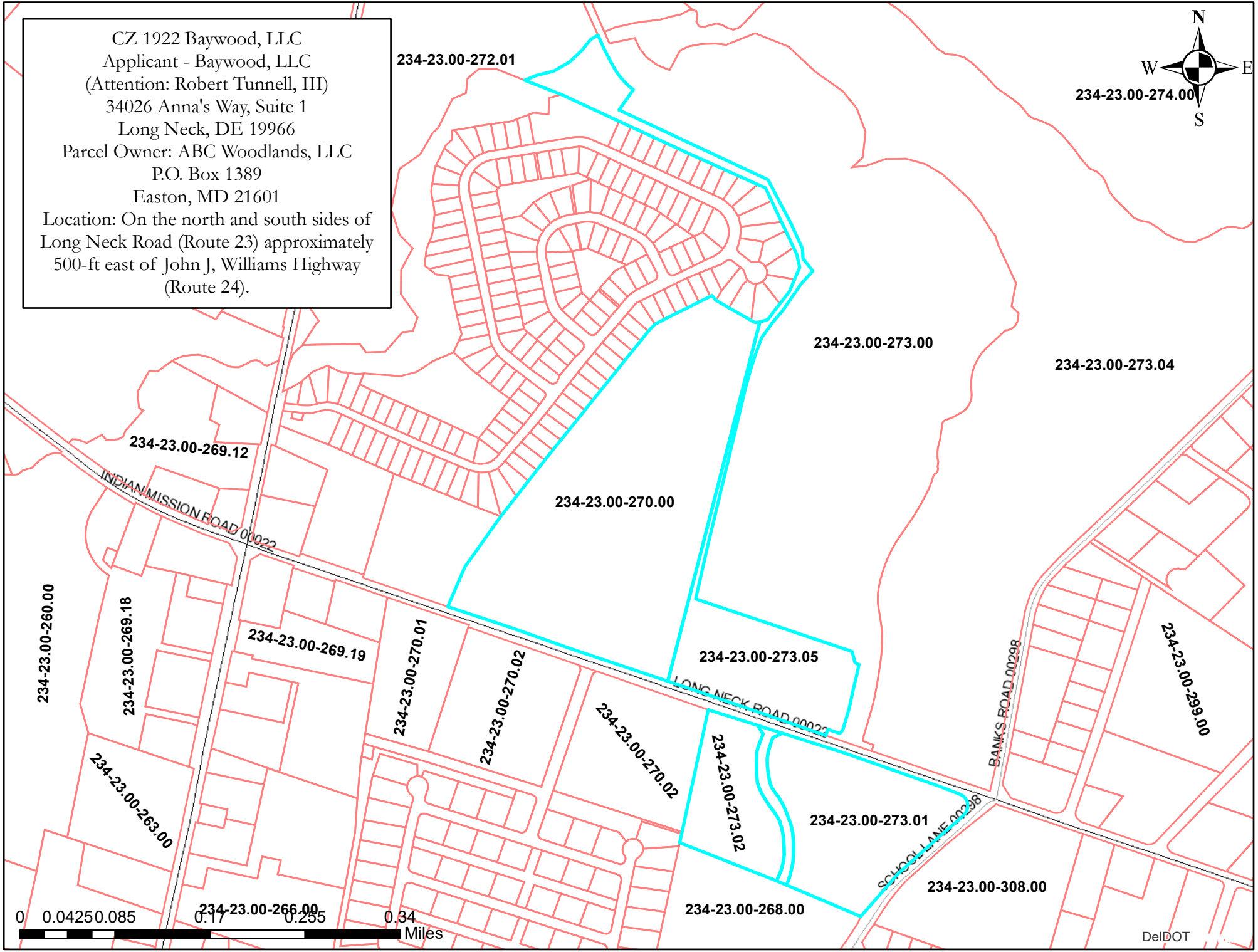
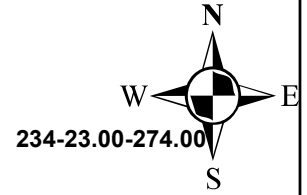
Tax Map ID.: 234-23.00-270.00, 273.01, 273.02, 273.03 & 273.05



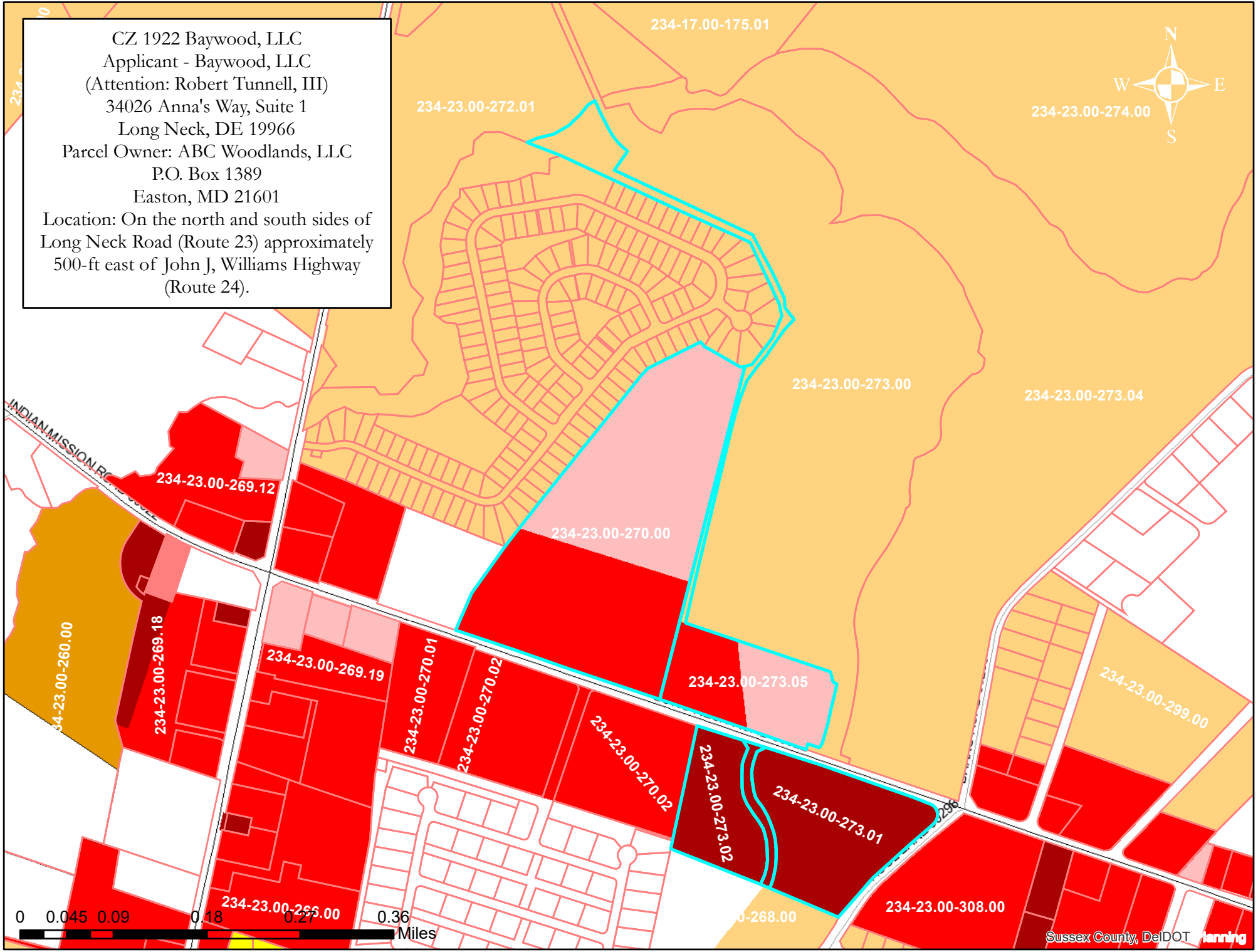
CZ 1922 Baywood, LLC  
Applicant - Baywood, LLC  
(Attention: Robert Tunnell, III)  
34026 Anna's Way, Suite 1  
Long Neck, DE 19966  
Parcel Owner: ABC Woodlands, LLC  
P.O. Box 1389  
Easton, MD 21601  
Location: On the north and south sides of  
Long Neck Road (Route 23) approximately  
500-ft east of John J, Williams Highway  
(Route 24).



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FULLNAME	MAILINGADD	ZIPCODE	CITY	STATE	Tax ID
BONNEY TUNNELL EGGLESTON	PO BOX 1537	21601	EASTON	MD	234-23.00-273.01
ALAN G. & KATLEEN F. CROPPER	33772 CADDIES WAY	19966	MILLSBORO	DE	234-23.00-273.00-3325
ALAN G. & LORA DREWER	32602 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3121
AMY L. WHITE	32315 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-66
ANDREAS K. TSIRIKOS	32316 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-21
ANDREW SCHOPFER	32319 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-68
ANGELO & PHYLLIS M. ZENORINI	32500 HASKELL DELL DR	19966	MILLSBORO	DE	234-23.00-273.00-3146
ANTHONY J. & PATRICIA A. SULECKI	75 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-744.00
ANTHONY J. AGLIO	32582 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3129
APRIL M. REID	32594 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3124
ARTHUR J. SMALLMAN	32324 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-25
BARRY J. MCCORD	32574 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3133
BAYWOOD LLC	32147 LONG NECK RD	19966	MILLSBORO	DE	234-23.00-270.00
BAYWOOD LLC	32809 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3158
BAYWOOD LLC	34026 ANNAS WAY UNIT 1	19966	MILLSBORO	DE	234-23.00-270.00
BAYWOOD LLC	32524 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00
BEEBE MEDICAL CENTER INC.	32060 LONG NECK RD	19966	MILLSBORO	DE	234-23.00-270.01
BETSY J. BOTKA	32584 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3128
BOB BLANTON	51 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-732.00
BONNIE L. VANLIER	32562 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3139
BRENDA J. HARVEY	41 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-727.00
CARL J. & JUDI L. ESHELMAN	32810 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3161
CAROL PIERCE	32328 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-27
CAROLYN MAYS AXTELL	33539 CLEEK WAY	19966	MILLSBORO	DE	234-23.00-273.00-3313
CAROLYN R. BINDER	101 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-757.00
CAROLYN S. AYERS TRUSTEE	32581 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3281
CHANTAL MOYER	32349 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-45
CHARLES H. RUTKOWSKI SR.	32333 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-38
CHARLES J. NAPPA	32366 BAYSHORE DR	19966	MILLSBORO	DE	234-23.00-935.00
CHARLES M. HORNEY	32285 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-146
CHARLES M. LEANNE H. REDSTONE	97 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-755.00
CHARLES R. JR & SUE VANHUYSEN	32814 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3160
CHRISTOPHER J. & MARGARET LOVERGINE	32326 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-26
CYNTHIA MOLINO	33771 CADDIES WAY	19966	MILLSBORO	DE	234-23.00-273.00-3324
DAMIEN M. DIORRIO	65 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-739.00
DANIEL L. & ANTONELLA F. REGO	32805 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3156
DANIEL L. & SANDRA L. GOTHIE	32590 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3125
DAVID J. RICCI & ROBERT D. TODD	109 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-761.00

DAVID R. PERKINS	32348 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-36
DEBRA J. HEAGY	45 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-729.00
DENNIS H. DARR	63 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-738.00
DIANNE L. LOMONACO	32286 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-81
DONALD DANGELL SR. TRUSTEE	32342 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-33
DONALD S. & RONNA LEE PYNE	32502 HASKELL DELL DR	19966	MILLSBORO	DE	234-23.00-273.00-3145
DONNA M. CONNOR	32330 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-28
DONNA TAYLOR	32501 HASKELL DELL DR	19966	MILLSBORO	DE	234-23.00-273.00-3142
DOUGLAS F. & BARBARA J. PAINTER	69 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-741.00
DWAYNE C. JONES	32320 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-23
EDWARD F. & SUSAN S. KING	32563 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3288
EDWARD I. & MARGARET L. FEESER	79 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-746.00
EDWARD W. & CAROL A FEELEY	81 BRANCH CT	19966	MILLSBORO	DE	234-23.00-747.00
EDWRD & GAIL PRISTASH	71 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-742.00
ERIC R. & ROBIN E. KRAHECK	32586 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3127
ERIK O. & JULIE M. HALVORSEN	32801 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3155
ERNEST R. PORTER & JANET T. REILLY	119 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-766.00
FRANCIS E. MURPHY	32351 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-46
FRANK A. ALI III	32797 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3153
GARY & REBECCA MINER	84 BRANCH CT	19966	MILLSBORO	DE	234-23.00-754.00
GARY C. & MELANIE L. SCHRIVER	32610 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3119
GARY DREW FORD TRUSTEE	53 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-733.00
GARY I. & ELIZABETH C. HESS	113 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-763.00
GARY S. & DEBORAH S. NESBITT	32618 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3116
GAYLE & RONALD M. MILLER	32312 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-19
GEORGE & MARGARET REVELLE	32588 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3126
GEORGE BOLLINGER	32632 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3111
GEORGE E. CHAPMAN	103 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-758.00
GEORGE J. & PATRICIA A. UNGEMAH	32795 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3152
GERALD LEE & ELLA MAE MCCABE	22874 COUNTRY LIVING RD	19966	MILLSBORO	DE	133-15.00-22.00
GERALD M. & JANICE L. DOTTERER	31 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-722.00
GERALDINE J. WISNEWSKI	123 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-768.00
GRACE BECKNER	32564 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3138
GREGORY S. & LAUREN S. JAMES	32288 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-80
HILARY M. FELINSKI	32276 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-86
HOMER N. & RUTH A. SHANER	32456 FREE DROP WAY	19966	MILLSBORO	DE	234-23.00-273.00-3163
HOWARD A. PETERS JR. & LISA S. PETERS	29 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-721.00
J RICHARDS & MARY C. WOOD	57 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-735.00
JAMES D. & BARBARA I. STONE	89 BRANCH CT	19966	MILLSBORO	DE	234-23.00-751.00

JAMES D. BENNETT	59 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-736.00
JAMES G. CARLSON	32622 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3114
JAMES O. & DOROTHY M. WRIGHT	32628 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3112
JEFFREY P. XAVIOS	32321 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-69
JEFFREY WORKMAN	37 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-725.00
JILL L. MOSSER	32570 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3135
JOANN S. & JOHN J. LAURO	67 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-740.00
JOANNE M. & PATRICIA A. KETLER	99 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-756.00
JOHN D. & GINA R. MILLER	32505 HASKELL DELL DR	19966	MILLSBORO	DE	234-23.00-273.00-3144
JOHN P. LAYSER	111 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-762.00
JOSEPH R. RUSNAK	32280 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-84
JULIA A. MARR	32314 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-20
KAREN ANNE FRIEDMAN	32568 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3136
KATHLEEN A. WATSON	77 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-745.00
KEVIN F. PECK	88 BRANCH CT	19966	MILLSBORO	DE	234-23.00-752.00
KEVIN J. & CATHERINE R. NORTH	32341 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-42
KEVIN P. & PATRICIA CUNNINGHAM	32353 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-47
KIMBERLY A. NUTTAL	107 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-760.00
KURT P. & DEBORAH C. ROGENMUSER	32636 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3110
LARRY H. & MARSHA L. EISENHAUER	32322 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-24
LAWRENCE J. BONGARD	32785 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3147
LINDA REDDING	32283 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-145
LIZANNE M. CORLEY	32325 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-71
LONG NECK APARTMENTS ASSOCIATES, LP	32071 LONG NECK RD	19966	MILLSBORO	DE	234-23.00-269.04
LONGNECK ENTERPRISES INC.	25933 SCHOOL LN	19966	MILLSBORO	DE	234-23.00-308.00
LONGWOOD LAKES LLC	20849 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-113.00
LONGWOOD LAKES LLC	PO BOX 212	19958	LEWES	DE	133-15.00-20.00
LONGWOOD LAKES LLC	20765 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-115.00
LONGWOOD LAKES LLC	20760 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-165.00
LONGWOOD LAKES LLC	20784 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-164.00
LONGWOOD LAKES LLC	20796 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-163.00
LONGWOOD LAKES LLC	20808 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-162.00
LONGWOOD LAKES LLC	20818 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-161.00
LONGWOOD LAKES LLC	20830 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-160.00
LONGWOOD LAKES LLC	20846 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-159.00
LONGWOOD LAKES LLC	20845 WOODLAKE CIR	19966	MILLSBORO	DE	133-15.00-114.00
LSF9 MASTER PARTICIPATION TRUST	32338 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-31
MARGARET M. MOROSKI	32808 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3162
MARIA E. GONZALEZ	32579 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3282



MARK J. WILLIAMS	33 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-723.00
MARK S. & DEANNA L. REUBEN	32816 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3159
MARTIN K. & DOROTHY T. MCBRIDE	32560 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3140
MARTYNE MOYER	32596 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3123
MICHAEL A. & DIANA B. LAVIN	35 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-724.00
MICHAEL A. JEFFERSON	32344 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-34
MICHAEL P. MCKINNEY SR. & DARLENE L. MCKINNEY	55 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-734.00
MICHELLE D. GALLAGHER	87 BRANCH CT	19966	MILLSBORO	DE	234-23.00-750.00
MICHELLE OLLASON	32503 HASKELL DELL DR	19966	MILLSBORO	DE	234-23.00-273.00-3143
MILDRED E. FORREST	32335 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-39
NORMAN E. & THERESA A. LOWE	61 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-737.00
PAMELA DECONSTANZA	32346 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-35
PATRICIA HOFFMAN	32340 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-32
PATTI SEESE & LINDA F. KURTZ	117 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-765.00
PAUL & DANA WALKER	85 BRANCH CT	19966	MILLSBORO	DE	234-23.00-749.00
PAUL D. LEVINE & THOMAS J. BONSAK	32576 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3132
PAUL P. & LORETTA F. VENTURA	32791 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3150
PETER DOLAN JR. TRUSTEE	121 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-767.00
PETER J. & NILDA INCATASCIATO	32789 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3149
PHYLLIS A. PHILLIPS	32334 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-30
PHYLLIS G. KRENZER	78 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-840.00
PRISCILLA NEMETH	32612 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3118
RALPH W. HINKLE	32339 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-41
RANDALL K. & CHARLENE PRATT	32626 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3113
RANDOLPH P. & BRIN J. TAYLOR	32323 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-70
RICE M. MAITLAND	32566 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3137
RICHARD A. BAUER	32609 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3335
RICHARD J. & MARILYN E. JACOBS	32613 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3336
RICHARD J. MCGUIGAN JR.	32364 BAYSHORE DR	19966	MILLSBORO	DE	234-23.00-934.00
RICHARD J. WAGNER JR. & MARY WAGNER	32606 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3120
RICHARD M. & LINDA K. GANLEY	83 BRANCH CT	19966	MILLSBORO	DE	234-23.00-748.00
ROBERT & DONNA SPERDUTO	32572 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3134
ROBERT A. & MARY C. TRUITT	105 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-759.00
ROBERT F. BARTLETT	32281 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-144
ROBERT G. DEBORAH A. MARKER	43 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-728.00
ROBERT J. & ARLENE F. POMANTE	32331 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-37
ROBERT J. CYRAN	32598 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3122
ROBERT J. FENFERT	32345 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-43
ROBERT K. & DAWN GAGLIONE	32578 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3131

ROBERT M. & HENRIETTA A. WOODS	32597 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3332
ROBERT W. GUEST	1 RITTER DR	19966	MILLSBORO	DE	234-23.00-583.00
ROGER P. PRYOR SR. & RUTH F. PRYOR	32616 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3117
RONALD & PATRICIA DIENNO	32799 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3154
RONALD B. & DOROTHY PECQUEUR	39 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-726.00
ROXANNE E. BECKER	32337 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-40
STEPHEN L. & ELAINE R. HALLSTEAD	32793 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3151
STEVEN R. & LINDA A. VITALI	32580 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3130
SUE A. BARDSLEY	32317 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-67
SUSAN ODDO	32332 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-29
SUZANNE G. BOWERS	49 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-731.00
TAMARA SUE BLACK	115 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-764.00
THERESA L. JAMES H. GAST	47 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-730.00
THOMAS J. & CECELIA M. TOTH	32620 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3115
THOMAS J. & THERESA A. MOORE	32638 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3109
THOMAS JAMES BLINSKI JR.	32347 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-44
THOMAS M. WAGNER	33538 CLEEK WAY	19966	MILLSBORO	DE	234-23.00-273.00-3314
TODD E. & ADRIANNE KARRICK	86 BRANCH CT	19966	MILLSBORO	DE	234-23.00-753.00
TRUDY J. ZIMMERMAN	32278 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-85
UNKNOWN	32282 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-83
UNKNOWN	32284 PELICAN CT	19966	MILLSBORO	DE	234-23.00-270.02-82
UNKNOWN	32807 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3157
VINCENT J. & SANDRA L. ZAINO	32787 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3148
WALTER J. & WENDELIN B. O'BRIEN	32800 GREENS WAY	19966	MILLSBORO	DE	234-23.00-273.00-3185
WAYNE D. BLUM	32318 TURNSTONE CT	19966	MILLSBORO	DE	234-23.00-270.02-22
WILBERFORCE FOUNDATION, INC.	33490 CLEEK WAY	19966	MILLSBORO	DE	234-23.00-273.00-3300
WILLIAM A. DAVENPORT	32599 LONG SPOON WAY	19966	MILLSBORO	DE	234-23.00-273.00-3333
WILLIAM P. & KAREN L. TINKHAM	73 WHITE PINE DR	19966	MILLSBORO	DE	234-23.00-743.00

**Planning & Zoning Commission Application  
Sussex County, Delaware**

Sussex County Planning & Zoning Department  
2 The Circle (P.O. Box 417) Georgetown, DE 19947  
302-855-7878 ph. 302-854-5079 fax

File #: CZ 1922

202002786

202002789

202002790

\$ 500  
Sussex County Council

Baywood Villages

202002791

202002792

**Type of Application: (please check applicable)**

Conditional Use

Zoning Map Amendment

**Site Address of Conditional Use/Zoning Map Amendment**

32147 Long Neck Road, Long Neck, DE 19966

**Type of Conditional Use Requested:**

Tax Map #: TM 234-23, P 270, 273.01, 273.02, 273.03, & 273.05 Size of Parcel(s): 54.38 acres

Current Zoning: B-1, C-1, & CR-1 Proposed Zoning: HR/RPC Size of Building: 514 Multi-Family Units

Land Use Classification: Commercial and Coastal Area

Water Provider: Tidewater Utilities

Sewer Provider: Sussex County & Inland Bays Preservation

**Applicant Information**

Applicant Name: Baywood, LLC (Attn Robert Tunnell, III)

Applicant Address: 34026 Anna's Way, Suite 1

City: Long Neck State: DE Zip Code: 19966

Phone #: (302) 945-9300 E-mail: rtunnell@potnets.com

**Owner Information** Applicant is Owner of TM 234-23, P 270 & 273.05

Owner Name: ABC Woodlands, LLC (TM 234-23, P 273.01, 273.02, & 273.03)

Owner Address: PO Box 1389

City: Easton State: MD Zip Code: 21601

Phone #: \_\_\_\_\_ E-mail: \_\_\_\_\_

**Agent/Attorney/Engineer Information**

Agent/Attorney/Engineer Name: Mr. James A Fuqua, Jr, Esq.

Agent/Attorney/Engineer Address: 26 The Circle

City: Georgetown State: DE Zip Code: 19947

Phone #: (302) 856-7777 E-mail: jimf@fywlaw.com



# Check List for Sussex County Planning & Zoning Applications

The following shall be submitted with the application

- Completed Application
- Provide eight (8) copies of the Site Plan or Survey of the property
  - Survey shall show the location of existing or proposed building(s), building setbacks, parking area, proposed entrance location, etc.
  - Provide a PDF of Plans (may be e-mailed to a staff member)
  - Deed or Legal description
- Provide Fee \$500.00
- Optional - Additional information for the Commission/Council to consider (ex. architectural elevations, photos, exhibit books, etc.) If provided submit 8 copies and they shall be submitted a minimum of ten (10) days prior to the Planning Commission meeting.
- Please be aware that Public Notice will be sent to property owners within 200 feet of the subject site and County staff will come out to the subject site, take photos and place a sign on the site stating the date and time of the Public Hearings for the application.
- DelDOT Service Level Evaluation Request Response
- PLUS Response Letter (if required)

The undersigned hereby certifies that the forms, exhibits, and statements contained in any papers or plans submitted as a part of this application are true and correct.

I also certify that I or an agent on my behalf shall attend all public hearing before the Planning and Zoning Commission and the Sussex County Council and any other hearing necessary for this application and that I will answer any questions to the best of my ability to respond to the present and future needs, the health, safety, morals, convenience, order, prosperity, and general welfare of the inhabitants of Sussex County, Delaware.

### Signature of Applicant/Agent/Attorney

\_\_\_\_\_ Date: \_\_\_\_\_

### Signature of Owner

 Date: 3/9/20

### For office use only:

Date Submitted: 3/9/2020 Fee: \$500.00 Check #: 101284  
Staff accepting application: celh Application & Case #: 2020027810  
Location of property: \_\_\_\_\_

Subdivision: \_\_\_\_\_  
Date of PC Hearing: \_\_\_\_\_ Recommendation of PC Commission: \_\_\_\_\_  
Date of CC Hearing: \_\_\_\_\_ Decision of CC: \_\_\_\_\_

2-34 17.00 25.00, 170.00 & 181.00  
2-34 23.00 5.00, 6.00, 7.00 & 270.00

Prepared by:  
Sergovic & Ellis, P.A.  
9 North Front Street  
Georgetown, DE 19947-0875

This Deed, made this 24<sup>th</sup> day Feb., 2005,

**BETWEEN Tunnell Companies, L.P.**, a Delaware limited partnership, of 34026 Anna's Way, Suite 1, Long Neck, DE 19966, party of the first part,

- A N D -

**Baywood, L.L.C.**, a Delaware limited liability company, 34026 Anna's Way, Suite 1, Long Neck, DE 19966 party of the second part,

**WITNESSETH**, that the said party of the first part, for and in consideration of the sum of **One Dollar and 00/100 (\$1.00)**, lawful money of the United States of America, the receipt whereof is hereby acknowledged, hereby grants and conveys unto the said party of the second part, its successors and assigns:

TRACT NO. 1: (2-34 17.00 25.00)

ALL that certain lot, piece or parcel of land, situate, lying and being in Indian River Hundred, Sussex County, Delaware, being designated upon a certain plot prepared by Mann Associates, Inc., Professional Land Surveyors, dated March 26, 1998, entitled "Partition-Lands of Eugene R. Hazzard, Jr." and of record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware, in Plot Book 60, Page 346, and more particularly described as follows, to wit:

BEGINNING at a point in the corner of lands of Eugene R. Hazzard, Jr., Trustee, being a rear corner of lands designated as Tract #1 and Tract #2 on the plot of Mann Associates, Inc. dated March 10, 1998, said corner being the following courses and distances from the westerly right-of-way line of De. Route 24, North 56 degrees 16 minutes 20 seconds East a distance of 1,352.06 feet to a point, thence in a northerly direction North 65 degrees 49 minutes 50 seconds East a distance of 340.30 feet to a point in the westerly right-of-way of De. Route 24, said point being South 07 degrees 14 minutes 55 seconds West a distance of 461.43 feet from an iron pipe, the westerly corner of the intersection of De. Route 24 and County Road 301, thence in a southerly direction South 56 degrees 16 minutes 20 seconds West a distance of 179.99 feet to a point; thence in a Northerly direction North 67 degrees 05 minutes 40 seconds West, a distance of 498.10 feet to a point; thence in a southerly direction South 47 degrees 59 minutes 10 seconds West, a distance of 640.01 feet to a point; thence in a southerly direction South 38 degrees 31 minutes 46 seconds East, a distance of 556.62 feet to a point; thence in a southerly direction South 08 degrees 35 minutes 30 seconds West, a distance of 272.22 feet to a point; thence in a southerly direction South 33 degrees 52 minutes 38 seconds East a distance of 684.48 feet to a point; thence in a southerly direction South 47 degrees 19 minutes 00 seconds West, a distance of 920.00 feet to an iron pipe; thence in a northerly direction North 42 degrees 42 minutes 10 seconds West, a distance of 765.00 feet to a piece of rebar; thence in a northerly direction North 47 degrees 20 minutes 00 seconds East, a distance of 528.09 feet to an iron pipe; thence in a northerly direction North 67 degrees 05 minutes 40 seconds west, a distance of 161.79 feet to a point, the place of beginning, containing 27.42 acres, more or less.

8/15

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of Eugene R. Hazzard, Jr., et al., dated April 8, 1998 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware in Deed Book 2278, page 241.

TRACT NO. 2: (2-34 17.00 170.00)

ALL that certain tract, piece or parcel of land situate, lying and being in Indian River Hundred, Sussex County, State of Delaware, adjoining lands now or formerly of the heirs of Thomas Abbott, adjoining lands now or formerly of J.C. Gilmore, lands now or formerly of Daniel C. Townsend, and the public road leading from Long Neck to Angola, the metes and bounds of which are as follows:

BEGINNING at a stake in the northeasterly right of way of County Road 298; thence North 45 degrees 24 minutes East 416.8 feet to a stake; thence in an easterly direction 103.2 feet to a stake; thence North 45 degrees 24 minutes East 1,312.95 feet to a stake; thence North 41 degrees West 242.20 feet to a stake; thence North 48 degrees 30 minutes East 67.80 feet to a stake; thence North 41 degrees West 471.90 feet to a stake, a corner for this land and lands of Shawn's Hideaway; thence along the division line between this land and lands of Shawn's Hideaway, South 48 degrees 30 minutes West 1,493.02 feet to a stake; thence in a southeasterly direction along the northern division line between this land and three lots the following: 123.33 feet, 121.7 feet and 120.0 feet to a stake; thence turning and running in a southerly direction along the eastern side of one of the said three lots, 353 feet more or less to a stake in the northeasterly side of County Road No. 298; thence along the right of way of said County Road No. 298 a distance of 280.0 feet to the place of beginning, said to contain 26.05 acres, more or less, with the improvements thereon.

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of Mildred I. Fritz and Diana Degerberg dated May 10, 1997 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware in Deed Book 2202, page 322.

TRACT NO. 3: (2-34 17.00 181.00)

ALL that certain lot, piece and parcel of land situate, lying and being in Indian River Hundred, Sussex County, State of Delaware, and lying on the southwestern right-of-way of County Road 298 (50' wide) and on the Southeastern right-of-way of State Route 24 (50' wide) being bounded and described as follows, to wit:

BEGINNING at a marked "point of beginning", said marked "point of beginning" being located on the Southwestern right-of-way of the aforementioned County Road 298; thence turning and running by and along the Southwestern right-of-way of County Road 298 South 44 degrees 15 minutes 30 seconds East 244.50 feet to a set iron bar; thence turning and running by and along a common boundary line with these lands and other lands of the Grantors North 45 degrees 44 minutes 30 seconds East 199.33 feet to a set iron bar; thence turning and running by and along a common boundary line with these lands and lands now or formerly of Baywood, L.L.C., North 41 degrees 37 minutes 20 seconds West 112.99 feet to a concrete monument; thence continuing along the same course and distance 24.11 feet to a found iron pipe; thence turning and running by and along the Southwestern right-of-way of State Route 24, a Delta Angle of 04 degrees 04 minutes 52 seconds with a length of 209.21 feet, also being a chord direction of North 11 degrees 30 minutes 47 seconds East with a chord distance of 209.17 feet to a set iron bar; thence turning North 72 degrees 27 minutes 59 seconds East 22.49 feet home to the place of beginning and said to contain 39,038 square feet of land, be the same more or less, as surveyed by Adams-Kemp Assoc., Inc., Registered Surveyors on February 18, 1998.

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of Virgle E. Banks, Jr. and Janet S. Banks dated March 26, 1998 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware in Deed Book 2287, page 72.

TRACT NO. 4: (2-34 23.00 5.00)

Parcel A-ALL that certain tract, piece or parcel of land situate, lying and being in Indian River Hundred, Sussex County and State of Delaware, lying on the Northeasterly side of Route #5 and being more particularly described as follows, to wit:

**BEGINNING** at a point along the Northeasterly right-of-way line of Route #5, a corner for these lands and lands of Altrenia A. Wright; thence from said point of beginning and running along and with the line of lands of Wright, North 50 degrees 30 minutes 54 seconds East 408.04 feet to a concrete monument found in line of lands of Agnes Beatrice Jackson; thence with the line of lands of Jackson, the three (3) following courses and distances: (1) North 50 degrees 30 minutes 54 seconds East 1,371.69 feet to a point; thence (2) North 21 degrees 14 minutes 06 seconds West 288.75 feet to a point; thence (3) North 64 degrees 11 minutes 06 seconds East 1,325.00 feet to an iron pipe set, a corner for these lands, lands of Jackson and lands of Townsend's, Inc.; thence turning and running with the line of lands of Townsend's, Inc., the two (2) following courses and distances: (1) South 49 degrees 11 minutes 46 seconds East 714.45 feet to a tree stump; thence (2) South 40 degrees 18 minutes 14 seconds West 1,008.51 feet to a re-bar w/cap found in line of lands of Long Neck Water Co., L.L.C.; thence turning and running with the line of lands of Long Neck Water Co., L.L.C., the three (3) following courses and distances: (1) North 31 degrees 04 minutes 57 seconds West 308.65 feet to a point; thence (2) South 67 degrees 34 minutes 21 seconds West 737.37 feet to a point; thence (3) South 23 degrees 40 minutes 39 seconds East 694.39 feet to a point in line of lands of Leon & Margaret Burton; thence turning and running with the line of lands of Burton, the three (3) following courses and distances: (1) South 41 degrees 04 minutes 21 seconds West 728.08 feet to a concrete monument found; thence (2) North 56 degrees 55 minutes 39 seconds West 181.50 feet to a point; thence (3) North 73 degrees 55 minutes 39 seconds West 77.72 feet to a point along the Northeasterly right-of-way line of Route #5; thence turning and running with the line of Route #5, the five (5) following courses and distances: (1) North 52 degrees 03 minutes 26 seconds West 138.37 feet to a point; thence (2) North 54 degrees 55 minutes 11 seconds West 100.12 feet to a point; thence (3) North 52 degrees 03 minutes 26 seconds West 600.00 feet to a point; thence (4) North 49 degrees 11 minutes 41 seconds West 100.12 feet to a point; thence (5) North 52 degrees 03 minutes 26 seconds West 35.58 feet to the point and place of beginning, said to contain 55.6307 acres of land, be the same more or less, as surveyed by Coast Survey, Inc., June 19, 1998.

Parcel B-ALL that certain tract, piece or parcel of land situate, lying and being in Indian River Hundred, Sussex County and State of Delaware, lying on the Southwesterly side of Route #5 and being more particularly described as follows, to wit:

**BEGINNING** at a point along the Southwesterly right-of-way line of Route #5, a corner for these lands and lands of William & Aleece Jackson; thence from said point of beginning and running along and with the line of Route #5, South 52 degrees 03 minutes 26 seconds East 781.07 feet to a point, a corner for these lands and lands of Herman McGee; thence turning and running with the line of lands of McGee, North 76 degrees 42 minutes 55 seconds West 223.65 feet to a concrete monument found in line of lands of Elloise Johnson, et al.; thence with the line of lands of Johnson and lands of Parker Harmon, et al., North 59 degrees 58 minutes 42 seconds West 623.75 feet to an iron pipe found, a corner for these lands and lands of William & Aleece Jackson; thence turning and running with the line of lands of Jackson, North 50 degrees 30 minutes 54 seconds East 183.67 feet

to the point and place of beginning, said to contain 2.0683 acres of land, be the same more or less, as surveyed by Coast Survey, Inc., June 19, 1998.

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of J.G. Townsend, Jr. & Co., dated March 31, 1999 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware in Deed Book 2374, page 208.

TRACT NO. 4: (2-34 23.00 6.00)

ALL that certain tract, piece or parcel of land situate, lying and being in Indian River Hundred, Sussex County and State of Delaware, lying northeast of County Road #5, but not fronting thereon, adjoining lands now or formerly of J.G. Townsend, Jr. & Co., Townsends, Inc. and Leon L. and Margaret C. Burton, containing 8.80 acres of vacant land, more or less.

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of Long Neck Water Company dated April 5, 1999 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware in Deed Book 2400, page 220.

TRACT NO. 5: (2-34 23.00 7.00)

ALL that certain tract, piece or parcel of land situate, lying and being in Indian River Hundred, Sussex County and State of Delaware, being on the Northwesterly side of County Route #24 and being more particularly described as follows, to wit:

**BEGINNING** at a point on the northwesterly right-of-way of Route #24 (50' wide), a corner for this tract and lands of Leon & Margaret Burton and being located 0.22, more or less, mile northeasterly from Route #5; thence leaving said right-of-way and with said Burton, north 50 degrees 13 minutes 38 seconds West, 1,875.90 feet (passing over a concrete monument found at 3.03') to a concrete monument found, a corner for this tract and said burton and along land of Long Neck Water Company, LLC; thence turning and with said Water Co. and lands of J.G. Townsend & Co., North 40 degrees 18 minutes 14 seconds East 1,398.63 feet (passing over a re-bar rod with cap found at 390.12 feet, a corner for said Water Co.) to a tree stump, a corner for said Townsend; thence turning and with said Townsend, North 49 degrees 11 minutes 46 seconds West 714.45 feet to an iron pipe set, a corner for this tract and said Townsend and an angle point for Agnes Beatrice Jackson; thence turning and with said Jackson, North 36 degrees 46 minutes 10 seconds West 812.68 feet to a concrete monument found, a corner for said Jackson and lands now or formerly of Eugene R. Hazzard; thence with said Hazzard, lands of James and Dorothy Cannon, land of Debra Hazzard and land of Diamond State Telephone Co., North 39 degrees 50 minutes 35 seconds East, 2,668.04 feet (passing over an iron pipe found at 1,295.54 feet, a corner for said Cannon, another iron pipe found at 2,172.94 feet, a corner for Cannon and another iron pipe found at 2,275.71 feet, a corner for said Telephone Co.) To a point on the aforesaid right-of-way of Route #24; thence with said right-of-way the five (5) following courses and distances: (1) South 10 degrees 56 minutes 30 seconds west 873.34 feet to a point; thence (2) South 11 degrees 36 minutes 44 seconds West 938.12 feet to a point; thence (3) South 11 degrees 51 minutes 54 seconds West 1,307.73 feet to a point; thence (4) South 11 degrees 37 minutes 10 seconds West 1,088.54 feet to a point; thence (5) South 11 degrees 51 minutes 30 seconds West 1,339.30 feet to the point of beginning containing 123.3445 acres of cleared land.

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of Townsends, Inc. dated June 19, 1998 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware in Deed Book 2297, page 13.



TRACT NO. 6: 2-34 23.00 270.00

ALL that certain tract containing 31.045 acres of land, more or less, located on the north side of Sussex County Route 22, Indian River Hundred, Sussex County, Delaware, and being more particularly described as follows:

BEGINNING at a concrete monument located on the Northerly side of the 50 foot right of way of County Road 22, said monument marking a common boundary between the hereafter described lands and lands now or formerly of the Heirs of Julian Townsend; thence by and with said Townsend lands North 23 degrees 06 minutes 02 seconds East 1741.61 feet to a concrete monument; thence North 49 degrees 52 minutes 57 seconds West 227.43 feet to a concrete monument; thence south 73 degrees 32 minutes 57 seconds West 296.56 feet to a marked oak tree; thence South 51 degrees 26 minutes 33 seconds West 384.75 feet to a marked oak tree located on the common boundary between the herein described lands and the adjoining lands now or formerly of Tony Johnson; thence South 48 degrees 26 minutes 41 seconds West 780.22 feet to a marked oak tree; thence south 44 degrees 56 minutes 45 seconds West 290.34 feet to a stake marking the boundary between the herein described lands and lands now or formerly of Mrs. Elmer Morris; thence South 32 degrees 47 minutes 34 seconds West 209.40 feet to a concrete monument located on the aforesaid right of way of Road 22; thence by and with the northerly right of way of said road South 61 degrees 45 minutes 00 seconds East 1110.54 feet to the point and place of Beginning, containing 31.045 acres, as surveyed by J.J. McCann, Inc., and as shown on the survey of The Lands of John J. Williams recorded on May 24, 1972, in the Office of the Recorder of Deeds, Georgetown, Delaware, in Plot Book 8, page 490.

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of Blanche W. Baker, Trustee dated June 22, 2001 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware in Deed Book 2602, page 320.

IN WITNESS WHEREOF, the said party of the first part has hereunto set its hand and seal the day and year first hereinbefore written.

Signed, Sealed and Delivered in the presence of:

[Signature]

Tunnell Companies, L.P.

By: [Signature] {SEAL}  
Robert W. Tunnell, Jr., General Partner

Consideration:	90.00	Exempt Code: A
County	State	Total
0.00	0.00	0.00
counter	Date: 03/07/2005	

State of Delaware )  
: S.S.  
County of Sussex )

**BE IT REMEMBERED**, that on February 24, 2005, personally came before me, the Subscriber, Robert W. Tunnell, Jr., General Partner of Tunnell Companies, L.P., party of the first part to this Indenture, known to me personally to be such, and acknowledged this Indenture to be his act and deed.

Given under my Hand and Seal of office the day and year aforesaid.

Dorothy A. Cannon  
Printed Name Dorothy A. Cannon  
Notary Public, Delaware  
My Commission Expires: 12-2-06

Dorothy A. Cannon  
Notary Public  
State of Delaware  
My Commission Expires Dec. 2, 2006

**Return to:**  
**Baywood, L.L.C.**  
34026 Anna's Way, Suite 1  
Long Neck, DE 19966

RECORDER OF DEEDS  
JOHN F. BRADY

05 MAR -7 PM 3:39

SUSSEX COUNTY  
DOC. SURCHARGE PAID

**Received**  
MAR 08 2005  
ASSESSMENT DIVISION  
OF SUSSEX CTY

Tax Number: 2-34 23.00 237.01, 237.03 & 237.02

PREPARED BY & RETURN TO:

Tunnell & Raysor, P.A.  
30 E. Pine Street  
Georgetown, DE 19947  
File No. DO3692/ERM

NO TITLE SEARCH REQUESTED  
NO TITLE SEARCH PERFORMED  
NO TITLE GUARANTEE  
DEED PREPARATION ONLY

THIS DEED, made this 17th day of March, 2021,

- BETWEEN -

ABC WOODLANDS, L.L.C., A DELAWARE LIMITED LIABILITY COMPANY, of PO Box 1537, Easton, MD 21601, party of the first part,

- AND -

BONNEY TUNNELL EGGLESTON, of P.O. Box 1537, Easton, MD 21601 as sole owner, party of the second part.

**WITNESSETH:** That the said party of the first part, for and in consideration of the sum of **ONE DOLLAR (\$1.00)**, lawful money of the United States of America, the receipt whereof is hereby acknowledged, hereby grants and conveys unto the party of the second part, and her heirs and assigns, in fee simple, the following described lands, situate, lying and being in Sussex County, State of Delaware:

Parcel No. A – 2-34 23.00 273.01

ALL that certain piece, parcel and tract of land, lying and being situate in Indian River Hundred, Sussex County and the State of Delaware. commencing at a point located on the northwesterly R.O.W. of County Road 298, said point being a corner for Parcel "D" and Parcel "E"; thence by and with Parcel "D" and Parcel "E", North 61 degrees 17 minutes 44 seconds West 7.18 feet to the point of beginning; thence North 61 degrees 17 minutes 44 seconds West, by and with Parcel "E", a distance of 431.80 feet to a point; thence along a curve to the left, by and with Parcel "B" having a radius of 450.00 feet, a central angle of 048 degrees 00 minutes 00 seconds an arc length of 376.99 feet, and a chord which bears North 04 degrees 42 minutes 16 seconds East to a point; thence along a

curve to the right, by and with Parcel "B", having a radius of 300.00 feet, a central angle of 048 degrees 00 minutes 00 seconds, an arc length of 251.33 feet, and a chord which bears North 04 degrees 42 minutes 16 seconds East to a point; thence North 28 degrees 42 minutes 16 seconds East by and with Parcel "B", a distance of 29.67 feet to a point; thence North 66 degrees 19 minutes 50 seconds East, by and with Parcel "B", a distance of 60.61 feet to a point; thence North 66 degrees 19 minutes 50 seconds East, by and with Parcel "B", a distance of 60.61 feet to a point; thence South 61 degrees 17 minutes 44 seconds East, by and with Parcel "D", a distance of 575.29 feet to a point; thence South 59 degrees 17 minutes 28 seconds East, by and with Parcel "D", a distance of 200.12 feet to a point; thence South 61 degrees 17 minutes 44 seconds East, by and with Parcel "D", a distance of 100.00 feet to a point; thence along a curve to the right, by and with Parcel "D", having a radius of 50.00 feet, a central angle of 119 degrees 12 minutes 36 seconds, an arc length of 104.03 feet, and a chord which bears South 01 degrees 41 minutes 26 seconds East to a point; thence South 57 degrees 54 minutes 45 seconds West, by and with Parcel "D", a distance of 417.18 feet to a point, thence along a curve to the left, by and with parcel "D", having a radius of 702.59 feet, a central angle of 016 degrees 36 minutes 02 seconds, an arc length of 203.56 feet, and a chord which bears South 49 degrees 36 minutes 51 seconds West to the point of beginning, said parcel contains 10.25 acres of land, being the same, more or less.

**Parcel No. B – 2-34 23.00 273.03**

ALL that certain piece, parcel and tract of land, lying and being situate in Indian River Hundred, Sussex County and the State of Delaware, Beginning at a point located at the corner for this Parcel, Parcel "A" and Parcel "E"; thence North 61 degrees 17 minutes 44 seconds West, by and with Parcel "E", a distance of 50.00 feet to a point; thence along a curve to the left, by and with Parcel "C", having a radius of 400.00 feet, a central angle of 048 degrees 00 minutes 00 seconds, an arc length of 335.10 feet, and a chord which bears North 04 degrees 42 minutes 16 seconds East to a point; thence along a curve to the right, by and with Parcel "C", having a radius of 350.00 feet, a central angle of 048 degrees 00 minutes 00 seconds an arc length of 293.22 feet and a chord which bears North 28 degrees 42 minutes 16 seconds East, by and with Parcel "C", a distance of 29.67 feet to a point; thence South 61 degrees 17 minutes 44 seconds East, by and with Parcel "D", a distance of 124.00 feet to a point; thence South 66 degrees 19 minutes 50 seconds West, by and with Parcel "A", a distance of 60.61 feet to a point; thence South 28 degrees 42 minutes 16 seconds West, by and with Parcel "A", a distance of 29.67 feet to a point; thence along a curve to the left, by and with Parcel "A", having a radius of 300.00 feet, a central angle of 048 degrees 00 minutes 00 seconds, an arc length of 251.33 feet, and a chord which bears South 04 degrees 42 minutes 16 seconds West to a point; thence along a curve to the right, by and with Parcel "A", having a radius of 450.00 feet, a central angle of 048 degrees 00 minutes 00 seconds, an arc length of 376.99 feet, and a chord which bears South 04 degrees 42 minutes 16 seconds West to the point of beginning, said Parcel contains 37,076 square feet of land, being the same more or less.

**PARCEL No. C – 2-34 23.00 273.02**

**ALL** that certain piece, parcel and tract of land, lying and being situate in Indian River Hundred, Sussex County and the State of Delaware, beginning at a point located at the corner for this Parcel, Parcel "B" and Parcel "E"; thence North 61 degrees 17 minutes 44 seconds West, by and with Parcel "E", a distance of 438.50 feet to a point; thence North 19 degrees 43 minutes 29 seconds East, by and with lands N/F Blanche W. Baker, a distance of 642.91 feet to a point; thence South 61 degrees 17 minutes 44 seconds East by and with Parcel "D", a distance of 642.91 feet to a point; thence South 61 degrees 17 minutes 44 seconds East, by and with Parcel "D", a distance of 253.70 feet to a point; thence South 08 degrees 55 minutes 18 seconds East, by and with Parcel "B", a distance of 60.61 feet to a point; thence South 28 degrees 42 minutes 16 seconds West, by and with Parcel "B", a distance of 29.67 feet to a point; thence along a curve to the left, by and with Parcel "B", having a radius of 350.00 feet, a central angle of 048 degrees 00 minutes 00 seconds, an arc length of 293.22 feet, and a chord which bears South 04 degrees 42 minutes 16 seconds West to a point; thence along a curve to the right, by and with Parcel "B", having a radius of 400.00 feet, a central angle of 048 degrees 00 minutes 00 seconds, an arc length of 335.10 feet, and a chord which bears South 04 degrees 42 minutes 16 seconds West to the point of beginning, said Parcel contains 5.11 acres of land, being the same more or less.

**BEING** a portion of the same lands conveyed to ABC Woodlands, L.L.C., a Delaware limited liability company from Bonney H.T. Bastholm, individually, for a 50% interest; Bonney H.T. Bastholm, for a 12 1/2% interest to be held by her as Trustee under an irrevocable trust of Eolyne K. Tunnell for the benefit of Ashley Hart Bastholm; Bonney H.T. Bastholm, for a 12 1/2% interest to be held by her as Trustee under an irrevocable trust of Robert W. Tunnell for the benefit of Ashley Hart Bastholm; Bonney H.T. Bastholm, for a 12 1/2% interest to be held by her as Trustee under an irrevocable trust of Eolyne K. Tunnell for the benefit of Chesley Elizabeth Bastholm; and Bonney H.T. Bastholm, for a 12 1/2% interest to be held by her as Trustee under an irrevocable trust of Robert W. Tunnell for the benefit of Chesley Elizabeth Bastholm, by Deed dated November 20, 1997, recorded in the Office of the Recorder of Deeds in and for Sussex County, Delaware, on November 21, 1997, in Deed Book 2248, Page 51.

**SUBJECT** to any and all restrictions, reservations, conditions, easements and agreements of record in the Office of the Recorder of Deeds in and for Sussex County, Delaware.

IN WITNESS WHEREOF, the said ABC Woodlands, L.L.C., a Delaware limited liability company, has caused its name to be hereunto set under seal by Bonney T. Bastholm n/k/a Bonney Tunnell Eggleston, an authorized manager of ABC Woodlands, L.L.C., a Delaware limited liability company, the day and year first above written.

ABC WOODLANDS, L.L.C., A  
DELAWARE LIMITED LIABILITY  
COMPANY

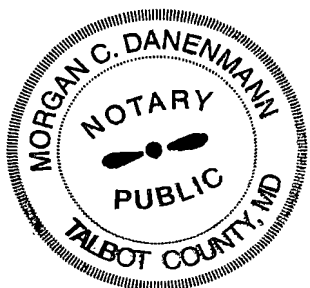
Nathaniel Hogan  
Witness

Bonney Tunnell Eggleston (SEAL)  
Bonney T. Bastholm n/k/a Bonney Tunnell  
Eggleston, Manager manager

STATE OF Maryland, COUNTY OF Talbot: to-wit

BE IT REMEMBERED, that on this 17 day of March A.D. 2021, personally appeared before me, the Subscriber, a Notary Public in and for the State of MD and Talbot County aforesaid, Bonney T. Bastholm n/k/a Bonney Tunnell Eggleston, Manager of ABC Woodlands, L.L.C., a Delaware limited liability company, party to this Indenture, known to me personally to be such, and acknowledged this Indenture to be her act and deed and the act and deed of said limited liability company; that the signature of the Manager is in her own proper handwriting and by her authority to act; and that the act of signing, sealing, acknowledging and delivering the said Indenture was first duly authorized by a resolution of the limited liability company.

GIVEN under my Hand and Seal of Office the day and year aforesaid.



Morgan C. Danenmann  
Notary Public  
My Commission Expires: 3/15/2023

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PREPARED BY:  
SERGOVIC & ELLIS, P.A.  
P.O. BOX 566  
GEORGETOWN, DE 19947

2-34 17.00 175.00 & 175.01  
2-34 23.00 272.00, 273.00,  
274.00 & 709.00

THIS DEED, MADE this 31<sup>st</sup> day of October in the year of our Lord one thousand nine hundred and ninety-seven (1997),

BETWEEN: TUNNELL COMPANIES, L.P., a Delaware Partnership, of R.D.#1, Box 291, Long Neck, Delaware, 19966, party of the first part,

-AND-

BAYWOOD, L.L.C., a Delaware Limited Liability Company, of R.D.#1, Box 291, Long Neck, Delaware, 19966, party of the second part;

WITNESSETH, That the said party of the first part, for and in consideration of the sum of ONE DOLLAR (\$1.00) Current Lawful Money of the United States of America and other good and valuable considerations, the receipt whereof is hereby acknowledged, hereby grants and conveys unto the said party of the second part, its successors or assigns:

ALL those certain tracts, pieces and parcels of land situate, lying and being in Indian River Hundred, Sussex County, Delaware, more particularly described on Exhibit "A" attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said party of the first part has hereunto set its hand and seal, the day and year aforesaid.

SIGNED, SEALED AND DELIVERED,  
IN THE PRESENCE OF:

[Signature]  
Witness

TUNNELL COMPANIES, L.P.  
By: [Signature] (SEAL)  
Robert W. Tunnell, Jr.  
General Partner

Consideration : 0      0.00 Exempt Code: A

County	State	Total
0.00	0.00	0.00
counter	Date: 11/07/1997	

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STATE OF DELAWARE :  
: SS.  
COUNTY OF SUSSEX :

BE IT REMEMBERED, That on this 31<sup>st</sup> day of October, in the year of our LORD, one thousand nine hundred and ninety-seven, personally came before me, The Subscriber, a Notary Public for the State and County aforesaid, TUNNELL COMPANIES, L.P. by and through Robert W. Tunnell, Jr., General Partner, party to this Indenture known to me personally to be such, and acknowledged this Indenture to be his Deed.

GIVEN under my Hand and Seal of Office, the day and year aforesaid.

Susan E. Davis  
Notary Public

\_\_\_\_\_  
Print or Type Name

Comm. Expires: \_\_\_\_\_



Susan E. Davis  
Notary Public, Delaware  
Comm. Expires 2/9/98



## EXHIBIT "A"

**TRACT NO. 1: (2-34 23.00 272.00)**

ALL that certain lot, piece or parcel of land, with improvements thereon, situate in Indian River Hundred, Sussex County and State of Delaware, more particularly described in a survey of Land Tech, Inc., dated April 20, 1993, as follows:

**BEGINNING** at an iron pipe located on the easterly R.O.W. of State Rt. 24, said iron pipe being a corner for this parcel and lands n/f Leon L. Burton, et ux; thence North 21 degrees 44 minutes 52 seconds East, by and with the easterly R.O.W. of State Rt. 24, a distance of 1365.49 feet to a point; thence North 21 degrees 30 minutes 31 seconds East a distance of 1088.75 feet to a point for corner; thence North 21 degrees 38 minutes 57 seconds East a distance of 875.85 feet to a point for corner; thence North 14 degrees 34 minutes 23 seconds East, by and with the easterly R.O.W. of State Rt. 24, a distance of 122.94 feet to an iron pipe; thence South 41 degrees 25 minutes 06 seconds East, by and with lands N/F Virgie E. Banks, Charles Longshaw, Keith Haas, Leon W. Hall, John D. Fink, and Frank E. Hall, a distance of 1663.83 feet to a marked Dogwood Tree; thence South 49 degrees 13 minutes 29 seconds West, by and with lands N/F Tunnell Companies, L.P., a distance of 2797.94 feet to a Stone; thence South 40 degrees 48 minutes 31 seconds East, by and with lands N/F Tunnell Companies, L.P., thru a concrete marker at 1269.45 feet, a distance of 1520.00 feet to a point; thence South 67 degrees 47 minutes 52 seconds West, by and with lands N/F Tunnell Properties, L.P., and the center of Abram's Branch, a distance of 80.22 feet to a point; thence North 60 degrees 36 minutes 22 seconds West a distance of 42.51 feet to a point for corner; thence South 78 degrees 43 minutes 45 seconds West a distance of 35.06 feet to a point for corner; thence North 54 degrees 30 minutes 27 seconds West a distance of 32.57 feet to a point for corner; thence South 64 degrees 11 minutes 00 seconds West a distance of 79.83 feet to a point for corner; thence North 66 degrees 01 minutes 58 seconds West a distance of 45.91 feet to a point for corner; thence North 87 degrees 28 minutes 00 seconds West a distance of 49.97 feet to a point for corner; thence South 79 degrees 08 minutes 45 seconds West a distance of 59.44 feet to a point for corner; thence North 46 degrees 43 minutes 54 seconds West a distance of 43.53 feet to a point for corner; thence South 64 degrees 11 minutes 54 seconds West a distance of 69.38 feet to a point for corner; thence South 79 degrees 50 minutes 16 seconds West a distance of 43.13 feet to a point for corner; thence South 27 degrees 30 minutes 44 seconds West a distance of 50.21 feet to a point for corner; thence South 73 degrees 03 minutes 25 seconds West a distance of 85.28 feet to a point for corner; thence North 74 degrees 20 minutes 47 seconds West a distance of 63.21 feet to a point for corner; thence North 22 degrees 13 minutes 21 seconds West a distance of 50.40 feet to a point for corner; thence North 87 degrees 21 minutes 08 seconds West a distance of 33.43 feet to a point for corner; thence South 18 degrees 07 minutes 21 seconds West a distance of 54.94 feet to a point for corner; thence South 72 degrees 49 minutes 21 seconds West a distance of 38.46 feet to a point for corner; thence South 41 degrees 01 minutes 59 seconds West a distance of

84.60 feet to a point for corner; thence North 89 degrees 03 minutes 07 seconds West, by and with lands N/F V & L Partnership, and the center of Abram's Branch, a distance of 85.42 feet to a point; thence North 58 degrees 34 minutes 45 seconds West a distance of 41.96 feet to a point for corner; thence South 86 degrees 08 minutes 55 seconds West a distance of 18.90 feet to a point for corner; thence South 65 degrees 29 minutes 16 seconds West a distance of 37.00 feet to a point for corner; thence South 33 degrees 32 minutes 29 seconds West a distance of 43.76 feet to a point for corner; thence South 25 degrees 02 minutes 11 seconds West a distance of 47.08 feet to a point for corner; thence 73 degrees 40 minutes 03 West seconds a distance of 73.10 feet to a point for corner; thence South 40 degrees 29 minutes 01 seconds West a distance of 64.59 feet to a point for corner; thence South 30 degrees 01 minutes 01 seconds West a distance of 72.49 feet to a point for corner; thence South 61 degrees 23 minutes 20 seconds West a distance of 44.14 feet to a point for corner; thence South 41 degrees 48 minutes 07 seconds West a distance of 123.78 feet to a point for corner; thence South 71 degrees 49 minutes 55 seconds West a distance of 86.19 feet to a point for corner; thence South 29 degrees 37 minutes 02 seconds West a distance of 67.16 feet to a point for corner; thence South 21 degrees 52 minutes 00 seconds West a distance of 161.25 feet to a point for corner; thence South 19 degrees 44 minutes 42 seconds East a distance of 54.99 feet to a point for corner; thence South 05 degrees 13 minutes 02 seconds West a distance of 52.45 feet to a point for corner; thence South 26 degrees 48 minutes 13 seconds East a distance of 64.38 feet to a point for corner; thence South 25 degrees 45 minutes 46 seconds West a distance of 132.69 feet to a point for corner; thence South 11 degrees 37 minutes 54 seconds West a distance of 92.93 feet to a point for corner; thence South 22 degrees 03 minutes 13 seconds East a distance of 137.92 feet to a point for corner; thence South 85 degrees 06 minutes 54 seconds West a distance of 58.31 feet to a point for corner; thence South 45 degrees 39 minutes 16 seconds West a distance of 49.14 feet to a point for corner; thence South 66 degrees 30 minutes 04 seconds West a distance of 59.79 feet to a point for corner; thence North 78 degrees 45 minutes 28 seconds West a distance of 79.36 feet to a point for corner; thence North 31 degrees 05 minutes 48 seconds West a distance of 36.86 feet to a point for corner; thence North 80 degrees 32 minutes 18 seconds West a distance of 69.91 feet to a point for corner; thence North 61 degrees 14 minutes 47 seconds West a distance of 50.78 feet to a point for corner; Thence North 40 degrees 31 minutes 27 seconds West, by and with lands N/F Leon L. Burton, et ux., thru and iron pipe at 116.30', a distance of 228.67 feet to the Point of Beginning, said Parcel contains 98.32 Acres of land, being the same, more or less.

BEING the same lands conveyed unto Tunnell Companies, L.P. by a Deed of Townsends, Inc., dated August 19, 1993 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware, in Deed Book 1931, page 26.

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**TRACT NO. 2: (2-34 23.00 273.00)**

**ALL** that certain piece, parcel and tract of land, lying and being situate in Indian River Hundred, Sussex County and the State of Delaware, fronting on the Northerly right-of-way line of State Route #22 and the Westerly right-of-way line of County Road #298, adjoining lands now or formerly of Blanche W. Baker, V & L Partnership, Townsend's Inc., Earl D. Warrington, Winifred Lukens and Williams & Baker, Inc., being more particularly described as follows, to wit:

**BEGINNING** at a point on the Northerly right-of-way line of State Route #22, 25.00 feet from the centerline thereof, being the Southeasterly corner for lands of Blanche W. Baker, distant North 23 degrees 31 minutes 10 seconds East 1.01 feet from a found concrete monument; thence proceeding with said Baker lands, North 23 degrees 31 minutes 10 seconds East 1,739.15 feet to a found concrete monument at a corner for lands of V & L Partnership; thence running with said lands of V & L Partnership the following six (6) courses and distances: 1) North 87 degrees 02 minutes 09 seconds East 60.07 feet; thence 2) North 48 degrees 35 minutes 37 seconds East 170.69 feet; thence 3) North 33 degrees 27 minutes 05 seconds East 114.61 feet; thence 4) North 00 degrees 14 minutes 08 seconds East 68.42 feet; thence 5) North 15 degrees 45 minutes 19 seconds West 339.79 feet; and thence 6) North 55 degrees 08 minutes 30 seconds West 1,336.89 feet to a corner for lands of Townsend's Inc., being in the center of Abrams Branch; thence running with the center line of said branch and lands of Townsend's Inc., of Earl D. Warrington and of Winifred S. LukenS the following sixty-three (63) courses and distances: 1) North 73 degrees 36 minutes 14 seconds East 7.65 feet; thence 2) South 87 degrees 06 minutes 54 seconds East 78.18 feet; thence 3) North 36 degrees 06 minutes 54 seconds East 49.55 feet; thence 4) North 61 degrees 52 minutes 50 seconds East 40.69 feet; thence 5) North 16 degrees 47 minutes 32 seconds East 35.15 feet; thence 6) South 72 degrees 56 minutes 19 seconds East 45.19 feet; thence 7) South 14 degrees 51 minutes 41 seconds East 63.86 feet; thence 8) South 81 degrees 01 minutes 15 seconds East 96.66 feet; thence 9) North 71 degrees 07 minutes 51 seconds East 42.78 feet; thence 10) North 18 degrees 14 minutes 47 seconds East 50.48 feet; thence 11) North 77 degrees 57 minutes 33 seconds East 62.22 feet; thence 12) North 60 degrees 36 minutes 50 seconds East 47.46 feet; thence 13) South 39 degrees 35 minutes 39 seconds East 115.42 feet; thence 14) North 83 degrees 21 minutes 58 seconds East 40.82 feet; thence 15) South 61 degrees 29 minutes 25 seconds East 49.10 feet; thence 16) North 54 degrees 05 minutes 48 seconds East 42.40 feet; thence 17) North 75 degrees 03 minutes 54 seconds East 24.05 feet; thence 18) South 38 degrees 12 minutes 12 seconds East 36.21 feet; thence 19) North 83 degrees 11 minutes 24 seconds East 39.11 feet; thence 20) South 62 degrees 40 minutes 56 seconds East 65.21 feet; thence 21) South 85 degrees 12 minutes 43 seconds East 68.34 feet; thence 22) South 25 degrees 52 minutes 31 seconds East 93.40 feet; thence 23) South 86 degrees 51 minutes 45 seconds East 78.85 feet; thence 24) South 56 degrees 46 minutes 39 seconds East 36.98 feet; thence 25) South 79 degrees 58 minutes 15 seconds East 55.01 feet; thence 26) North 30 degrees 29 minutes 58 seconds East 55.01 feet; thence 27)

North 67 degrees 36 minutes 42 seconds East 41.60 feet; thence 28) North 51 degrees 48 minutes 35 seconds East 81.51 feet; thence 29) North 67 degrees 58 minutes 43 seconds East 47.93 feet; thence 30) North 81 degrees 19 minutes 34 seconds East 31.67 feet; thence 31) South 82 degrees 24 minutes 24 seconds East 119.72 feet; thence 32) North 82 degrees 20 minutes 52 seconds East 108.26 feet; thence 33) South 78 degrees 42 minutes 13 seconds East 159.00 feet; thence 34) South 48 degrees 42 minutes 13 seconds East 271.00 feet; thence 35) South 22 degrees 42 minutes 13 seconds East 115.00 feet; thence 36) South 49 degrees 42 minutes 13 seconds East 471.00 feet; thence 37) South 35 degrees 42 minutes 13 seconds East 99.00 feet; thence 38) South 76 degrees 42 minutes 13 seconds East 84.00 feet; thence 39) South 47 degrees 42 minutes 13 seconds East 70.00 feet; thence 40) South 27 degrees 04 minutes 23 seconds East 114.75 feet; thence 41) South 42 degrees 42 minutes 13 seconds East 154.00 feet; thence 42) South 65 degrees 42 minutes 13 seconds East 119.00 feet; thence 43) South 06 degrees 42 minutes 13 seconds East 64.00 feet; thence 44) South 44 degrees 42 minutes 13 seconds East 70.00 feet; thence 45) south 28 degrees 42 minutes 13 seconds East 254.00 feet; thence 46) South 48 degrees 42 minutes 13 seconds East 50.00 feet; thence 47) South 15 degrees 42 minutes 13 seconds East 111.00 feet; thence 48) South 52 degrees 42 minutes 13 seconds East 54.19 feet; thence 49) South 27 degrees 42 minutes 13 seconds East 46.00 feet; thence 50) South 50 degrees 42 minutes 13 seconds East 127.00 feet; thence 51) South 36 degrees 42 minutes 13 seconds East 90.00 feet; thence 52) South 78 degrees 42 minutes 13 seconds East 175.00 feet; thence 53) North 72 degrees 17 minutes 47 seconds East 100.00 feet; thence 54) South 67 degrees 42 minutes 13 seconds East 86.00 feet; thence 55) North 65 degrees 17 minutes 47 seconds East 124.00 feet; thence 56) North 38 degrees 17 minutes 47 seconds East 74.00 feet; thence 57) North 15 degrees 17 minutes 47 seconds East 48.00 feet; thence 58) North 46 degrees 42 minutes 13 seconds East 72.00 feet; thence 59) North 51 degrees 17 minutes 47 seconds East 178.00 feet; thence 60) North 33 degrees 17 minutes 47 seconds East 65.00 feet; thence 61) North 70 degrees 17 minutes 47 seconds East 53.00 feet; thence 62) North 28 degrees 17 minutes 47 seconds East 220.00 feet; and thence 63) North 61 degrees 17 minutes 47 seconds East 314.00 feet to a corner for lands of Williams & Baker, Inc.; thence running with said lands of Williams & Baker, Inc. the following nine (9) courses and distances: 1) South 09 degrees 59 minutes 30 seconds West 68.29 feet; thence 2) South 73 degrees 52 minutes 21 seconds East 190.01 feet; thence 3) South 53 degrees 38 minutes 46 seconds East 129.52 feet; thence 4) South 2 degrees 26 minutes 56 seconds West 73.96 feet; thence 5) South 40 degrees 07 minutes 36 seconds East 189.40 feet; thence 6) South 05 degrees 09 minutes 09 seconds West 161.26 feet; thence 7) South 29 degrees 08 minutes 10 seconds West 50.58 feet; thence 8) South 16 degrees 10 minutes 25 seconds West 32.19 feet; and thence 9) South 17 degrees 47 minutes 04 seconds East 35.23 feet to a point on the Westerly right-of-way line of County Road #298; thence running with said right-of-way line of County Road #298 the following fourteen (14) courses and distances: 1) deflecting right along a 815.00 foot radius curve, the chord of which bears South 40 degrees 06 minutes 58 seconds West 74.88 feet, an arc distance of 74.90 feet to a pint of tangency; thence 2) South 47 degrees 15 minutes 04 seconds East 10.00 feet

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to a point of curvature; thence 3) deflecting right along a 825.00 foot radius curve, the chord of which bears South 47 degrees 34 minutes 59 seconds West 139.04 feet, an arc distance of 139.21 feet, to a point of tangency; thence 4) South 52 degrees 25 minutes 01 seconds West 393.70 feet; thence 5) South 57 degrees 23 minutes 42 seconds West 145.81 feet; thence 6) South 72 degrees 22 minutes 03 seconds West 94.16 feet; thence 7) South 77 degrees 20 minutes 47 seconds West 92.67 feet; thence 8) South 71 degrees 47 minutes 18 seconds West 53.34 feet; thence 9) South 62 degrees 10 minutes 04 seconds West 94.59 feet; thence 10) South 55 degrees 56 minutes 09 seconds West 380.81 feet; thence 11) South 56 degrees 05 minutes 43 seconds West 124.84 feet; thence 12) South 56 degrees 32 minutes 15 seconds West 992.05 feet to a point of curvature; thence 13) deflecting left along a 575.42 foot radius curve, the chord of which bears South 38 degrees 13 minutes 17 seconds West 361.66 feet, an arc distance of 367.90 feet to a point of tangency; and thence 14) South 19 degrees 54 minutes 19 seconds West 801.30 feet to a point on the aforementioned Northerly right-of-way line of State Route #22; thence finally, running with said right-of-way line of State Route #22, North 61 degrees 17 minutes 44 seconds West 1619.11 feet to the place of beginning, containing 171.30 acres of land, more or less, as surveyed by Charles D. Murphy, Jr., Registered Land Surveyor, dated March 6, 1992.

BEING Parcel B of Tract Number One of the land conveyed unto Tunnell Companies, L.P. by J.G. Townsend, Jr. & Co. dated July 21, 1992 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County, at Georgetown, Delaware in Deed Book 1858, page 346.

TRACT NO. 3: (2-34 23.00 274.00)

ALL that certain tract, piece or parcel of land situate, lying and being on the Southwesterly side of county road #298, in Indian River Hundred, Sussex County, Delaware, more particularly bounded and described as follows, to wit:

BEGINNING at a concrete monument found in the Southwesterly right-of-way line of County Road #298, a corner for these lands and lands now or formerly of Williams & Baker, Inc.; thence from said point of beginning and running along and with the line of lands now or formerly of Williams & Baker, Inc., South 54 degrees 00 minutes 00 seconds West 509.99 feet to a point; thence turning and running and continuing with the line of lands now or formerly of Williams & Baker, Inc., South 5 degrees 41 minutes 00 seconds East 388.20 feet to a point, a corner for these lands, lands now or formerly of Williams & Baker, Inc., lands now or formerly of J.G. Townsend, Jr. & Co. and the centerline of Guinea Creek; thence turning and running with the line of lands now or formerly of J.G. Townsend, Jr. & Co. and the centerline of Guinea Creek, the following thirty-two (32) courses and distances: (1) South 56 degrees 00 minutes 00 seconds West 314.00 feet to a point; thence (2) South 23 degrees 00 minutes 00 seconds West 220.00 feet to a point; thence (3) South 65 degrees 00 minutes 00 seconds West 65.00 feet to a point; thence (4) South 28 degrees 00 minutes 00 seconds West 65.00 feet to point; thence (5) South 46

degrees 00 minutes 00 seconds West 178.00 feet to a point; thence (6) South 52 degrees 00 minutes 00 seconds East 72.00 feet to a point; thence (7) South 10 degrees 00 minutes 00 seconds West 48.00 feet to a point; thence (8) South 33 degrees 00 minutes 00 seconds West 74.00 feet to a point; thence (9) South 60 degrees 00 minutes 00 seconds West 124.00 feet to a point; thence (10) North 73 degrees 00 minutes 00 seconds West 86.00 feet to a point; thence (11) South 67 degrees 00 minutes 00 seconds West 100.00 feet to a point; thence (12) North 84 degrees 00 minutes 00 seconds West 175.00 feet to a point; thence (13) North 42 degrees 00 minutes 00 seconds West 90.00 feet to a point; thence (14) North 56 degrees 00 minutes 00 seconds West 127.00 feet to a point; thence (15) North 33 degrees 00 minutes 00 seconds West 46.00 feet to a point; thence (16) North 58 degrees 00 minutes 00 seconds West 54.19 feet to a point; thence (17) North 21 degrees 00 minutes 00 seconds West 111.00 feet to a point; thence (18) North 54 degrees 00 minutes 00 seconds West 50.00 feet to a point; thence (19) North 34 degrees 00 minutes 00 seconds West 254.00 feet to a point; thence (20) North 50 degrees 00 minutes 00 seconds West 70.00 feet to a point; thence (21) North 12 degrees 00 minutes 00 seconds West 64.00 feet to a point; thence (22) North 71 degrees 00 minutes 00 seconds West 119.00 feet to a point; thence (23) North 48 degrees 00 minutes 00 seconds West 154.00 feet to a point; thence (24) North 32 degrees 22 minutes 10 seconds West 114.75 feet to a point; thence (25) North 53 degrees 00 minutes 00 seconds west 70.00 feet to a point; thence (26) North 82 degrees 00 minutes 00 seconds West 84.00 feet to a point; thence (27) North 41 degrees 00 minutes 00 seconds West 99.00 feet to a point; thence (28) North 55 degrees 00 minutes 00 seconds West 47.00 feet to a point; thence (29) North 28 degrees 00 minutes 00 seconds West 115.00 feet to a point; thence (30) North 54 degrees 00 minutes 00 seconds West 271.00 feet to a point; thence (31) North 84 degrees 00 minutes 00 seconds West 159.00 feet to a point; thence (32) South 77 degrees 00 minutes 00 seconds West 108.04 feet to a point corner for these lands, lands now or formerly of Earl D. Warrington and in line of lands now or formerly of J.G. Townsend, Jr. & Co.; thence turning and running along and with the line of lands now or formerly of Earl D. Warrington, North 43 degrees 30 minutes 00 seconds East 2,717.12 feet to a concrete monument found along the Southwesterly right-of-way line of County Road #298, a corner for these lands and lands now or formerly of Earl D. Warrington; thence turning and running along and with the right-of-way line of Country Road #298, the following seven (7) courses and distances: (1) South 47 degrees 00 minutes 16 seconds East 83.47 feet to a point; thence (2) with a curve bearing to the right, having a radius of 2,114.33 feet, an arc distance of 275.41 feet to a point; thence (3) South 39 degrees 32 minutes 28 seconds East 462.28 feet to a point; thence (4) South 37 degrees 58 minutes 00 seconds East 342.18 feet to a point; thence (5) South 36 degrees 33 minutes 00 seconds East 335.06 feet to a point; thence (6) with a curve bearing to the right, having a radius of 531.05 feet, an arc distance of 280.68 feet to a point; thence (7) South 6 degrees 16 minutes 00 seconds East 387.06 feet to a concrete monument found in the Southwesterly right-of-way line of County road #298, the point and place of beginning, said to contain 116.7957 acres of land, be the same more or less, as surveyed by Coast Survey, Inc., December 10, 1990.

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BEING the same land conveyed unto Tunnell Companies, L.P., by Deed of Winifred S. Lukens, et al. dated September 24, 1991 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County, at Georgetown, Delaware in Deed Book 1805, page 93.

TRACT NO. 4: (2-34 17.00175.00)

ALL that certain tract, piece and parcel of land, lying and being in Indian River Hundred, Sussex County and State of Delaware, fronting on the southwesterly side of County Road 298, adjoining lands of Edward S. Rodgers, Jr., lands of William Rodgers, lands of Arthur Tormet, lands of Frank E. Hall, lands of Townsend's, Inc., and lands of Earl D. Warrington, about to be conveyed to Tunnell Companies, L.P., and more particularly described as follows, according to a survey and plot thereof prepared by Charles D. Murphy, Jr., Registered Land Surveyor, dated September 4, 1984, to-wit:

BEGINNING at a set iron pipe on the southwesterly right-of-way line of aforementioned County Road 298, 25 feet from the centerline thereof, at a corner for lands of Earl D. Warrington, about to be conveyed to Tunnell Companies, L.P., and distant, on a bearing of South 44 degrees 38 minutes 26 seconds East, 60.005 feet from the southeast corner of lands of Edward S. Rodgers, Jr.; thence, running with said lands of Earl D. Warrington, about to be conveyed to Tunnell Companies, L.P., the following three courses and distances, viz: (1) South 46 degrees 07 minutes 08 seconds West, 681.76 feet to a set iron pipe; thence, (2) North 43 degrees 45 minutes 56 seconds West, 778.00 feet to a set iron pipe; thence, (3) South 46 degrees 19 minutes 57 seconds West, 2422.84 feet to a set iron pipe on line of lands of Townsend's, Inc.; thence, following line of lands of Townsend's, Inc., the following three courses and distances, viz: (1) North 43 degrees 45 minutes 56 seconds West, 1022.20 feet to a found stone; thence, (2) North 46 degrees 39 minutes 43 seconds East, 2482.92 feet to a found concrete monument; thence, (3) North 46 degrees 30 minutes 41 seconds East, 314.10 feet to a found concrete monument at the southwest corner of lands of Frank E. Hall; thence, proceeding along said Hall lands, North 43 degrees 21 minutes 26 seconds East, 271.25 feet to a point on aforementioned southwesterly line of County Road 298 and which is distant, on a bearing of South 43 degrees 21 minutes 26 seconds West, 0.32 feet from a found concrete monument; thence, following said right-of-way line of County Road 298, South 46 degrees 14 minutes 22 seconds East, 14.90 feet to the northeast corner of lands of Arthur Tormet, which corner is distant, on a bearing of south 43 degrees 01 minutes 49 seconds West, 0.43 feet from a found concrete monument; thence, running with said Tormet lands, South 43 degrees 01 minutes 49 seconds West, 270.82 feet to a found concrete monument; thence, continuing with said Tormet lands South 46 degrees 31 minutes 45 seconds West, 315.26 feet to a point; thence, following line of lands of Arthur Tormet, William Rodgers and Edward S. Rodgers, Jr., South 43 degrees 45 minutes 56 seconds East, 1709.40 feet to a found concrete monument; thence, continuing with said lands of Edward S. Rodgers, Jr., North 46 degrees 07 minutes 08 seconds East, 620.83 feet to a set iron pipe on

aforementioned southwesterly right-of-way line of County Road 298; thence, finally proceeding along said right-of-way line of County Road 298, South 44 degrees 38 minutes 26 seconds East, 60.005 feet to the place of BEGINNING, containing 60.00 acres of land, more or less.

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of Laura Joyce Warrington Hoge dated January 2, 1991 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware, in Deed Book 1823, page 317.

**TRACT NO. 5: (2-34 17.00 175.01)**

ALL that certain tract, piece and parcel of land, lying and being in Indian River Hundred, Sussex County and State of Delaware, fronting on the Southwesterly side of County Road 298, adjoining lands of Laura J. W. Hoge, about to be conveyed unto Tunnell Companies, L.P., lands of J.G. Townsend, Jr., other lands of Tunnell Companies, L.P. and lands of Townsend's Inc., and more particularly described as follows, according to a survey and plot thereof prepared by Charles D. Murphy, Jr., Registered Land Surveyor, dated September 4, 1984, to wit:

BEGINNING at a set iron pipe on aforementioned Southwesterly right-of-way line of Road 298, 25.00 feet from the centerline thereof, and at the Northeast corner of other lands of Tunnell Companies, L.P.; thence running with said Tunnell Companies, L.P. lands, South 46 degrees 11 minutes 34 seconds West, 2,748.97 feet to a corner for lands of J.G. Townsend, Jr. & Co., in the centerline of Abram's Branch passing over a field stone found at 2,346.37 feet; thence running with said lands of J.G. Townsend, Jr. & Co., and with the centerline of Abram's Branch, South 80 degrees 38 minutes 44 seconds West, 432.40 feet to a corner for lands of Townsend's Inc.; thence, running with said lands of Townsend's, Inc., North 43 degrees 45 minutes 56 seconds West, 605.53 feet to a set iron pipe at a corner for lands of Laura J.W. Hoge, about to be conveyed to Tunnell Companies, L.P.; thence, following line of said lands of Laura J.W. Hoge, about to be conveyed to Tunnell Companies, L.P., the following three courses and distances, viz: (1) North 46 degrees 19 minutes 57 seconds East, 2422.84 feet to a set iron pipe; thence, (2) South 43 degrees 45 minutes 56 seconds East, 778.00 feet to a set iron pipe; thence, (3) North 46 degrees 07 minutes 08 seconds East, 681.76 feet to a set iron pipe on the aforementioned southwesterly right-of-way line of County Road 298; thence, following said right-of-way line of County Road 298, South 44 degrees 38 minutes 26 seconds East, 67.065 feet to the place of BEGINNING, containing 47.1606 acres of land, more or less.

BEING the same land conveyed unto Tunnell Companies, L.P. by a Deed of Earl D. Warrington dated January 3, 1991 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware, in Deed Book 1823, page 319.



**TRACT NO. 6: (2-34 23.00 709.00)**

**ALL that certain tract and parcel of land lying and being in Indian River Hundred, Sussex County, Delaware, and being more particularly described as follows:**

**BEGINNING** at a point located along the northwesterly right of way of County Road 298, said point marking the division line between the lands described herein and other lands of Tunnell Companies, L.P. and also marking the southwesterly end of a bridge over Abrams Branch; thence from said point of beginning and by and with other properties of the grantee North 40 degrees 19 minutes 53 seconds West 10.23 feet to a point; thence North 17 degrees 54 minutes 15 seconds West 35.23 feet; thence North 16 degrees 03 minutes 14 seconds East 32.19 feet to a point; thence North 29 degrees 00 minutes 59 seconds East 50.58 feet to a point; thence North 05 degrees 01 minutes 58 seconds East 161.26 feet to a point; thence North 40 degrees 14 minutes 47 seconds West 189.40 feet to a point; thence North 22 degrees 19 minutes 45 seconds East 73.96 feet to a point located in Abrams Branch; thence continuing with the Branch North 53 degrees 45 minutes 57 seconds West 129.52 feet to a point in the Branch; thence North 73 degrees 59 minutes 32 seconds West 177.69 feet to a point in the Branch; thence North 00 degrees 29 minutes 44 seconds West 458.01 feet to a concrete marker; thence North 59 degrees 11 minutes 16 seconds East 509.52 feet to a concrete marker situate along the aforesaid right of way of County Road 298; thence by and with said right of way the following eighteen (18) courses and distances, back to the point and place of Beginning: (1) South 01 degrees 14 minutes 53 seconds East 255.99 feet; (2) South 03 degrees 48 minutes 08 seconds East 131.22 feet; (3) South 10 degrees 36 minutes 29 seconds East 101.08 feet; (4) South 20 degrees 45 minutes 05 seconds East 52.42 feet; (5) South 26 degrees 41 minutes 01 seconds East 52.71 feet; (6) South 29 degrees 24 minutes 08 seconds East 100.31 feet; (7) South 24 degrees 38 minutes 53 seconds East 90.01 feet; (8) South 17 degrees 36 minutes 28 seconds West 54.93 feet; (9) South 11 degrees 19 minutes 53 seconds East 63.63 feet; (10) South 05 degrees 04 minutes 18 seconds West 57.38 feet; (11) South 18 degrees 50 minutes 46 seconds West 51.75 feet; (12) South 28 degrees 26 minutes 49 seconds West 50.45 feet; (13) South 34 degrees 07 minutes 50 seconds West 45.90 feet; (14) South 37 degrees 47 minutes 17 seconds West 228.06 feet; (15) North 52 degrees 48 minutes 23 seconds West 5.76 feet; (16) South 37 degrees 30 minutes 22 seconds West 53.56 feet; (17) South 15 degrees 50 minutes 31 seconds West 20.23 feet; (18) South 37 degrees 09 minutes 37 seconds West 51.58 feet, home to the point and place of Beginning, containing 9.81 Acres, more or less, as surveyed by Land-Tech, Inc. on July 8, 1993, which may be found of record in the Office of the Recorder of Deeds, Georgetown, Delaware, in Plot Book 51, page 155.

**BEING** the same lands conveyed unto Tunnell Companies, L.P. by a Deed of Williams & Baker, Inc., dated November 22, 1993 and filed for record in the Office of the Recorder of Deeds, in and for Sussex County at Georgetown, Delaware, in Deed Book 1946, page 227.

RECORDER OF DEEDS  
FRANCIS M. BACHAUSKAS

97 NOV -7 AM 11:16

SUSSEX COUNTY  
DOC. SURCHARGE PAID

Received

NOV 10 1997

ASSESSMENT DIVISION  
OF SUSSEX CTY

12-18-97  
Raywood LLC  
RD 1 Box 291  
Long Neck, DE  
19966

JAMIE WHITEHOUSE, AICP MRTPI  
PLANNING & ZONING DIRECTOR  
(302) 855-7878 T  
(302) 854-5079 F  
jamie.whitehouse@sussexcountyde.gov



**Sussex County**

DELAWARE  
sussexcountyde.gov

## Memorandum

To: Sussex County Planning Commission Members  
From: Lauren DeVore, Planner III  
CC: Vince Robertson, Assistant County Attorney and applicant  
Date: May 5<sup>th</sup>, 2021  
RE: Staff Analysis for CZ 1922 Baywood, LLC

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This memo is to provide background and analysis for the Planning Commission to consider as a part of application CZ 1922 Baywood, LLC to be reviewed during the May 13, 2021, Planning Commission Meeting. This analysis should be included in the record of this application and is subject to comments and information that may be presented during the public hearing.

The request is for a Change of Zone for Tax Parcels 234-23.00-270.00, 273.01, 273.02, 273.03 and 273.05 to allow for a change of zone from a General Commercial (C-1) Zoning District, Commercial Residential (CR-1) Zoning District, and a Neighborhood Business (B-1) Zoning District to a High Density Residential Zoning District, Residential Planned Community (HR-RPC). The parcels are located on the northern and southern sides of Long Neck Road (Route 23) approximately 500 feet east of John J. Williams Highway (Route 24). The parcels to be rezoned consist of 54.38 acres +/-.

The 2018 Sussex County Comprehensive Plan Update (Comprehensive Plan) provides a framework of how land is to be developed. As part of the Comprehensive Plan, a Future Land Use Map is included to help determine how land should be zoned to ensure responsible development. The Future Land Use map in the plan indicates that the subject properties have a land use designation of "Coastal Area" and "Commercial Area." The properties to the north and south also have the land use designation of Coastal Area.

As outlined in the 2018 Sussex County Comprehensive Plan, the Coastal Areas are areas that can accommodate development provided that special environmental concerns are addressed. A range of housing types should be permitted in Coastal Areas, including single-family homes, townhouses, and multi-family units. Retail and office uses are appropriate, but larger shopping centers and office parks should be confined to selected locations with access along arterial roads. Appropriate mixed-use development should all be allowed.

Additionally, Commercial Areas include concentrations of retail and service uses that are mainly located along arterials, and highways. As opposed to small, traditional downtown areas that are often historic and pedestrian-friendly, Commercial Areas include commercial corridors, shopping centers, and other medium and large commercial vicinities geared towards vehicular traffic. The Comprehensive Plan also notes that mixed-use buildings may also be appropriate for these areas.

The subject properties are zoned General Commercial (C-1), Neighborhood Business (B-1) and Commercial Residential (CR-1). The adjacent parcels to the north of the subject properties on the north side of Long Neck Road (Route 23) are zoned General Residential (GR). The properties to



the south of the southern parcels, which are part of this application and are located on the south side of Long Neck Road (Route 23), are zoned General Residential (GR) and High Density Residential (HR-1).

The 2018 Sussex County Comprehensive Plan outlines Zoning Districts by their applicability to each Future Land Use category. Under Table 4.5-2 “Zoning Districts Applicable to Future Land Use Categories,” the High Density Residential (HR-1) Zoning District is listed as an applicable zoning district within the “Coastal Area.”

Since 2011, there have been two (2) Change of Zone applications within a 2-mile radius of the application site. The first application is for Change of Zone No. 1880 for a change of zone from an Agricultural Residential (AR-1) Zoning District to a Medium Commercial (C-2) Zoning District. The application was approved by the Sussex County Council on July 16, 2019 and the change was adopted through Ordinance No. 2669. The second application is for Change of Zone No. 1791 for a change of zone from an Agricultural Residential (AR-1) Zoning District and a General Commercial (C-1) Zoning District to a High-Density Residential Zoning District (HR-1). The application was approved by the Sussex County Council on April 12, 2016 and adopted through Ordinance No. 2444.

A potential amendment to the Future Land Use map for parcel 270.00 has been submitted to the State Planning Office for review at the June PLUS meeting.

Based on the analysis of the land use, surrounding zoning and uses, a Change of Zone from a General Commercial (C-1) Zoning District, Commercial Residential (CR-1) Zoning District, and a Neighborhood Business (B-1) Zoning District to a High Density Residential Zoning District, Residential Planned Community (HR-RPC) could be considered as being generally consistent with the land use, area zoning and surrounding uses.



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

September 19, 2019

Ms. Janelle Cornwell, Director  
Sussex County Planning & Zoning  
P.O. Box 417  
Georgetown, DE 19947

Dear Ms. Cornwell:

The Department has completed its review of a Service Level Evaluation Request for the **Robert Tunnell, III** rezoning application, which we received on September 10, 2019. This application is for an approximately 91.52-acre assemblage of parcels (Tax Parcels: 234-23.00-273.00, 273.01, 273.02, 273.03 and 273.05). The subject land is located on both sides of Long Neck Road (Sussex Road 22), west of School Lane and Bank Road (Sussex Road 298), approximately 2,300 feet east of the intersection of Delaware Route 24 and Long Neck Road / Indian Mission Road (Sussex Road 22). The subject land is currently split-zoned as B-1 (General Business), C-1 (General Commercial) and CR-1 (Commercial Residential), and the applicant is seeking to rezone the land to HR (High-Density Residential) with a residential planned community (RPC) overlay to develop 514 apartment units.

Per the 2018 Delaware Vehicle Volume Summary, the annual average and summer average daily traffic volumes along the segment of Long Neck Road where the subject land is located, which is from Masseys Landing to Delaware Route 24, are 11,338 and 14,592 vehicles per day, respectively. As the subject land also has frontage along School Lane, the annual average and summer average daily traffic volumes along that road segment, which is from Bay Farm Road (Sussex Road 299) to Delaware Route 24, are 3,921 and 5,046 vehicles per day, respectively.

Based on our review, we estimate that the proposed land use would generate more than 50 vehicle trips in any hour or 500 vehicle trips per day, and would be considered to have a Major impact to the local area roadways. In this instance, the Department considers a Major impact to be when a proposed land use would generate more than 200 vehicle trips in any hour of the week and / or 2,000 vehicle trips per day. According to the Institute of Transportation Engineers (ITE) Trip Generation Manual, a development of 514 apartment units would generate 2,800 vehicle trips per day, 170 vehicle trips during the morning peak hour, and 213 vehicle trips during the afternoon peak hour. Because of this impact, we recommend that the applicant be required to perform a Traffic Impact Study (TIS) for the subject application.



Ms. Janelle M. Cornwell  
Page 2 of 3  
September 19, 2019

It is noted that two proposed residential developments currently conducting TIS would occupy the subject parcels. Briefly, the Baywood Garden Villas Phases I & II is proposed to include 353 units of low-rise multi-family housing and would occupy Tax Parcels 234-23.00-270.00 and 273.05. The Woodlands (f.k.a. Baywood Gardens Phase III) is proposed to include 160 units of low-rise multi-family housing and would occupy Tax Parcels 234-23.00-273.01, 273.02 and 273.03. Copies of the TIS Scopes of Work for the above-mentioned projects are enclosed with this letter.

If the County approves this application, the applicant should be reminded that DeIDOT requires compliance with State regulations regarding plan approvals and entrance permits, whether or not a TIS is required.

Please contact Mr. Claudy Joinville, at (302) 760-2124, if you have questions concerning this correspondence.

Sincerely,



T. William Brockenbrough, Jr.  
County Coordinator  
Development Coordination

TWB:cjm  
Enclosure

cc: Constance C. Holland, Coordinator, Cabinet Committee on State Planning Issues  
Robert Tunnell, III, Applicant  
J. Marc Coté, Assistant Director, Development Coordination  
Gemez Norwood, South District Public Works Manager, Maintenance & Operations  
Susanne K. Laws, Sussex County Review Coordinator, Development Coordination  
Derek Sapp, Subdivision Manager, Development Coordination  
Brian Yates, Subdivision Manager, Development Coordination  
John Andrescavage, Subdivision Manager, Development Coordination  
Kevin Hickman, Subdivision Manager, Development Coordination  
Troy Brestel, Project Engineer, Development Coordination  
Claudy Joinville, Project Engineer, Development Coordination

**PLANNING & ZONING**  
JANELLE M. CORNWELL, AICP  
DIRECTOR

(302) 855-7878 T  
(302) 854-5079 F



**Sussex County**  
DELAWARE  
sussexcountyde.gov

## Service Level Evaluation Request Form

This form **shall** be submitted to the Planning and Zoning Office and a response **shall** be received back from DelDOT prior to the applicant being able to submit an application to the Planning and Zoning Office.

Date: 5/31/19

### Site Information:

Site Address/Location: Intersection of Long Neck Road, School Land and Greens Way

Tax Parcel Number: TM 234-23, P 273, 273.01, 273.02, 273.03, 273.05

Current Zoning: B-1, C-1, & CR-1

Proposed Zoning: HR/RPC

Land Use Classification: FH, TX, RV, AG & CO

Proposed Use(s): 514 Apartments and Associated Amenities

Square footage of any proposed buildings or number of units: 514 Units

### Applicant Information:

Applicant's Name: Robert Tunnell, III

Applicant's Address: 34026 Annas Way, Suite 1

City: Long Neck State: DE Zip Code: 19966

Applicant's Phone Number: (302) 945-9300

Applicant's e-mail address: rtunnell@potnets.com



COUNTY ADMINISTRATIVE OFFICES  
2 THE CIRCLE | PO BOX 417  
GEORGETOWN, DELAWARE 19947

Last updated 7-27-18

*SENT EMAIL*  
*3:42pm 9/19/2019*



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

MEMORANDUM

**TO:** File

**FROM:** Claudy Joinville, Project Engineer *C.J.*

**DATE:** September 18, 2018

**SUBJECT:** Baywood at Garden Villas Phase I & II  
Traffic Impact Study (TIS) – Scoping Meeting (09/06/18)  
Scope of Work

**ATTENDANCE:** Betty Tustin, The Traffic Group, Inc.  
Jason Palkewicz, Solutions IPEM  
Brian Yates, DelDOT Planning  
Claudy Joinville, DelDOT Planning

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Background and Discussion

Baywood, LLC seeks to develop 353 low-rise multi-family dwelling units on an approximately 24.35-acre assemblage of parcels (Tax Parcels: 234-23.00-270.00 & 273.03). The development will be built in two phases with Phase I consisting of 209 units and Phase II, 144 units.

The land is located on the north side of Long Neck Road (Sussex Road 22), approximately 1,000 feet east of the intersection of Delaware Route 24 and Long Neck Road, in Sussex County. The land is currently split-zoned as C-1 (General Commercial) and B-1 (Neighborhood Business), and the developer does not plan to rezone the land.

Two access points are proposed along Long Neck Road: one access point directly opposite Bayshore Drive and another via Greens Way, which serves the existing Baywood residential development. Construction is anticipated to be complete in 2027.

Cases to be Evaluated

The study shall evaluate the weekday morning, weekday evening, summer Saturday midday peak hours for the following situations:

- 1) Existing (2018);
- 2) 2027 without development;
- 3) 2027 with development.

### **Facilities to be Evaluated**

The TIS should evaluate conditions at the following intersections for capacity and level of service using the Highway Capacity Software (HCS). It should also evaluate the extent to which they meet the relevant DelDOT, AASHTO and MUTCD standards for geometry and traffic control devices.

- 1) Site Entrance A / Bayshore Drive / Long Neck Road (Sussex Road 22)
- 2) Site Entrance B / Greens Way / Long Neck Road
- 3) Delaware Route 24 / Indian Mission Road (Sussex Road 22) / Long Neck Road
- 4) Indian Mission Road / E. Stonewater Creek Boulevard / Surf Board Boulevard (*backfill*)
- 5) Indian Mission Road / Cannon Road (Sussex Road 307)
- 6) Indian Mission Road / Harmons Hill Road / Phillip Branch Road (Sussex Road 302)
- 7) Delaware Route 24 / Plaza Drive (*backfill*)
- 8) Delaware Route 24 / Sherwood Forest (*backfill*)
- 9) Delaware Route 24 / Autumn Road / Bay Farm (Sussex Road 299)
- 10) Delaware Route 24 / White Pine Drive (*backfill*)
- 11) Delaware Route 24 Greens Way (*backfill*)
- 12) Delaware Route 24 / Banks Road (Sussex Road 298)
- 13) Delaware Route 24 / Holly Lake Road (Sussex Road 301)

### **Traffic Counts**

The Consultant should conduct traffic counts for the intersections listed above from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m., on a Tuesday, Wednesday or Thursday, and from 10:00 a.m. to 2:00 p.m. on a Saturday to determine when the peaks occur. The weekday counts should be performed during a time when schools are open and operating at a normal capacity. The Saturday counts should be conducted at a time when local area schools, as well as schools in the nearby metropolitan areas of Philadelphia, Baltimore, and Washington, D.C., are closed in June, July, or August.

Additionally, an Automatic Traffic Recorders (ATR) should be used to collect traffic data on Long Neck Road near the area of the proposed site entrances. The ATRs should be placed for a one-week time period that includes the date(s) of the manual traffic counts. The ATR data will be used to verify the manual counts and determine whether adjustments are required.

Section 2.2.8.5, item 19, under Existing Traffic and Transportation Conditions in the Development Coordination Manual addresses how oversaturated intersections are to be counted.

The traffic counts should be submitted to DelDOT both electronically as Portable Document Format (PDF)/Excel files and as draft report figures showing peak hour volumes (labeled with date and peak hour interval) posted on diagrams of the road network.

The Consultant should include counts of pedestrians, a separate count of right-turn on red (in addition to right-turn movement counts), and a separate count of heavy vehicles.



The Consultant should be alert for events affecting the traffic counts, such as accidents or nearby construction and shall make note of any such events when submitting the counts. As necessary, DelDOT reserves the right to reject the counts or require adjustments to them.

### **Trip Generation**

The Consultant shall use the 10<sup>th</sup> edition of the ITE Trip Generation Manual in generating trips for this development.

### **Trip Distributions**

A trip distribution to be used for the site is attached.

### **Growth Factors**

The Consultant shall apply growth factors to the traffic counts. DelDOT will develop those factors after we receive the Consultant's traffic counts.

The Consultant should also determine what portions of the following developments were complete at the time of any traffic counts to be used in the study and shall add in projected traffic from any unbuilt portions. The following information on the amount and types of development associated with these projects is tentative and should be verified with Sussex County.

- 1) Bridlewood at Baywood (675 single-family detached houses)\*
- 2) Pelican Point (400 single-family detached houses)
- 3) Independence (a.k.a. Indigo Run) (450 single-family detached houses)
- 4) Acadia f.k.a. Insight at Lewes Point (238 single-family detached houses)
- 5) The Woods at Burton Pond (165 single-family detached houses)
- 6) Burton Pond (319 single-family detached houses)
- 7) Deerbrook (120 single-family detached houses)
- 8) Peninsula Lakes (588 single-family detached houses, 72 multi-family low-rise houses, and 15,000 square-feet of retail space)
- 9) Baylis Estates (136 single-family detached houses)
- 10) Peninsula Square (40,000 square feet of retail space, 15,000 square feet of medical office space, a 6,200 square-foot high turn-over sit-down restaurant, 144 apartments, and a 100-room hotel)

\* Section 2.2.8.10 of the Development Coordination Manual provides a rule for determining a development's expected year of completion for the purpose of a TIS. In accordance with that rule, Bridlewood at Baywood has a projected buildout year of 2034. Again by that rule, Bridlewood at Baywood is projected to have 350 dwellings occupied in 2027. Therefore this TIS should account for only 350 of the 675 total dwellings.

### **Highway Capacity Software**

The Consultant shall use the most recent version of the Highway Capacity Software (HCS) that implements the 6<sup>th</sup> Edition of the Highway Capacity Manual (HCM). Presently, that is HCS7.

**Seasonal Adjustment Factors** for the roads in the study area are as follows:

Roads	August	September	October
Delaware Route 24	0.77	0.92	1.09
Indian Mission Road (Sussex Road 22)	0.92	0.96	0.95
Long Neck Road (Sussex Road 22)	0.77	0.92	1.09
Banks Road (Sussex Road 298)	0.92	0.96	0.95
Autumn Road / Bay Farm (Sussex Road 299)	0.92	0.96	0.95
Holly Lake Road (Sussex Road 301)	0.92	0.96	0.95
Phillip Branch Road (Sussex Road 302)	0.92	0.96	0.95
Harmons Hill Road (Sussex Road 302)	0.92	0.96	0.95
Cannon Road (Sussex Road 307)	0.92	0.96	0.95
All Other Roads	1.00	1.00	1.00

**DelDOT Projects**

Currently, DelDOT has two active projects in the study area.

1. The first project involves DelDOT’s Hazard Elimination Program (HEP), formerly known as the Highway Safety Improvement Program (HSIP), which has two sites that include the intersections of Delaware Route 24 and Indian Mission Road / Long Neck Road, and Delaware Route 24 and Plaza Drive. The purpose of this project is to make operational improvements to address safety deficiencies and to accommodate future traffic volumes at these intersections. The proposed improvements associated with this project include:
  - Build channelization islands at several entrances along Delaware Route 24 to restrict certain turning movements.
  - Construct sidewalk connections to fill in gaps.
  - Install bicycle lanes.
  - Relocate the entrance of the Timber Acres community to align with the adjacent traffic signal at Plaza Drive.
  - Provide consistent lanes, shoulders and curbs along Delaware Route 24.
  - Extend the Delaware Route 24 left-turn lanes onto Indian Mission Road and Long Neck Road.
  - Extend the Long Neck Road left-turn lane onto westbound Delaware Route 24.
  - Reconstruct the traffic signals at the intersections of Delaware Route 24 and Indian Mission Road / Long Neck Road, and Delaware Route 24 and Plaza Drive.

More details, including concept plans for this project, are available at the following link: [https://www.deldot.gov/information/projects/HSIP\\_SR24\\_SR5\\_SR23/](https://www.deldot.gov/information/projects/HSIP_SR24_SR5_SR23/). For more information on how this project affects the proposed development, the Consultant shall contact Mr. Mark Whiteside, Project Manager in the Project Development – South section. Mr. Whiteside may be reached at (302) 760-2127.

2. The second project also pertains to DelDOT's Hazard Elimination Program. This project has two sites that include the intersections of Delaware Route 24 and Mount Joy Road, and Delaware Route 24 and Bay Farm Road / Autumn Road. At the intersection of Delaware Route 24 and Mount Joy Road, the proposed improvements include:
  - Widen the northbound and southbound Oak Orchard Road and Mount Joy Road approaches, respectively, to provide separate left-turn, pass through, and right-turn lanes.
  - Extend the left-turn and right-turn lanes on all approaches to meet storage requirements.
  - Construct sidewalks and bicycle lanes.

At the intersection of Delaware Route 24 and Bay Farm Road / Autumn Road, the proposed improvements include:

- Widen the northbound and southbound Bay Farm Road and Autumn Road approaches, respectively, to provide separate left-turn, pass through, and right-turn lanes.
- Widen the westbound Delaware Route 24 approach to provide separate left-turn, pass through, and right-turn lanes.
- Extend the left-turn and right-turn lanes on all approaches to meet storage requirements.
- Construct sidewalks and bicycle lanes.

More details, including concept plans for this project, are available at the following link: [https://www.delDOT.gov/information/projects/SR24\\_MountJoy\\_BayFarmRd/index.shtml](https://www.delDOT.gov/information/projects/SR24_MountJoy_BayFarmRd/index.shtml). For more information on how this project affects the proposed development, the Consultant shall also contact Mr. Whiteside.

### **Transit, Bicycle, and Pedestrian Facilities**

The study should describe the existing and proposed transit service in the project area and should also describe the existing and needed transit, bicycle, and pedestrian facilities on or near the project site. In determining these items, the Consultant shall contact Mr. David Dooley, a Service Development Planner at the Delaware Transit Corporation (DTC), and Mr. Anthony Aglio, of DelDOT's Statewide and Regional Planning Section. Mr. Dooley may be reached at (302) 576-6064. Mr. Aglio may be reached at (302) 760-2509.

### **General Notes**

- 1) All submissions relating to this study should be made electronically via the Planning and Development Coordination Application (PDCA), preferably in Portable Document Format (PDF).
- 2) The Consultant is advised to read Chapter 2 in the Development Coordination Manual carefully, as our regulations have changed. A current version is available on our website at the following link: <https://delDOT.gov/Business/subdivisions/index.shtml?dc=changes>.
- 3) The Consultant should e-mail DelDOT's Transportation Management Center (TMC) at [tmcl@state.de.us](mailto:tmcl@state.de.us) to obtain advance approval for the use of any signal timings.

Memorandum to File  
September 18, 2018  
Page 6 of 6

- 4) The Consultant should contact Ms. Kari Glanden, of DelDOT's Traffic Safety Section, for crash data within the study area. The Consultant shall report on this data and make recommendations for improvements if safety problems exist in the study area. Ms. Glanden may be reached at (302) 659-4069.
- 5) The Consultant should e-mail DelDOT's Transportation Management Center (TMC) at [tmcl@state.de.us](mailto:tmcl@state.de.us) before installing ATRs to notify the TMC of the time, location and duration the ATRs will remain installed. The Consultant should provide contact information for the person to reach in the event of an equipment failure or other problem.
- 6) Both DelDOT and Sussex County reserve the right to change this scope of work if the study is not performed within a reasonable time.
- 7) The developer may choose to have DelDOT's Consultant perform the TOA rather than use their own Consultant. If this option is of interest, the developer should contact me at (302) 760-2167 to request a cost estimate.
- 8) By copy of this memorandum I ask those copied to contact me at (302) 760-2124 regarding any significant errors or omissions.

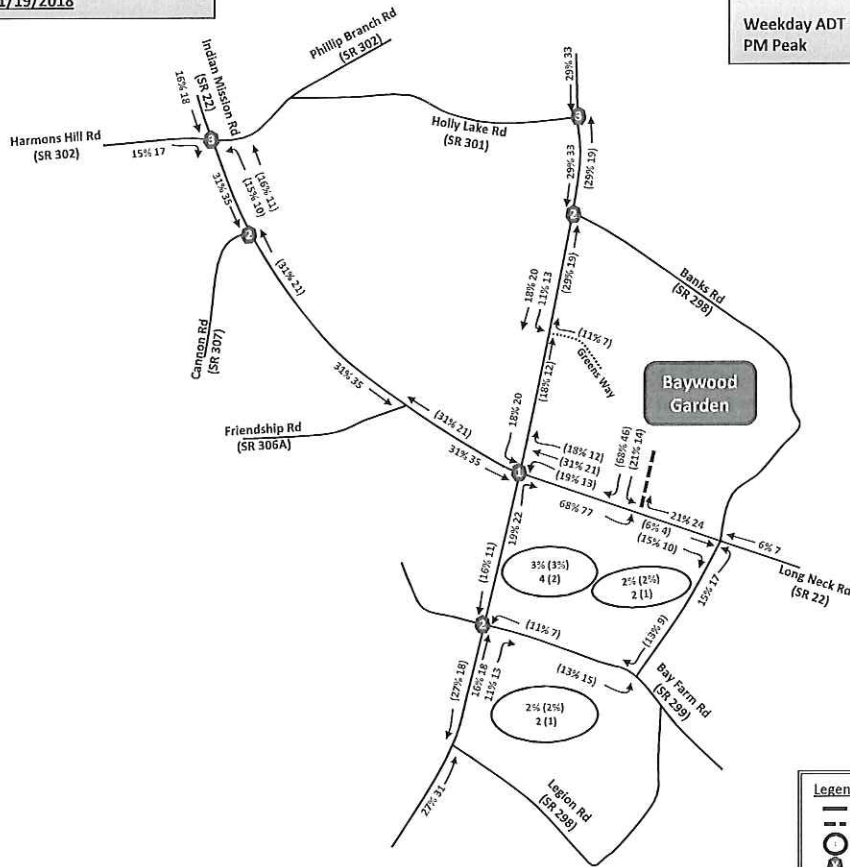
CJ:cjm  
Enclosure

cc: Janelle Cornwell, Director, Sussex County Planning and Zoning  
Drew Boyce, Director, Planning  
Michael Simmons, Assistant Director for Project Development South, DOTS  
J. Marc Coté, Assistant Director, Development Coordination  
Peter Haag, Traffic Studies Manager, Traffic, DOTS  
Alastair Probert, South District Engineer, DOTS  
Gemez Norwood, South District Public Works Supervisor, DOTS  
William Kirsch, South District Permit Supervisor, DOTS  
Steve Sisson, Sussex County Review Coordinator, Development Coordination  
T. William Brockenbrough, County Coordinator, Development Coordination  
Troy Brestel, Project Engineer, Development Coordination  
David Dooley, Service Development Planner, Delaware Transit Corporation  
Anthony Aglio, Statewide & Regional Planning  
Kari Glanden, Statistical Information Supervisor, DelDOT Traffic, DOTS  
Mark Galipo, Traffic Engineer, DelDOT Traffic, DOTS  
Andrew Parker, McCormick & Taylor, Inc.  
Mir Wahed, Johnson, Mirmiran, & Thompson, Inc.

PM Peak Distribution / Assignment  
 September 18, 2018  
 Revised 11/19/2018

**Baywood Garden Villas Phases I & II**  
 Trip Generation - Residential  
 353 Multi-family Low-Rise Houses (ITE 10 LUC 220)

	IN	OUT
Weekday ADT	1,314	1,314
PM Peak	114	67



Note: Figure Not Drawn to Scale

**Legend**

- State-maintained road
- - - Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

**MEMORANDUM**

**TO:** File

**FROM:** Claudy Joinville, Project Engineer *C.J.*

**DATE:** April 24, 2019

**SUBJECT:** Baywood Gardens – Phase 3  
Traffic Impact Study (TIS) – Scoping Meeting (4/11/19)  
Scope of Work

**ATTENDANCE:** Robert Tunnell, III, Baywood LLC  
Betty Tustin, The Traffic Group, Inc.  
Jason Palkewicz, Solutions IPEM  
Susanne Laws, DelDOT Planning  
T. William Brockenbrough, DelDOT Planning  
Claudy Joinville, DelDOT Planning

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**Background and Discussion**

Baywood, LLC seeks to develop 160 low-rise multi-family houses on an approximately 15.36-acre assemblage of parcels (Tax Parcels: 234-23.00-273.01, 273.02, and 273.03). The land is located on the southwest corner of the intersection of Long Neck Road (Sussex Road 22) and School Lane / Banks Road (Sussex Road 298), in Sussex County. The land is currently zoned as CR-1 (Commercial Residential), and the developer plans to rezone the land to HR-1 (High-Density Residential) with a Residential Planned Community overlay.

Two access points are proposed: a full access along School Lane directly opposite the Long Neck Shopping Plaza driveway, and a rights-in / rights-out / lefts-out access on Long Neck Road directly opposite Greens Way. Construction is anticipated to be complete in 2024.

**Cases to be Evaluated**

The study shall evaluate the weekday morning, weekday evening, summer Saturday midday peak hours for the following situations:

- 1) Existing (2019);
- 2) 2024 without development;
- 3) 2024 with development.

### **Facilities to be Evaluated**

The TIS should evaluate conditions at the following intersections for capacity and level of service using the Highway Capacity Software (HCS). It should also evaluate the extent to which they meet the relevant DeIDOT, AASHTO and MUTCD standards for geometry and traffic control devices.

- 1) Site Entrance A / School Lane (Sussex Road 298) – *Full Access*
- 2) Site Entrance B / Greens Way / Long Neck Road – (*Rights-in / Rights-out / Lefts-out Access*)
- 3) Long Neck Road / School Lane / Banks Road (Sussex Road 298)
- 4) Delaware Route 24 / Long Neck Road / Indian Mission Road (Sussex Road 22)

### **Traffic Counts**

The Consultant may reuse traffic count data used in the Baywood Garden Villas (a.k.a. Keastone) and Bridlewood at Baywood TIS for all three peak hours. For the School Lane / Long Neck Shopping Plaza Driveway intersection, the Consultant should conduct weekday morning and evening peak hour traffic counts now. Summer volumes are not needed for the driveway but through volumes on School Lane should be determined using the traffic counts from the intersection of Long Neck Road / School Lane / Banks Road.

Section 2.2.8.5, item 19, under Existing Traffic and Transportation Conditions in the Development Coordination Manual addresses how oversaturated intersections are to be counted.

The traffic counts should be submitted to DeIDOT both electronically as Portable Document Format (PDF)/Excel files and as draft report figures showing peak hour volumes (labeled with date and peak hour interval) posted on diagrams of the road network.

The Consultant should include counts of pedestrians, a separate count of right-turn on red (in addition to right-turn movement counts), and a separate count of heavy vehicles.

### **Trip Generation**

The Consultant shall use the 10<sup>th</sup> edition of the ITE Trip Generation Manual in generating trips for this development.

### **Trip Distributions**

A trip distribution to be used for the site is attached.

### **Growth Factors**

The Consultant shall apply growth factors to the traffic counts. DeIDOT will develop those factors after we receive the Consultant's traffic counts.

The Consultant should also determine what portions of the following developments were complete at the time of any traffic counts to be used in the study and shall add in projected traffic from any unbuilt portions. The following information on the amount and types of development associated with these projects is tentative and should be verified with Sussex County.

- 1) Baywood Gardens Villas / Baywood Gardens Phases 1 & 2 (a.k.a. Keastone) (353 low-rise multi-family)
- 2) Bridlewood at Baywood (675 single-family detached houses)\*
- 3) Pelican Point (400 single-family detached houses)
- 4) The Woods at Burton Pond (165 single-family detached houses)
- 5) Burton Pond (319 single-family detached houses)
- 6) Deerbrook (120 single-family detached houses)
- 7) Peninsula Lakes (588 single-family detached houses, 72 multi-family low-rise houses, and 15,000 square-feet of retail space)
- 8) Baylis Estates (136 single-family detached houses)
- 9) Peninsula Square (40,000 square feet of retail space, 15,000 square feet of medical office space, a 6,200 square-foot high turn-over sit-down restaurant, 144 apartments, and a 100-room hotel)
- 10) Carillon Woods (189 apartments)

\* Section 2.2.8.10 of the Development Coordination Manual provides a rule for determining a development's expected year of completion for the purpose of a TIS. In accordance with that rule, Bridlewood at Baywood has a projected buildout year of 2034. Again by that rule, Bridlewood at Baywood is projected to have 200 dwellings occupied in 2024. Therefore, this TIS should account for only 200 of the 675 total dwellings.

**Highway Capacity Software**

The Consultant shall use the most recent version of the Highway Capacity Software (HCS) that implements the 6<sup>th</sup> Edition of the Highway Capacity Manual (HCM). Presently, that is HCS7.

**Seasonal Adjustment Factors** for the roads in the study area are as follows:

Roads	April	May	June
Delaware Route 24	1.09	0.96	0.81
Indian Mission Road (Sussex Road 22)	0.98	0.96	0.89
Long Neck Road (Sussex Road 22)	1.09	0.96	0.81
Banks Road / School Lane (Sussex Road 298)	0.98	0.96	0.88
All Other Roads	1.00	1.00	1.00



### **DelDOT Projects**

Currently, DelDOT has one active project within the study area. The project involves DelDOT's Hazard Elimination Program (HEP), formerly known as the Highway Safety Improvement Program (HSIP), which has two sites that include the intersections of Delaware Route 24 and Indian Mission Road / Long Neck Road, and Delaware Route 24 and Plaza Drive. The purpose of this project is to make operational improvements to address safety deficiencies and to accommodate future traffic volumes at these intersections. The proposed improvements associated with this project include:

- Build channelization islands at several entrances along Delaware Route 24 to restrict certain turning movements.
- Construct sidewalk connections to fill in gaps.
- Install bicycle lanes.
- Relocate the entrance of the Timber Acres community to align with the adjacent traffic signal at Plaza Drive.
- Provide consistent lanes, shoulders and curbs along Delaware Route 24.
- Extend the Delaware Route 24 left-turn lanes onto Indian Mission Road and Long Neck Road.
- Extend the Long Neck Road left-turn lane onto westbound Delaware Route 24.
- Reconstruct the traffic signals at the intersections of Delaware Route 24 and Indian Mission Road / Long Neck Road, and Delaware Route 24 and Plaza Drive.

The most recent project updates indicate that final design is underway and construction is anticipated to start in spring 2020 and end in summer 2021. More details, including concept plans for this project, are available at the following link: [https://www.deldot.gov/information/projects/HSIP\\_SR24\\_SR5\\_SR23/](https://www.deldot.gov/information/projects/HSIP_SR24_SR5_SR23/). For more information on how this project affects the proposed development, the Consultant shall contact Mr. Mark Whiteside, Project Manager in the Project Development – South section. Mr. Whiteside may be reached at (302) 760-2127.

### **Transit, Bicycle, and Pedestrian Facilities**

The study should describe the existing and proposed transit service in the project area and should also describe the existing and needed transit, bicycle, and pedestrian facilities on or near the project site. In determining these items, the Consultant shall contact Mr. David Dooley, a Service Development Planner at the Delaware Transit Corporation (DTC), and Mr. Anthony Aglio, of DelDOT's Statewide and Regional Planning Section. Mr. Dooley may be reached at (302) 576-6064. Mr. Aglio may be reached at (302) 760-2509.

### **General Notes**

- 1) All submissions relating to this study should be made electronically via the Planning and Development Coordination Application (PDCA), preferably in Portable Document Format (PDF).

Memorandum to File  
April 24, 2019  
Page 5 of 5

- 2) The Consultant should e-mail DeIDOT's Transportation Management Center (TMC) at [tmcl@delaware.gov](mailto:tmcl@delaware.gov) to obtain advance approval for the use of any signal timings.
- 3) The Consultant should contact Ms. Kari Glanden, of DeIDOT's Traffic Safety Section, for crash data within the study area. The Consultant shall report on this data and make recommendations for improvements if safety problems exist in the study area. Ms. Glanden may be reached at (302) 659-4069.
- 4) The Consultant should e-mail DeIDOT's Transportation Management Center (TMC) at [tmcl@delaware.gov](mailto:tmcl@delaware.gov) before installing ATRs to notify the TMC of the time, location and duration the ATRs will remain installed. The Consultant should provide contact information for the person to reach in the event of an equipment failure or other problem.
- 5) Both DeIDOT and Sussex County reserve the right to change this scope of work if the study is not performed within a reasonable time.
- 6) The developer may choose to have DeIDOT's Consultant perform the TIS rather than use their own Consultant. If this option is of interest, the developer should contact Mr. Troy Brestel at (302) 760-2167 to request a cost estimate.
- 7) By copy of this memorandum I ask those copied to contact me at (302) 760-2124 regarding any significant errors or omissions.

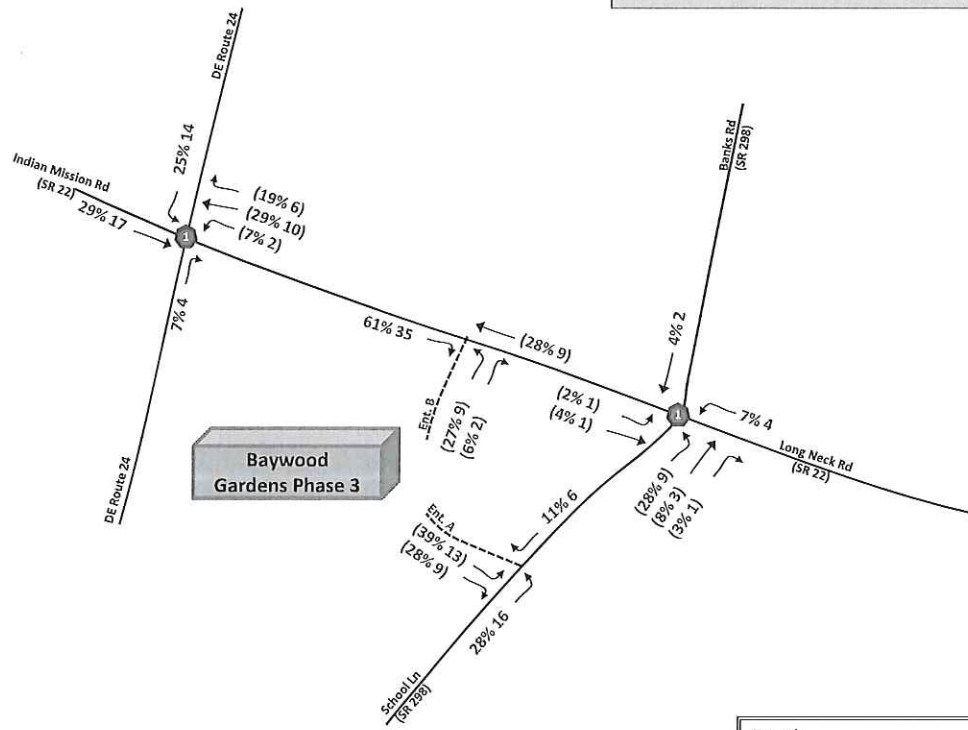
CJ:cjm  
Enclosure

cc: Janelle Cornwell, Director, Sussex County Planning and Zoning  
Drew Boyce, Director, Planning  
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Michael Simmons, Assistant Director for Project Development South, DOTS  
Peter Haag, Traffic Studies Manager, Traffic, DOTS  
Alastair Probert, South District Engineer, DOTS  
Gemez Norwood, South District Public Works Supervisor, DOTS  
Bryan Behrens, Group Engineer, Project Development South, DOTS  
Mark Whiteside, Project Engineer, Project Development South, DOTS  
William Kirsch, South District Permit Supervisor, DOTS  
David Dooley, Service Development Planner, Delaware Transit Corporation  
Anthony Aglio, Statewide & Regional Planning  
Brian Yates, Subdivision Manager, DeIDOT Planning  
Kari Glanden, Statistical Information Supervisor, DeIDOT Traffic, DOTS  
Mark Galipo, Traffic Engineer, DeIDOT Traffic, DOTS  
Andrew Parker, McCormick & Taylor, Inc.  
Mir Wahed, Johnson, Mirmiran, & Thompson, Inc.

PM Peak Distribution / Assignments  
April 24, 2019

**Baywood Gardens Phase 3**  
Trip Generation  
160 apartments – low-rise multi-family (ITE 10<sup>th</sup> Ed. LUC 220)

	Total	IN	OUT
ADT	1,169	584	585
PM Peak	90	57	33



**Legend**

- State-maintained road
- Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips



Figure 1 of 1

**SUSSEX COUNTY ENGINEERING DEPARTMENT  
UTILITY PLANNING & DESIGN REVIEW DIVISION  
C/U & C/Z COMMENTS**

RECEIVED

TO: **Jamie Whitehouse**  
REVIEWER: **Chris Calio**  
DATE: **5/5/2021**  
APPLICATION: **CZ 1922 (Baywood, LLC – Robert Tunnell, III)**  
APPLICANT: **Baywood, LLC – Robert Tunnell III**  
FILE NO: **NCPA-5.03**

MAY 06 2021  
SUSSEX COUNTY  
PLANNING & ZONING

TAX MAP &  
PARCEL(S): **234-23.00-270.00, 273.01, 273.02, 273.03 & 273.05**

LOCATION: **North and south side of Long Neck Rd. (Rt. 23), approximately  
500 feet east of John J. Williams Hwy. (Rt. 24).**

NO. OF UNITS: **Change from C-1 & B-1 to HR-1 RPC**

GROSS  
ACREAGE: **54.38**

SYSTEM DESIGN ASSUMPTION, MAXIMUM NO. OF UNITS/ACRE: **4**

**SEWER:**

- (1). Is the project in a County operated and maintained sanitary sewer and/or water district?  
Yes  No 
  - a. If yes, see question (2).
  - b. If no, see question (7).
- (2). Which County Tier Area is project in? **Tier 1**
- (3). Is wastewater capacity available for the project? **Yes** If not, what capacity is available? **N/A.**
- (4). Is a Construction Agreement required? **Yes** If yes, contact Utility Engineering at (302) 855-7717.
- (5). Are there any System Connection Charge (SCC) credits for the project? **No** If yes, how many? **N/A.** Is it likely that additional SCCs will be required? **Yes** If yes, the current System Connection Charge Rate is **Unified \$6,360.00** per EDU. Please contact **N/A** at **302-855-7719** for additional information on charges.

- (6). Is the project capable of being annexed into a Sussex County sanitary sewer district? **Yes**
- Attached is a copy of the Policy for Extending District Boundaries in a Sussex County Water and/or Sanitary Sewer District.
- (7). Is project adjacent to the Unified Sewer District? **Yes**
- (8). Comments: **Parcels 234-23.00-270.00 & 273.05 will have to be annexed into the sewer district.**
- (9). Is a Sewer System Concept Evaluation required? **Yes, Contact Utility Planning at 302-855-1299 to apply**
- (10). Is a Use of Existing Infrastructure Agreement Required? **Yes**

UTILITY PLANNING APPROVAL:



John J. Ashman  
Director of Utility Planning

Xc: Hans M. Medlarz, P.E.  
Lisa Walls  
Nicole Messeck

## **Policy for Extending District Boundaries**

1. Property owner (developer) and/or his representative shall make a request to the Utility Planning Division for a Sewer System Concept Evaluation.
2. Property owner (developer) and/or his representative shall meet with the applicable planning and zoning agency to determine if zoning is appropriate for the development being planned.
3. With appropriate zoning, property owner (developer) and/or his representative shall send a letter (with appropriate application fee as listed below) requesting the Sussex County Council to consider extending the water and/or sanitary sewer district boundaries. (Sussex County Code)

<b>Application Fees</b>	
<b>Less than 2 acres</b>	<b>\$500.00</b>
<b>2.1 -9.99 acres</b>	<b>\$750.00</b>
<b>10 - 150.00 acres</b>	<b>\$1,500.00</b>
<b>Greater than 150.00 acres</b>	<b>\$2,500.00</b>

4. The Sussex County Engineering Department shall present, for Sussex County Council's consideration, posting of notices for the proposed extension of the district boundaries.
5. The Sussex County Council approves posting notices for the proposed extension of the boundaries. (If approval to post the notices is not given, the appropriate fee is refunded.)
6. Within ninety days of the posting of the notices, the Sussex County Council approves/disapproves extending the boundaries.
7. The Sussex County Council approves/disapproves of the extension of the water and/or sanitary sewer pipelines under the appropriate Sussex County Ordinance.



Station #1 – 32628 Oak Orchard Road, Millsboro, DE 19966  
Station #2 – 25375 Banks Road, Millsboro, DE 19966

April 29, 2021

Robert W. Tunnell, III, Partner, &/or  
Lincoln Davis  
32046 Anna's Way  
Long Neck, DE 19966

RE: Apparatus Funding Campaign Pledge

Dear Gentlemen,

The Indian River Volunteer Fire Company would like to acknowledge the generosity and past support of the Tunnell Companies, Pot Nets Communities, and most recently Baywood, LLC via the financial contributions to our organization.

The Indian River Volunteer Fire Company would like to acknowledge the most recent financial funding pledge of \$150,000 by Baywood, LLC towards our recent acquisition of our brand-new Pierce Arrow XT 100' HD Ascendant Tower truck.

This aerial platform is ideally suited for firefighting and rescue situations involving multi-story and multi-residential buildings, such as the multi-story condominium and apartment buildings which are increasingly being constructed within our fire district.

It is and has been Indian River's aspiration to locate this tower truck at our Long Neck facility (Station #2) on Banks Road, nearest the Baywood community, to serve our communities more efficiently. The Indian River Volunteer Fire Company is actively pursuing substantial facility upgrades including but not limited to new construction and renovations at this location to accommodate these desires.

The Indian River Volunteer Fire Company greatly appreciates your support and looks forward to working with you in the future.

If there are any questions, please do not hesitate to contact me at your earliest convenience.

Respectfully submitted,

Patrick C. Miller  
President



34026 Anna's Way - Suite 1 • Long Neck, DE 19966

302-945-9300  
1-800-647-7500  
FAX 302-945-4032

April 26, 2021

Mr. Patrick C. Miller  
President  
Indian River Volunteer Fire Co.  
32628 Oak Orchard Road  
Millsboro, DE 19966

Re: 100' Ascendant Tower Truck  
\$150,000 Pledge

Dear Mr. Miller,

It was a pleasure meeting with you last week.

We believe that a 2021 Pierce Arrow XT 100' HD Ascendant Tower truck will be an excellent addition to your inventory of equipment that keeps the Long Neck community safer in their homes and businesses.

Tunnell Companies, L.P. will commit \$150,000.00 towards the purchase of this truck, over 6 annual payments:

1. \$25,000.00 – enclosed with this letter.
2. \$25,000.00 – May 1<sup>st</sup>, 2022
3. \$25,000.00 – May 1<sup>st</sup>, 2023
4. \$25,000.00 – May 1<sup>st</sup>, 2024
5. \$25,000.00 – May 1<sup>st</sup>, 2025
6. \$25,000.00 – May 1<sup>st</sup>, 2026

We are pleased to learn that this truck will be located at Station #2 on Banks Road, nearest our communities.

When the truck arrives, we would enjoy being a part of any commissioning ceremony that you may have, to celebrate this apparatus being placed into service.

Sincerely,

Robert W. Tunnell, III  
Partner



# PRELIMINARY HR-RPC SITE PLAN FOR BAYWOOD GARDENS

SUSSEX COUNTY, DELAWARE  
FOR  
BAYWOOD, LLC

## SITE DATA:

OWNER: TAX MAP: 234-23.00-273.05 & 270.00  
BAYWOOD, LLC  
34026 ANNA'S WAY  
SUITE 1  
LONG NECK, DE 19966

TAX MAP: 234-23.00-273.01, 273.02 & 273.03  
ABC WOODSLAND, LLC  
P.O. BOX 1389  
EASTON, MD 21601

APPLICANT/  
DEVELOPER: BAYWOOD, LLC  
34026 ANNA'S WAY, SUITE 1  
LONG NECK, DE 19966  
PHONE: 302.945.9300  
FAX: 302.945.4032  
CONTACT: ROBERT TUNNELL, III

ENGINEER: SOLUTIONS IPEM  
303 N. BEDFORD STREET  
GEORGETOWN, DE 19947  
PHONE: 302.297.9215  
CONTACT: JASON PALKEWICZ, PE

- TAX MAP:  
234-23.00-273.05 & 270.00  
AREA = 38.17 ± ACRES  
234-23.00-273.01, 273.02 & 273.03  
AREA = 16.21 ± ACRES
- PERMITTED DENSITY HR-RPC  
54.38 AC. - 2.68 AC. = 51.70 AC. (NET)  
51.70 AC x 12 DU/AC = 620 DU
- PROPOSED USE:  
514 MULTI-FAMILY UNITS (514 UNITS / 54.38 AC = 9.45 UNIT/AC.)
- EXISTING ZONING:  
C-1 (17.48 AC.±)  
B-1 (20.69 AC.±)  
CR-1 (16.21 AC.±)  
ENVIRONMENTALLY SENSITIVE DEVELOPING AREA
- PROPOSED ZONING: HR-RPC
- BUILDING SETBACKS:  
FRONT: 40'  
SIDE: 10'  
REAR: 10'  
MAXIMUM BUILDING HEIGHT: 50'
- FLOOD ZONE:  
THE PROPERTY IS LOCATED WITHIN FLOOD ZONE X. (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), PER FIRM MAP NUMBER 10005C0340K & 10005C343K, MAP REVISED MARCH 16, 2015.
- SOIL TYPES:  
FmA - FORT MOIT-HENLOPEN COMPLEX - HYDROLOGIC SOIL GROUP A  
FmA - FORT MOIT LOAMY SAND - HYDROLOGIC SOIL GROUP A  
HpA & HpB - HENLOPEN LOAMY SAND - HYDROLOGIC SOIL GROUP A  
HuA - HURLOCK LOAMY SAND - HYDROLOGIC SOIL GROUP A/D
- WATER SUPPLY:  
TIDEWATER UTILITY COMPANY  
LONG NECK WATER COMPANY
- SANITARY SEWER:  
INLAND BAYS PRESERVATION COMPANY  
SUSSEX COUNTY
- OPENSACE = 27.5 AC.± (51.5%)

NOTES:  
1. ALL ON-SITE DRIVE AISLES AND PARKING AREAS ARE PRIVATE AND SHALL BE MAINTAINED BY THE OWNER UNTIL DEDICATION TO THE HOMEOWNERS ASSOCIATION. THE PERPETUAL MAINTENANCE OF THE DRIVE AISLES SHALL BE BY THE RESPECTIVE ORGANIZATION.

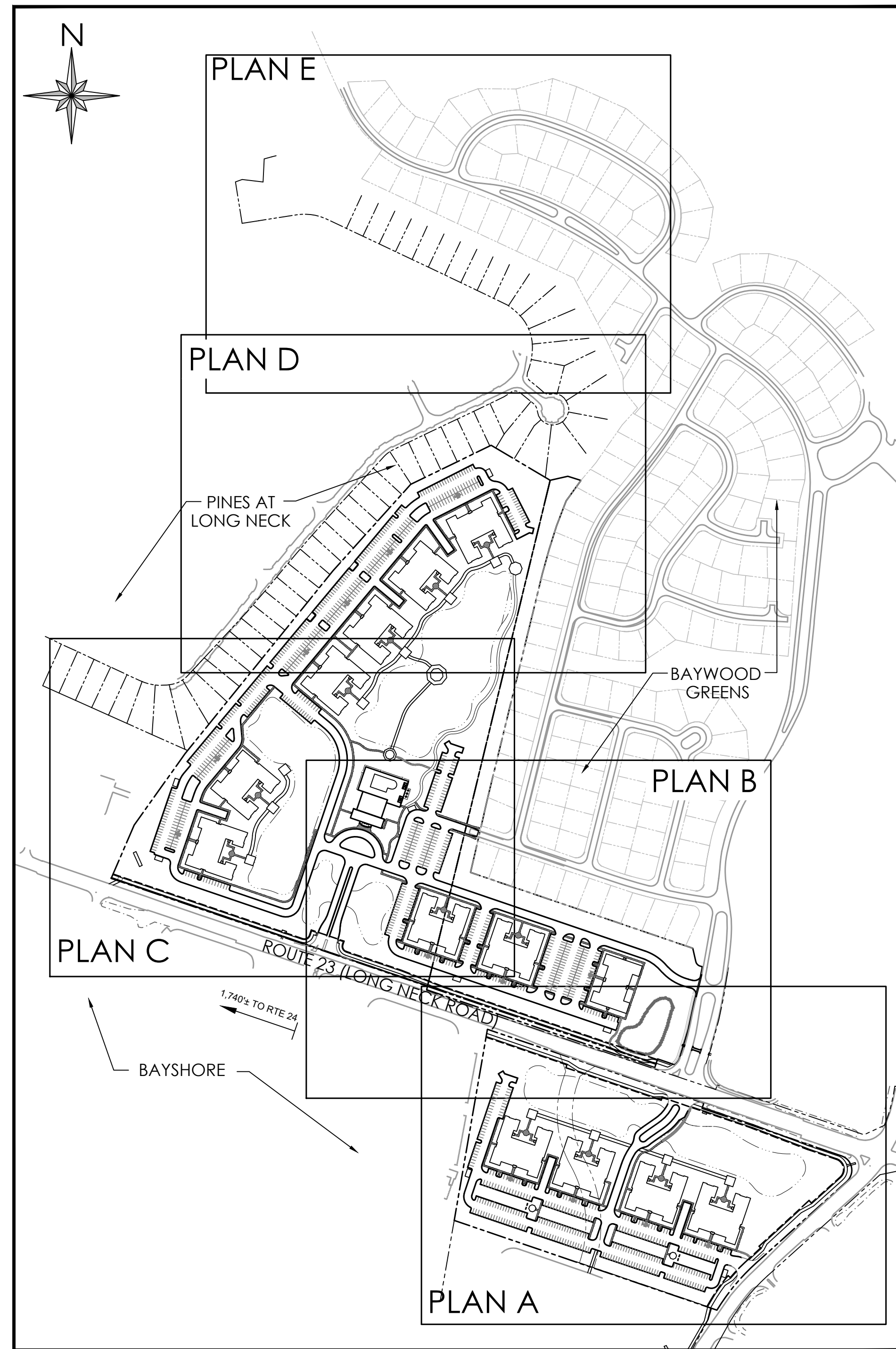
2. ROUTE 23 (LONG NECK ROAD) IMPROVEMENTS SHALL BE PER THE APPROVED DELAWARE DEPARTMENT OF TRANSPORTATION ENTRANCE PLANS DATED 3/15/2007 SIGNED BY MARC COTE.

3. SURVEY: THE BOUNDARY AND TOPOGRAPHIC INFORMATION FOR THIS PLAN WAS ADAPTED FROM ELECTRONIC FILES PROVIDED BY DAVIS, BOWEN & FRIEDEL, INC. TITLED "BAYWOOD TOWN CENTER", DATED FEBRUARY 2003. A FIELD SURVEY WAS COMPLETED BY MCCRONE INC. IN SEPTEMBER 2005. BASE DATA INCLUDING AERIAL SURVEY PROVIDED BY THE CLIENT.

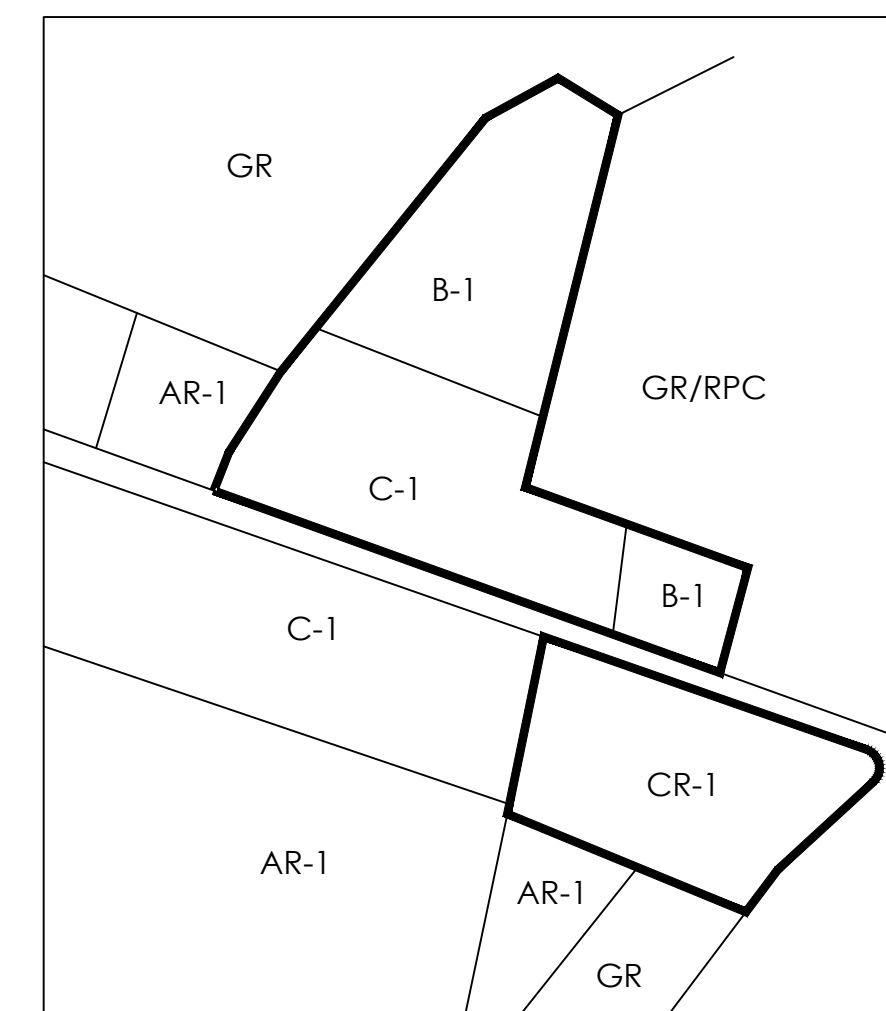
PARKING CALCULATIONS		
TAX MAP 234-23.00-273.05 & 270.00	REQUIRED	PROPOSED
354 MULTI-FAMILY UNITS	602 SPACES*	791 SPACES
*354 MULTI-FAMILY UNITS 2 SPACES PER UNIT FOR 1st 50 UNITS = 100 SPACES 15% REDUCTION FOR 51 TO 200 UNITS = (150 x 2 x 85%) = 255 SPACES 20% REDUCTION FOR REMAINDER (154 x 2 x 80%) = 247 SPACES		
TAX MAP 234-23.00-273.01, 273.02 & 273.03	REQUIRED	PROPOSED
160 MULTI-FAMILY UNITS	287 SPACES**	320 SPACES
**160 MULTI-FAMILY UNITS 2 SPACES PER UNIT FOR 1st 50 UNITS = 100 SPACES 15% REDUCTION FOR 51 TO 200 UNITS = (110 x 2 x 85%) = 187 SPACES		

## SHEET INDEX

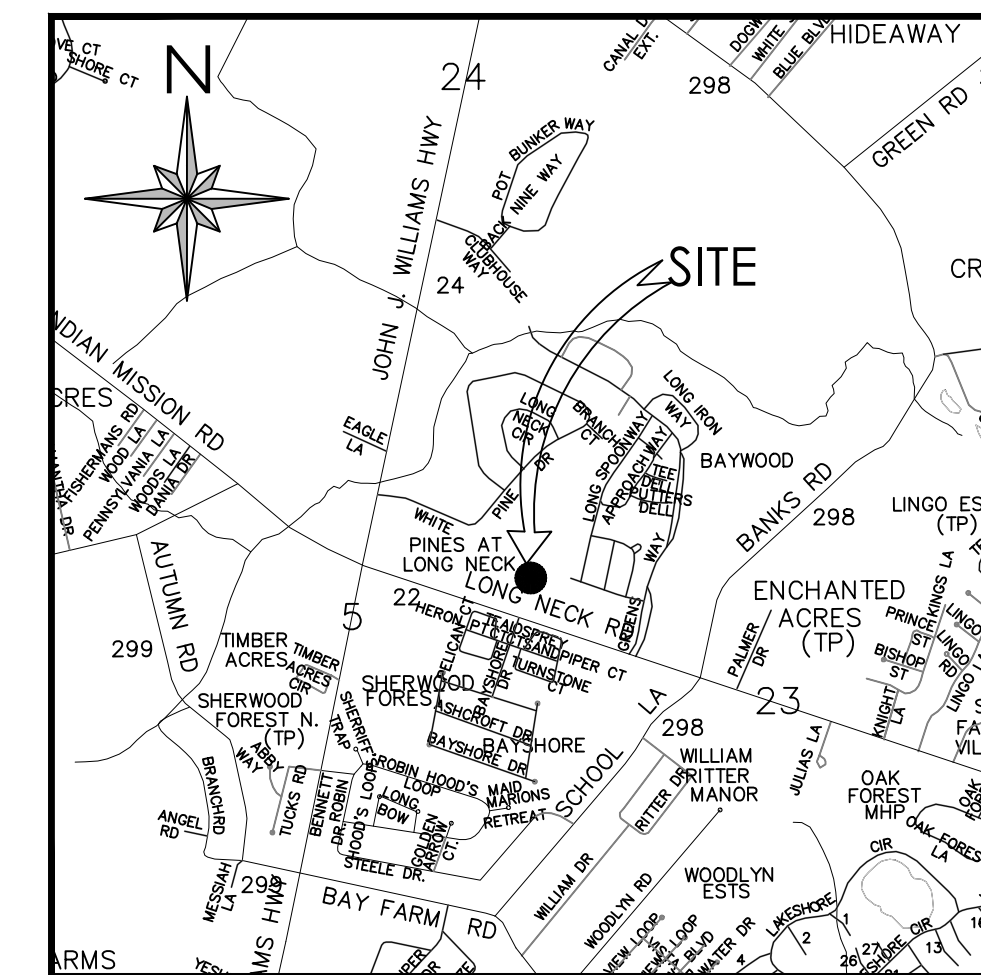
- COVER SHEET
- EXISTING CONDITIONS PLAN
- SITE PLAN A
- SITE PLAN B
- SITE PLAN C
- SITE PLAN D
- SITE PLAN E



SITE PLAN  
1" = 300'



EXISTING ZONING KEY PLAN  
N.T.S.



VICINITY MAP  
SCALE: 1" = 2,000'±

## LEGEND

	EXISTING	PROPOSED
PROPERTY LINE	---	---
ZONING LINE	---	N/A
SETBACK LINE	---	N/A
BUFFER	---	---
PROPERTY CORNER (NOT SPECIFIED)	⊙	N/A
CONCRETE MONUMENT FOUND	CMF □	N/A
IRON PIPE FOUND	IPF ●	N/A
MAJOR CONTOUR	---	N/A
MINOR CONTOUR	---	N/A
SPOT ELEVATION	N/A	19.25
FENCE LINE	---	N/A
EDGE OF POND	---	---
WETLAND LINE	---	N/A
BUILDING	▭	▨
STORM MANHOLE	⊙	⊙
CATCH BASIN	▭	▭
CURB INLET	▭	▭
STORM PIPE	---	---
SANITARY MANHOLE	⊙	⊙
CLEANOUT	N/A	○
SANITARY PIPE	---	---
FORCE MAIN PIPE	N/A	---
WATER PIPE	---	---
FIRE HYDRANT	⊕	⊕
OVERHEAD ELECTRIC	---	N/A
UTILITY POLE	⊕	N/A
DECIDUOUS TREE	⊕	N/A
CONIFEROUS TREE	●	N/A
TREE LINE	---	---
PAVEMENT HATCH	▨	▨
CONCRETE HATCH	▨	▨
BUILDING OUTLINE	---	---
SIDEWALK	---	---
SIDEWALK HATCH	▨	▨
ROAD CENTERLINE	---	---
EDGE OF CONCRETE	---	---
EDGE OF PAVEMENT	---	---
EDGE OF GRAVEL	---	N/A
PAINT STRIPE	---	---
CURB	---	---
LIGHT POLE	N/A	★
DUMPSTER PAD	N/A	⊕

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INCORPORATED  
10005 PRELIMINARY COVER SHEET

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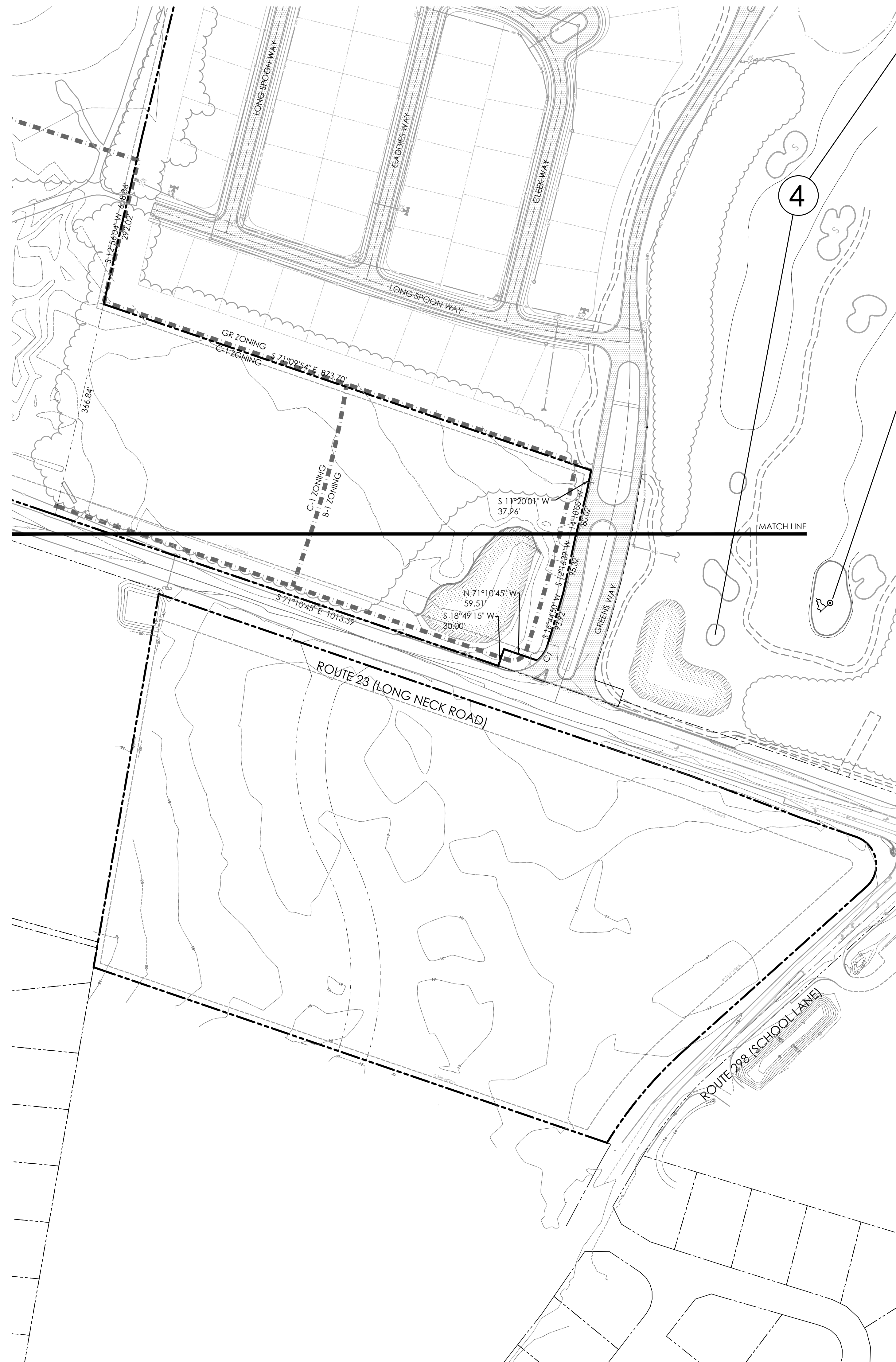
NO.	DATE	DESCRIPTION
1	4/27/21	PLANNING AND ZONING SUBMITAL

COVER SHEET for  
**BAYWOOD GARDENS**  
SUSSEX COUNTY, DELAWARE  
PREPARED FOR: TUNNELL COMPANIES, LLC

Date:	3/9/20
Job Number:	10005
Scale:	AS NOTED
Drawn By:	ML
Designed By:	HHB
Approved By:	JIP

Sheet No.: 1

File Name: 10005-prelim-cover



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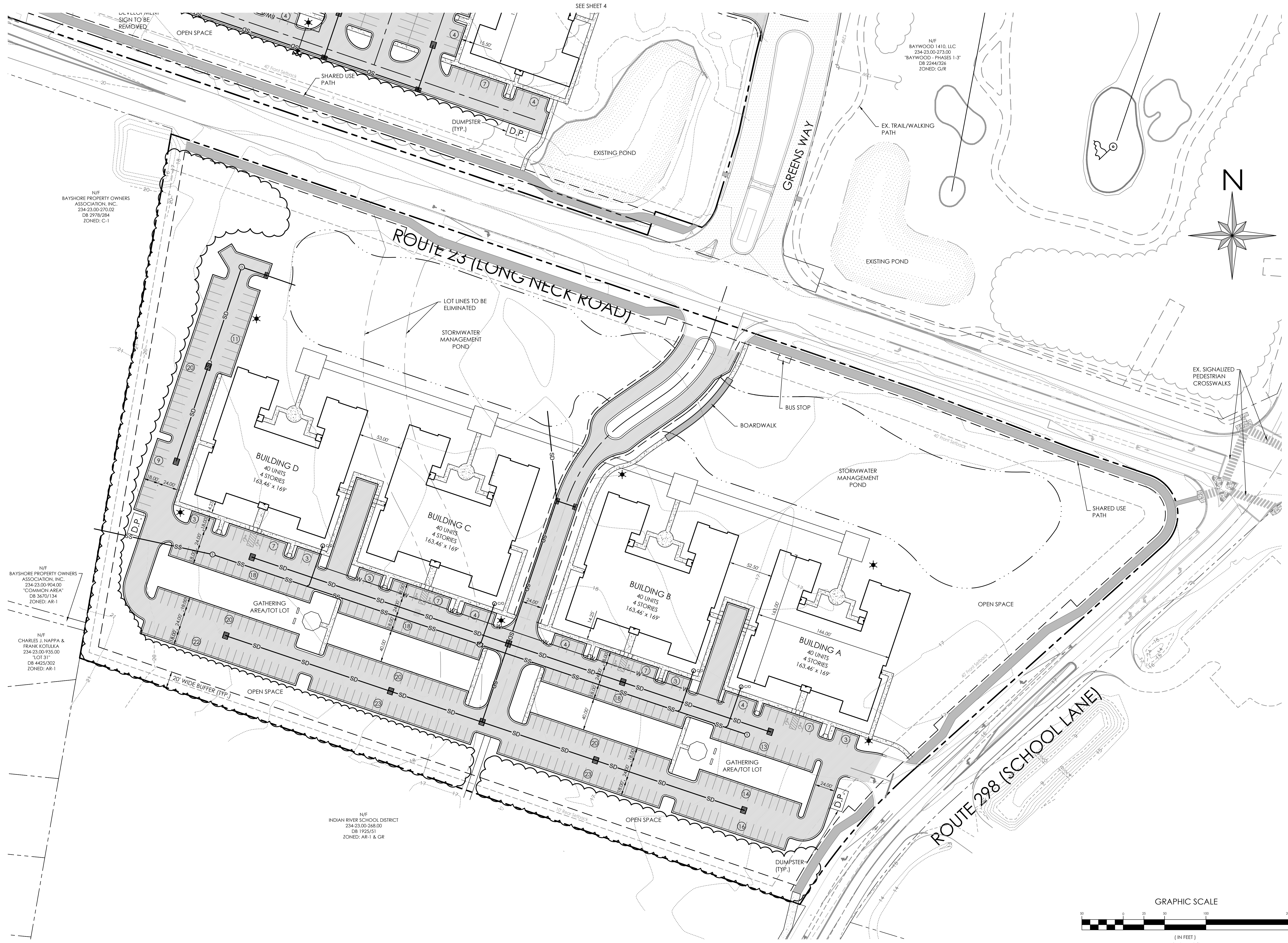
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NO.	DATE	DESCRIPTION
1	4/27/21	PLANNING AND ZONING SUBMITAL

EXISTING CONDITIONS PLAN  
 for  
**BAYWOOD GARDENS**  
 SUSSEX COUNTY, DELAWARE  
 PREPARED FOR: TUNNELL COMPANIES, LLC

Date:	3/9/20
Job Number:	10005
Scale:	1" = 100'
Drawn By:	ML
Designed By:	HJB
Approved By:	JP

Sheet No.: **2**

File Name: 10005-prelim-siteplan



SEE SHEET 4

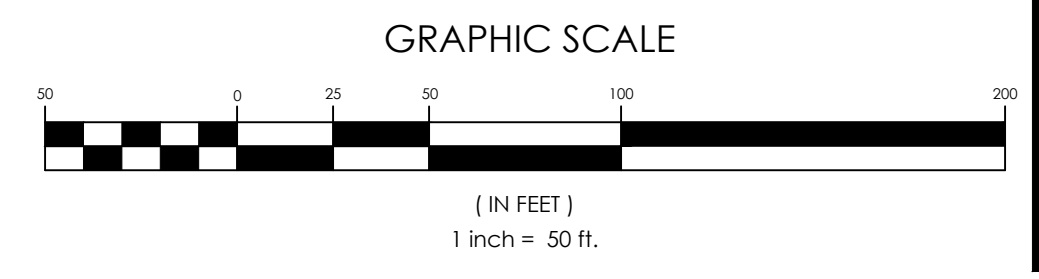
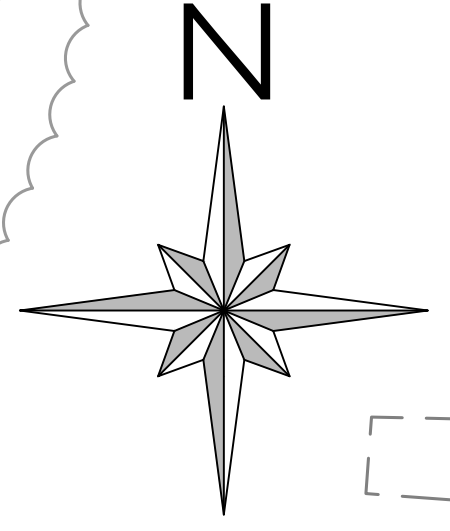
N/F  
BAYWOOD 141D, LLC  
234-23.00-273.00  
"BAYWOOD - PHASES 1-3"  
DB 2244/326  
ZONED: G/R

N/F  
BAYSHORE PROPERTY OWNERS  
ASSOCIATION, INC.  
234-23.00-270.02  
DB 2978/284  
ZONED: C-1

N/F  
BAYSHORE PROPERTY OWNERS  
ASSOCIATION, INC.  
234-23.00-904.00  
"COMMON AREA"  
DB 3670/134  
ZONED: AR-1

N/F  
CHARLES J. NAPPA &  
FRANK KOTULKA  
234-23.00-935.00  
"LOT 31"  
DB 4425/302  
ZONED: AR-1

N/F  
INDIAN RIVER SCHOOL DISTRICT  
234-23.00-268.00  
DB 1925/51  
ZONED: AR-1 & GR



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PLANNING AND ZONING

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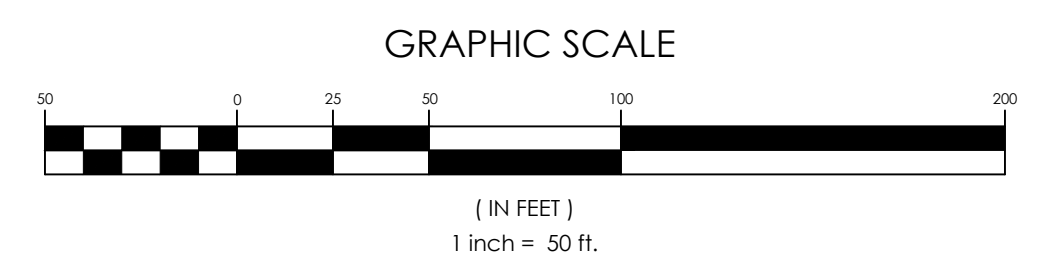
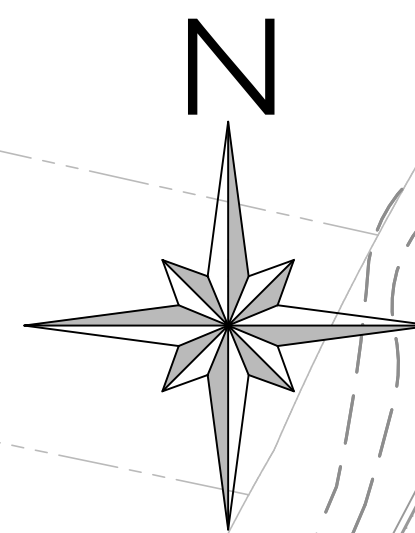
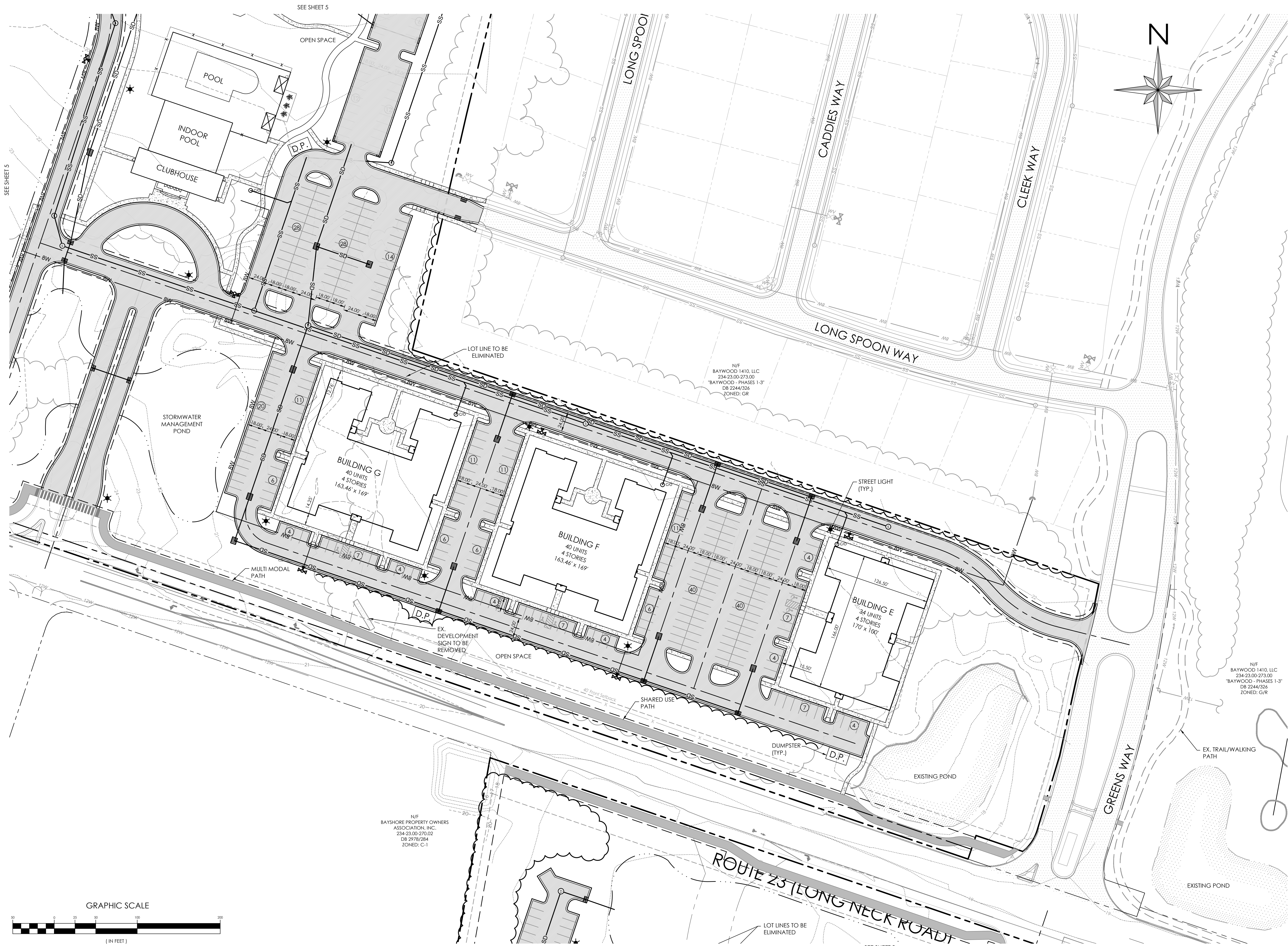
NO.	DATE	DESCRIPTION
1	4/27/21	PLANNING AND ZONING SUBMITAL

SITE PLAN A  
for  
**BAYWOOD GARDENS**  
SUSSEX COUNTY, DELAWARE  
PREPARED FOR: TUNNELL COMPANIES, LLC

Date:	3/9/20	Job Number:	10005	Scale:	1"=50'	Drawn By:	ML	Designed By:	HHB	Approved By:	JP
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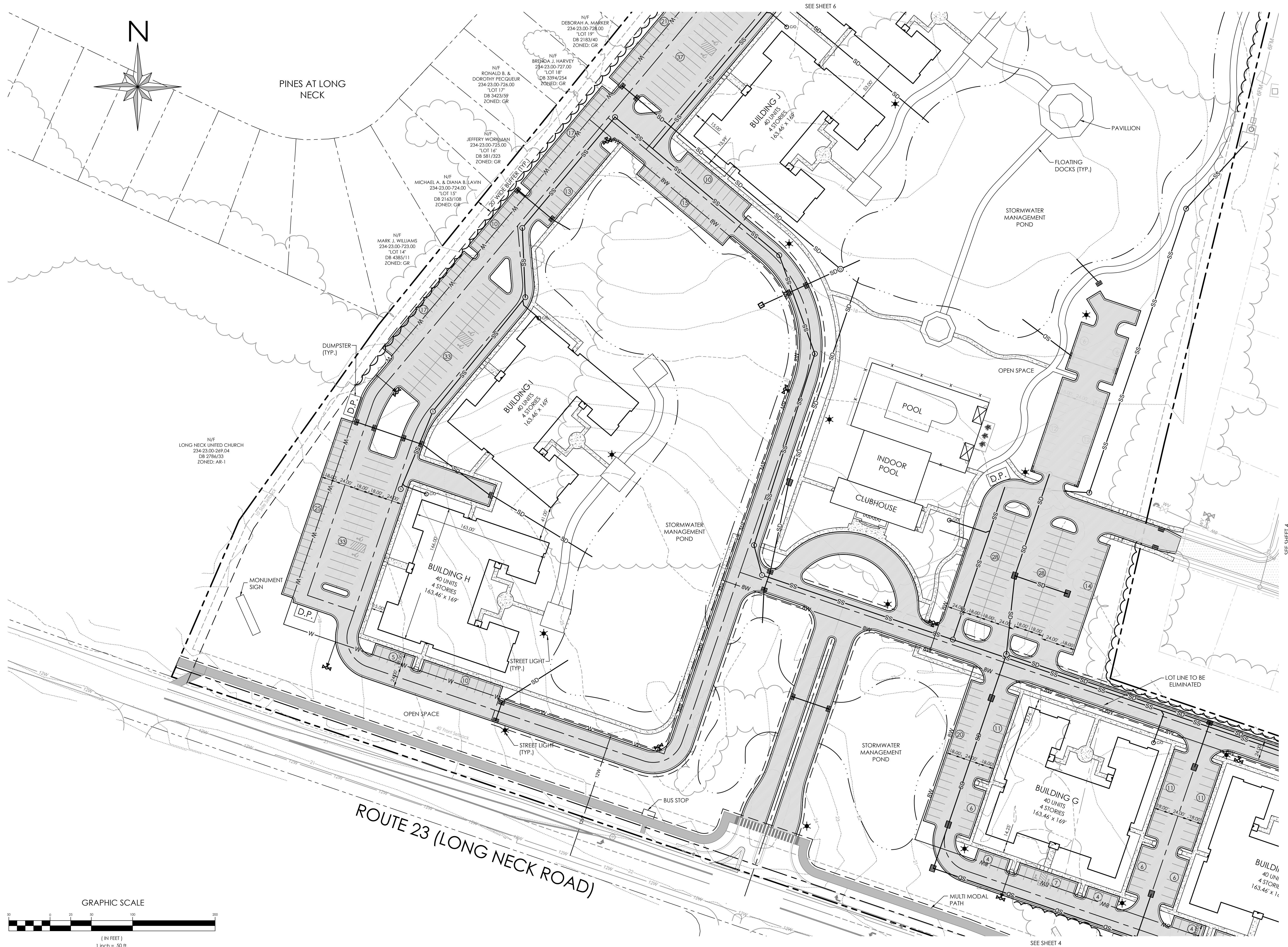


NO.	DATE	DESCRIPTION
1	4/27/21	PLANNING AND ZONING SUBMITAL

SITE PLAN B for  
**BAYWOOD GARDENS**  
SUSSEX COUNTY, DELAWARE  
PREPARED FOR: TUNNELL COMPANIES, LLC

Date:	3/9/20
Job Number:	10005
Scale:	1"=50'
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Approved By:	JJP

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SEE SHEET 6

SEE SHEET 4

SEE SHEET 4

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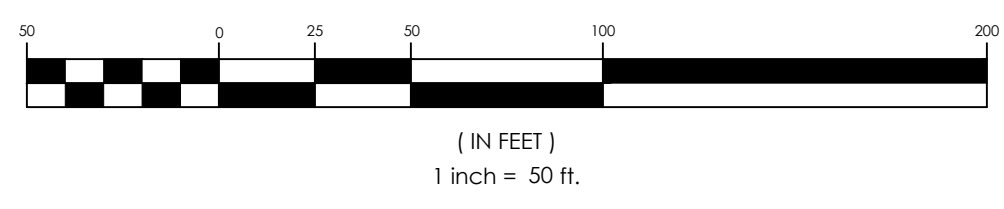
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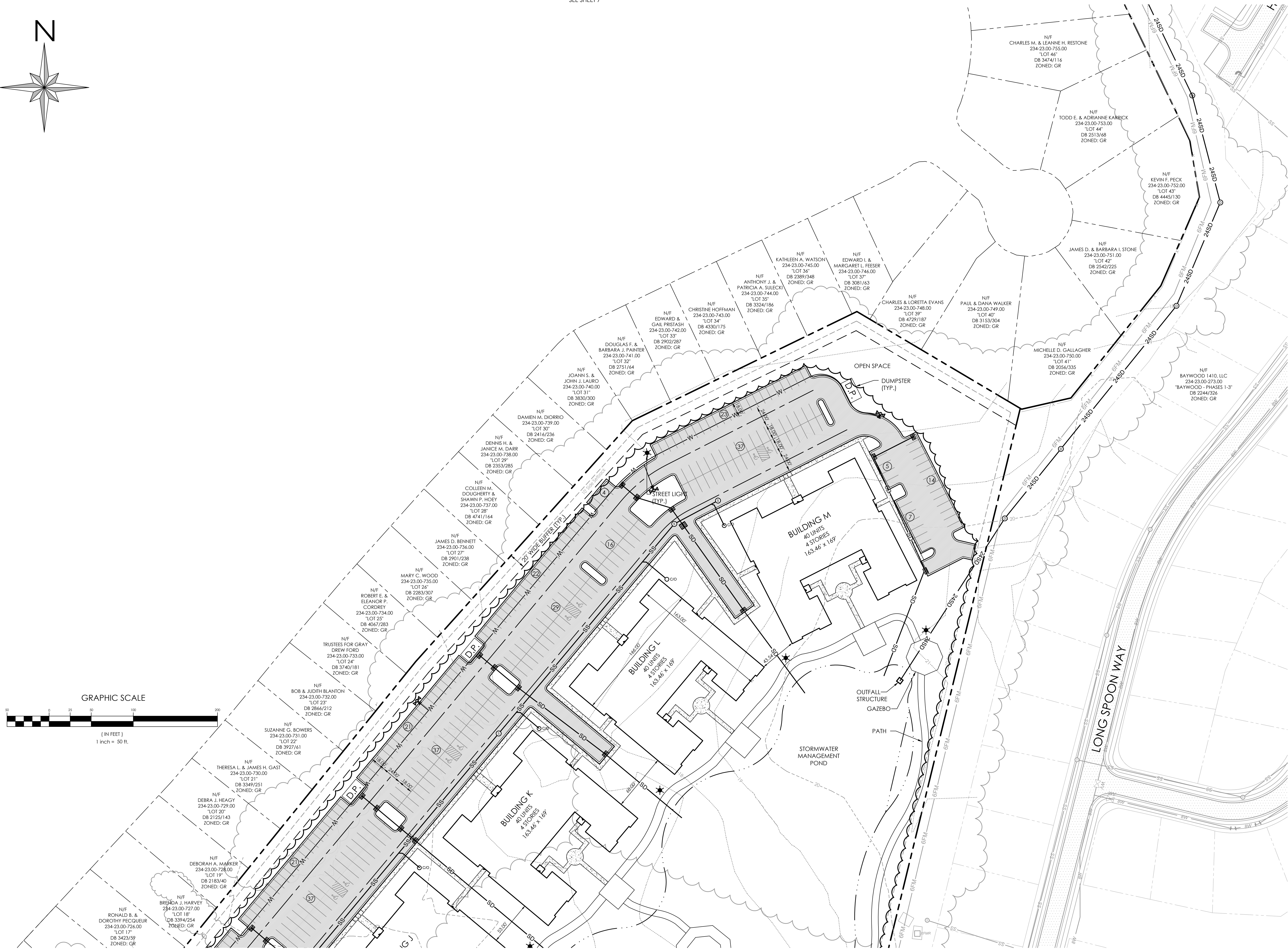
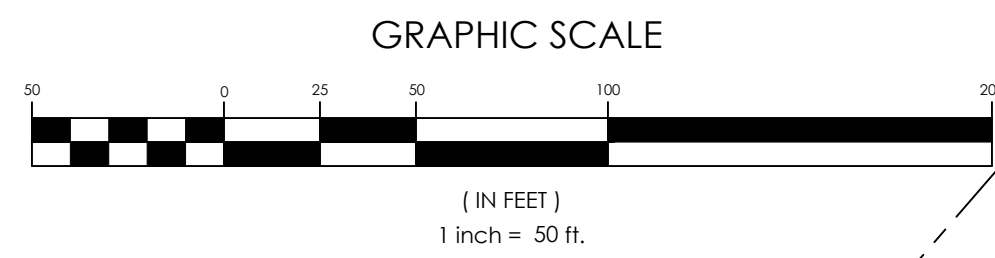
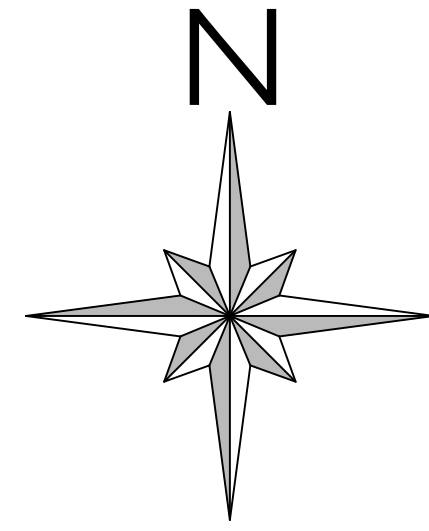
SITE PLAN C  
 for  
**BAYWOOD GARDENS**  
 SUSSEX COUNTY, DELAWARE  
 PREPARED FOR: TUNNELL COMPANIES, LLC

Date:	3/9/20	Job Number:	10005	Scale:	1"=50'	Drawn By:	ML	Designed By:	HJB	Approved By:	JIP
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Sheet No.: **5**  
 File Name: 10005-prelim-siteplan

GRAPHIC SCALE



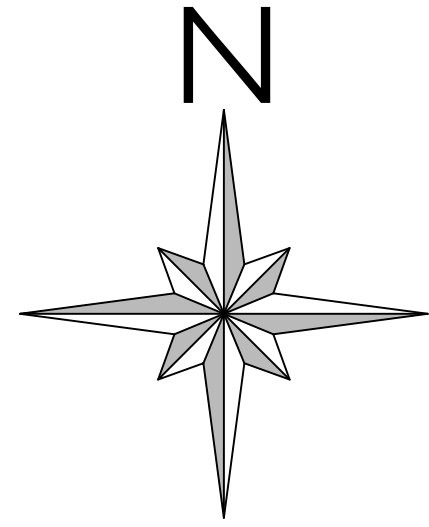


NO.	DATE	DESCRIPTION
1	4/27/21	PLANNING AND ZONING SUBMITAL

SITE PLAN D  
for  
**BAYWOOD GARDENS**  
SUSSEX COUNTY, DELAWARE  
PREPARED FOR: TUNNELL COMPANIES, LLC

Date:	3/9/20
Job Number:	10005
Scale:	1"=50'
Drawn By:	ML
Designed By:	HHB
Approved By:	JJP

ZONE X  
(UNSHADED)  
ZONE AE (EL. 5)



N/F  
PINES AT LONG NECK HOMEOWNER'S ASSOCIATION  
234-23.00-901.00  
"WETLANDS AREA"  
DB 4708/258  
ZONED: GR

N/F  
PINES AT LONG NECK HOMEOWNER'S ASSOCIATION  
234-23.00-900.00  
"STORMWATER MANAGEMENT AREA"  
DB 2622/343  
ZONED: GR

N/F  
RICHARD K. &  
CAROL A. RYAN  
234-23.00-768.00  
"LOT 59"  
DB 4613/147  
ZONED: GR

N/F  
PETER DOLAN JR.  
TRUSTEE  
234-23.00-767.00  
"LOT 58"  
DB 3999/216  
ZONED: GR

N/F  
ERNEST R. PORTER &  
JANET T. REILLY  
234-23.00-766.00  
"LOT 57"  
DB 3473/221  
ZONED: GR

N/F  
PATTI SEESE &  
LINDA F. KURTZ  
234-23.00-765.00  
"LOT 56"  
DB 2893/42  
ZONED: GR

N/F  
TAMARA SUE BLACK  
234-23.00-764.00  
"LOT 55"  
DB 2500/89  
ZONED: GR

N/F  
GARY L. &  
ELIZABETH C. HESS  
234-23.00-763.00  
"LOT 54"  
DB 2454/81  
ZONED: GR

N/F  
JOHN P. &  
NANCY J. LAYSER  
234-23.00-762.00  
"LOT 53"  
DB 4733/102  
ZONED: GR

N/F  
DAVID J. RICCI &  
ROBERT D. TODD  
234-23.00-761.00  
"LOT 52"  
DB 2489/1  
ZONED: GR

N/F  
JOSEPH J. &  
MARY MACBRIDE  
234-23.00-760.00  
"LOT 51"  
DB 4752/241  
ZONED: GR

N/F  
ROBERT A. &  
MARY C. TRUITT  
234-23.00-759.00  
"LOT 50"  
DB 9826/210  
ZONED: GR

N/F  
GEORGE E. & GAIL M.  
CHAIRMAN  
234-23.00-758.00  
"LOT 49"  
DB 4022/74  
ZONED: GR

N/F  
CAROLYN R. BINDER &  
ROBERT GALLO  
234-23.00-757.00  
"LOT 48"  
DB 3517/248  
ZONED: GR

N/F  
JOANNE M. & PATRICIA A. KETLER  
234-23.00-756.00  
"LOT 47"  
DB 3677/300  
ZONED: GR

N/F  
CHARLES M. & LEANNE H. RESTONE  
234-23.00-755.00  
"LOT 46"  
DB 3474/116  
ZONED: GR

N/F  
TODD E. & ADRIANNE KARRICK  
234-23.00-753.00  
"LOT 44"  
DB 2513/68  
ZONED: GR

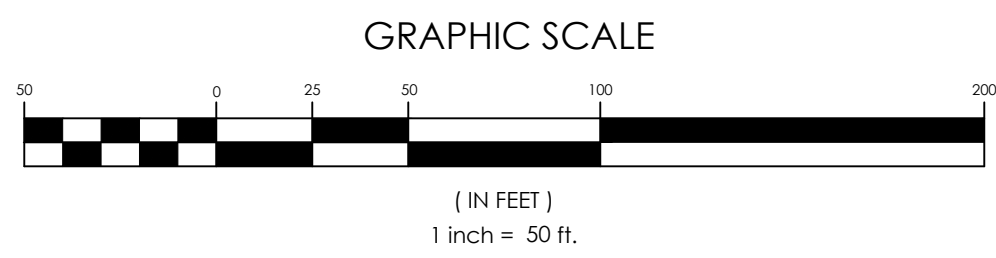
FORCE MAIN TO  
WWTP

ADVISORY LINE ESTIMATING  
FLOODING EXTENTS IF  
DUNES ARE BREACHED  
DURING A 0.2% ANNUAL  
CHANGE FLOOD EVENT

GREENS WAY

FREE DROP WAY

HASKELL DELL



SEE SHEET 6

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LANDSCAPE ARCHITECTURE  
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SITE PLAN E  
for  
**BAYWOOD GARDENS**  
SUSSEX COUNTY, DELAWARE  
PREPARED FOR: TUNNELL COMPANIES, LLC

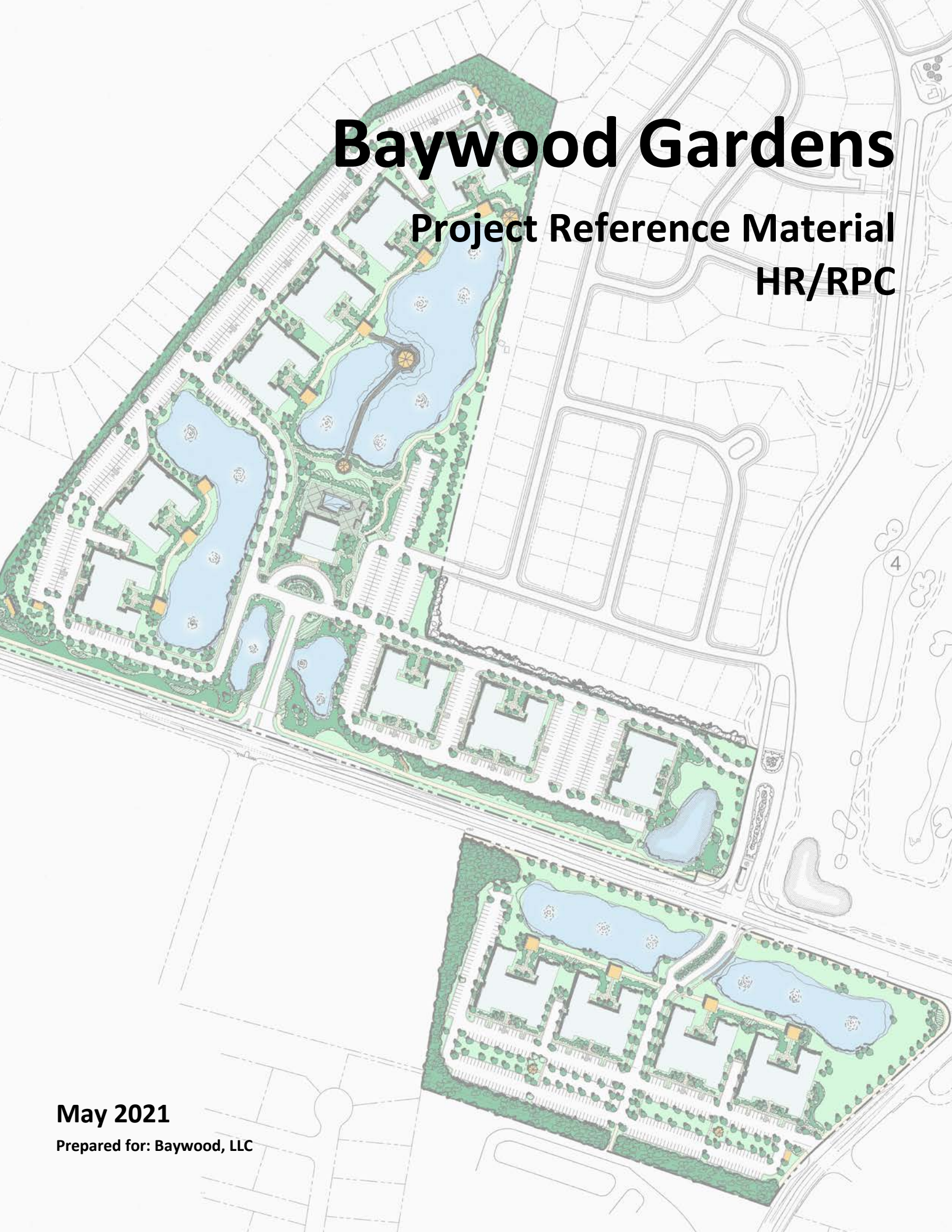
Date:	3/9/20
Job Number:	10005
Scale:	1"=50'
Drawn By:	ML
Designed By:	HHB
Approved By:	JIP

Sheet No.: 7  
File Name: 10005-prelim.siteplan

# Baywood Gardens

Project Reference Material

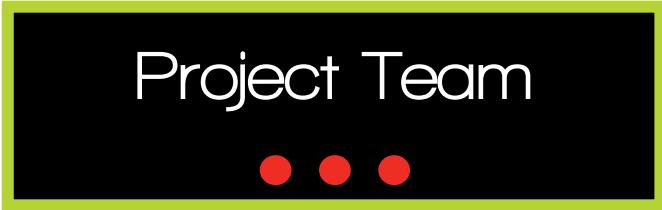
HR/RPC



May 2021

Prepared for: Baywood, LLC





**APPLICANT/DEVELOPER: Baywood, LLC**

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Email: [rtunnell@potnets.com](mailto:rtunnell@potnets.com)

**CIVIL ENGINEER/  
LAND PLANNER**

**Solutions IPEM, LLC**  
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**ATTORNEY:**

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Telephone: 302.856.7777  
FAX: 302.856.2128  
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**TRAFFIC:**

**The Traffic Group**  
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Berlin, MD 21811  
Telephone: 443.290.4060  
Email: [btustin@trafficgroup.com](mailto:btustin@trafficgroup.com)

**ENVIRONMENTAL**

**Environmental Resources, Inc**  
Contact: Mr. Edward M. Launay, Professional Wetland Scientist  
38173 DuPont Boulevard  
Selbyville, DE 19975  
Telephone: 302.436.9637  
Email: [elaunay@ericonsultants.com](mailto:elaunay@ericonsultants.com)

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  - C. Land Plan and Amenities**
  - D. DeIDOT Improvements**
  - E. Preliminary Land Use Service (PLUS)**
  - F. Sanitary Sewer Planning Area**
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- Figure 11) Soils Summary – Geo-Technology Associates
- Figure 12) Environmental Assessment and Public Facilities Evaluation Report

### **Resumes:**

Jason Palkewicz, PE

# Baywood Gardens



## I. Executive Summary

Baywood Gardens is a proposed 54.38 acre HR-1 / RPC consisting of 514 multi-family residential units. The site is located on the north and south side of Long Neck Road at the intersections of Banks Road, School Lane and Greens Way.

An Application for re-zoning has been submitted to allow for the proposed development. The site has been planned to provide efficient and safe pedestrian and vehicular patterns. The roadway improvements and entrance to Baywood Gardens will be designed in accordance with DeIDOT standards and regulations.

Baywood Gardens is located within Investment Levels 1, 2, & 3 of the State Strategies for Policies and Spending Map.

The proposed community provides 514 homes on private access aisles with curb and gutter, sidewalks, streetlights and walking paths. A total of 27.5 +/- acres (51.5%) of interconnected open space is provided. The buildings are designed to overlook stormwater facilities.

A centrally located recreation facility is provided with community center, indoor and outdoor pools, fitness center, playground, pavilions, bocce and practice green. Pedestrian access across Long Neck Road is provided by a multi-modal path with signalized crosswalks. In addition to the main recreation facilities, most buildings will have an exterior courtyard to allow for gatherings and community events.

In conclusion, the proposed community plan represents a higher level of design that will produce a superior living environment for future residents. This plan provides affordable but appealing amenities that will result in sustainable property values with neutral to positive impacts on property values in nearby neighborhoods while promoting the health, safety and welfare of the citizens of Sussex County.

### **Proposed Density and Calculations:**

Gross Site Area = 54.38 +/- acres

Net Development Area = 51.70 +/- acres

### **Allowable Homes Calculation (HR / RPC):**

12 homes/acre

51.70 x 12 = 620 homes

Proposed Homes:

514 Homes

Actual Density:

514 / 54.38 = 9.45 homes/acre (gross)

514 / 51.70 = 9.95 homes/acre (net)

## II. Project Overview

### A. Boundary Plat, Topographic & Non-Tidal Wetlands Survey

A boundary survey for the property was prepared by Solutions IPEM, LLC. The total area of the property is 54.38 +/- acres. Wetlands are not located on the site.

### B. Overview of Current Site Conditions

The property for the proposed Baywood Gardens community is located along Long Neck Road at Greens Way, Banks Road and School Lane. The proposed development is surrounded by the existing communities of Baywood Greens (GR / RPC), Pines at Long Neck (GR) and Bayshore (C-1).

The property is located within Flood Zone X, (areas determined to be outside the 2.0% annual chance floodplain) per map number 10005C Panel 0340K & 343K, map revised March 16, 2015. The site is located within areas of good/fair groundwater recharge potential.

Soils report were prepared by Hillis-Carnes Engineering Associates, Inc. and Geo-Technology Associates, Inc. to determine depth to ground water and storm water feasibility. The depth to seasonal high ground water is approximately 8 feet below average grade on the North side of Long Neck Road and between 7 – 10 feet below grade on the South. Some portions of the site are suitable for stormwater infiltration.

### C. Land Plan and Amenities

The land plan takes into account:

- Existing site conditions
- Stormwater outfalls
- Adjacent communities
- Existing roadways
- Current housing trends
- Recreational needs

The resultant plan has:

- A minimum 20' perimeter buffer to Bayshore, Long Neck, Elementary School, Long Neck United Church, Baywood Greens and Pines at Long Neck.
- Horseshoe shaped buildings with courtyards overlooking ponds or other open space.
- Clubhouse with indoor and outdoor pools.
- Sidewalks and walking trails interconnected to Baywood Greens and across Long Neck Road via signalized crosswalks.
- Street lights.
- Community mail box clusters.
- An efficient stormwater management system that acts as an amenity.
- Additional amenities include:
  - Community center
  - Indoor and outdoor pools
  - Fitness center
  - Playground
  - Pavilions

- Bocce
- Practice green

#### **D. DeIDOT Improvements**

A series of meetings was held with DeIDOT officials concerning area roadway improvements related to Baywood Gardens specifically with regard to off-site transportation improvements and frontage improvements. Two traffic impact studies (one for each side of Long Neck Road) were prepared, reviewed and approved by DeIDOT. The developer will contribute to off-site transportation improvements as required by the TIS.

The entrance improvements requirements are:

- A full entrance with turn lanes across from Bayshore Drive.
- A right-in / right-out entrance across from Greens Way.
- Full entrance improvements onto School Lane.
- Installation of multi-modal paths along property frontage.

#### **E. Preliminary Land Use Service (PLUS)**

A concept plan for Baywood Gardens was presented to PLUS in May of 2019. A response letter was provided to PLUS in which addressed their comments point by point.

#### **F. Sanitary Sewer Planning Area**

The Baywood Gardens community is located within the Inland Bays Preservation Company and Sussex County sewer service areas. The north side of Long Neck Road is to be served by Inland Bays Preservation Company. The south side of Long Neck Road will connect to Sussex County sewer via the Bayshore community.

#### **G. Water Service**

The Baywood Gardens community will be served with potable water by Tidewater Utilities.

### III. Compliance with Applicable Regulations

#### A. Compliance with HR-1 (High Density Residential District)

The proposed land use is in conformity with the Zoning Ordinance which allows 12 dwelling units per acre based on the gross site area.

Purpose: Baywood Gardens conforms with the purpose of the HR-1 code. It is an appropriate density residential community, with public water and sewer located less than ½ mile to Route 24 and shopping facilities.

Permitted Uses: The HR-1 Zone allows multi-family dwellings.

Permitted Accessory Uses: The HR-1 Zoning allows outdoor amenities for use by occupants and their guests.

Conditional Uses: Baywood Gardens is not applying for any Conditional Uses.

Special Use Exceptions: Baywood Gardens is not applying for any Special Use Exceptions.

Permitted Signs: All proposed development signage will conform to the regulations provided in Sussex County Code 115-159.2.

Height, Area and Bulk Requirements: The height, area and bulk requirements are established by the requirements set forth in the HR-1 zoning article.

#### B. Compliance with RPC (Residential Planned Community)

Purpose: Baywood Gardens conforms with the purpose of the RPC. It is a superior community utilizing design ingenuity.

Permitted Uses: The RPC Zone allows multi-family dwellings.

Minimum District Area: The community is larger than the required minimum 10 acres in the HR-1 District.

Number of Dwelling Units Permitted: Baywood Gardens has a net density of 9.95 units per acre, which is less than the 12 units per acre permitted.

Parking and Streets and Driveways: Parking and drive aisles are provided in the community.



**C. Statement of Conformity with Sussex County, Delaware, Comprehensive Plan Update, March 2019**

**Chapter 4 Future Land Use:**

A portion of the site is located within the Coastal Areas Growth Area and complies with the Future Land Use Section as follows:

- Multi-family homes are permitted.
- The proposed density of 9.95 units/acre is in compliance with the 4-12 units/acre recommended as appropriate in this location.
- Central water and sewer will be available to the site.

A portion of the site is located within the Commercial Area and complies as follows:

- The site is currently zoned with three different types of commercial.
  - o B-1 permits multi-family via conditional use
  - o C-1 permits multi-family
  - o CR-1 permits multi-family via conditional use

As such, this rezoning request is generally consistent with the Future Land Use Plan.

**Chapter 5 Conservation:**

The proposed community complies with the Conservation section as follows:

- The site complies with surface water runoff requirements.
- There are no well head protection areas nor excellent ground water recharge areas within the proposed site.
- There are no wetlands on the site.
- The site is located outside of a flood zone.
- Central water and sewer will be available to the site.

**Chapter 6 Recreation and Open Space:**

The proposed community complies with the Recreation and Open Space section as follows:

- The site is located within Region 5 of the Delaware Statewide Comprehensive Outdoor Recreation Plan and provides the following:
  - o High Priorities:
    - Swimming pools (indoor and outdoor)
    - Picnic areas (pavilions)
    - Walking/jogging paths (multi-modal)
    - Bike paths (multi-modal)
  - o Moderate Priorities:
    - Playgrounds
- In addition, the community provides:
  - o Gathering areas
  - o Sidewalks
  - o Tot lots

**Chapter 7 Utilities:**

The proposed community complies with the Utilities section as follows:

- There are no well head protection areas nor excellent ground water recharge areas within the proposed site.
- Potable water will be provided by Tidewater Utilities.
- The community is located within the sewer CPCN area of Inland Bays Preservation Company, LLC and Sussex County.
- The project is located within the Chesapeake Utilities Existing and Planned Natural Gas Service area.
- Adequate areas are provided for stormwater management and stormwater drainage.
- It is anticipated that solid waste collection will be by Blue Hen Disposal or another licensed commercial hauler.

**Chapter 8 Housing:**

The proposed community complies with the Housing section as follows:

- The site is located in the Eastern portion of Sussex County which include beach communities as well as communities that capture much of the retiree market.
- This multi-family community would provide a more affordable home than a traditional single-family detached home.

**Chapter 9 Economic Development:**

The proposed community complies with the Economic Development section as follows:

- This development project will directly provide employment/opportunities in:
  - o Construction
  - o Professional, Business and IT Services
  - o Finance, Insurance and Real Estate Services
  - o Utilities
  - o Maintenance and Management
- The development will also indirectly provide job opportunities in:
  - o Leisure and Hospitality
  - o Education and Healthcare

**Chapter 10 Historic Preservation:**

The proposed community complies with the Historic Preservation section as follows:

- There are no historic sites referenced on the property.

**Chapter 12 Community Design:**

The proposed community complies with the Community Design section as follows:

- The proposed community is a residential planned community (RPC).
- Street lighting will be provided.
- Sidewalks and multi-modal paths are provided throughout the community.
- The proposed buildings will be limited to 52' in height.
- No variances to the required setbacks are proposed.
- The community will connect to multi-modal paths within DeIDOT's right-of-way as well as those in Baywood Greens.
- The entrance to the community will be landscaped.
- Cross walks will be provided.
- Landscaped/forested buffers will be provided along the perimeter.
- Utilities are proposed to be underground.
- Street signage will be provided throughout the community.

**Chapter 13 Mobility Element:**

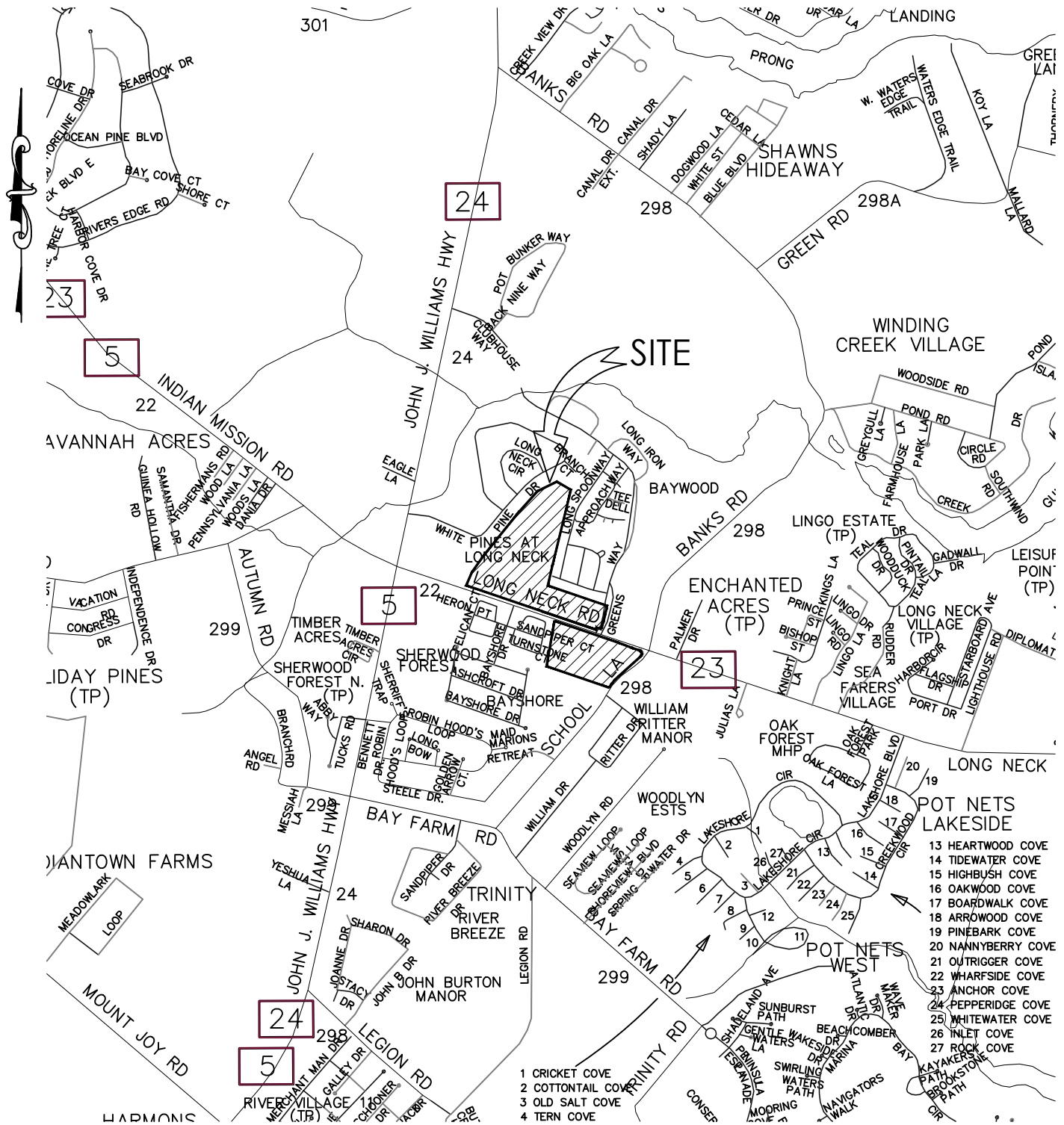
The proposed community complies with the Mobility Element section as follows:

- A Traffic Impact Study (TIS) was prepared for both the North and South side of the proposed development which included intersections beyond the property.
- Entrance, roadway and off-site improvements necessitated by DeIDOT will be designed and constructed per DeIDOT standards.
- Improvements are anticipated to include
  - o Road widening
  - o Shoulder construction
  - o Installation of turn lanes
  - o Multi-modal paths
  - o Drainage improvements
- The developer will contribute to off-site improvements as required by the two Traffic Impact Studies.

**IV. Conclusion**

The proposed community of Baywood Gardens will enhance the area with a well-planned design, amenities, and no negative impact on the land. The design preserves large amounts of open space while preserving attractive views within and into the community. The community will have a neutral to positive impact on the value of the surrounding neighborhoods and will provide the County with additional tax revenue. Active amenities include a community center, indoor and outdoor pools, fitness center, playground, pavilions, bocce, and practice green. The design also preserves and enhance existing views through non-disturbance and accentuating certain features of the existing terrain.

The proposed community of Baywood Gardens meets the HR/RPC standards set forth by the County and State and will provide a superior living environment for future residents without placing a burden on the County, State or tax payers to serve this community.



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VICINITY MAP  
**BAYWOOD GARDENS**  
 SUSSEX COUNTY, DELAWARE

Drawn:	ML
Scale:	N.T.S.
Date:	6/17/20
Job No:	G10005

March 11, 2020

Mrs. Constance C. Holland, AICP, State Planning Director  
Haslet Armory  
122 Martin Luther King Jr. Blvd. South  
Dover, DE 19901

RE: PLUS review 2019-05-09; Baywood Gardesns

Dear Mrs. Holland:

Please allow this letter to serve as our response to the PLUS review of the Baywood Gardens community. Answers to comments have been provided following each comment taken directly from your comment letter for ease of use. Our responses are in red and a different font for ease in review.

Thank you for meeting with State agency planners on May 22, 2019 to discuss the Baywood Gardens project. According to the information received, you are seeking review of a rezoning of 54.38 acres from B-1, C-1, and CR-1 to HR/PC in anticipation of 514 apartment units along Long Neck Road in Sussex County.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. **The developers will also need to comply with any Federal, State, and local regulations regarding this property. We also note that as Sussex County has governing authority over this land the developers will need to comply with any and all regulations/restrictions set forth by the County.**

**Response – The developer will comply with all Federal, State and Local regulations regarding the development of this property. The developer will comply with any and all regulations / restrictions set forth by Sussex County.**

### **Strategies for State Policies and Spending**

This project is located in Investment Level 1 and 2 according to the *Strategies for State Policies and Spending*. This site is also located in the Coastal Area growth zone of the recently certified SC comp plan. Investment Level 1 & 2 reflect areas that are already developed in an urban or suburban fashion, where infrastructure is existing or readily available, and where future redevelopment or infill projects are expected and encouraged by State policy. State investments will support growth in these areas.

**Response – Noted.**

## Code Requirements/Agency Permitting Requirements

### Department of Transportation – Contact Bill Brockenbrough 760-2109

- The site access on Long Neck Road (Delaware Route 23) and School Lane (Sussex Road 298) must be designed in accordance with DeIDOT's Development Coordination Manual, which is available at <http://www.deldot.gov/Business/subdivisions/index.shtml?dc=changes>.
- Pursuant to Section P.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. The form needed to request the meeting and guidance on what will be covered there and how to prepare for it is located at [https://www.deldot.gov/Business/subdivisions/pdfs/Meeting\\_Request\\_Form.pdf?08022017](https://www.deldot.gov/Business/subdivisions/pdfs/Meeting_Request_Form.pdf?08022017).
- Section P.5 of the Manual addresses fees that are assessed for the review of development proposals. DeIDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when construction plans are submitted for review.
- Per Section 2.2.2.1 of the Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. From the PLUS application, the total daily trips are estimated at 2,827 vehicle trip ends per day. DeIDOT calculates a higher number, 3,845 vehicle trip ends per day, but regardless the warrant for a TIS is met.

DeIDOT has met with the developer's engineers about this project twice regarding TIS, once in September 2018 to set a scope for a TIS for Phases 1 and 2 of the development, the part on the north side of Long Neck Road and once in April 2019 to set a scope for a TIS for Phase 3 of the development, the part on the south side of Long Neck Road. See the attached memoranda dated September 18, 2018 and April 24, 2019.

At the April 2019 meeting, DeIDOT informed the applicant and their engineers that left turns into Phase 3 of the development from Long Neck Road cannot be accommodated and that consequently a secondary access would need to be provided on School Lane. That secondary access is not shown on the concept sketch accompanying the PLUS application.

The primary purpose of a TIS is to determine the need for off-site transportation improvements. Without prejudging the results of either TIS, DeIDOT expects to require a contribution to the DeIDOT project at the intersection of Delaware Route 24 and Long Neck Road and signal agreements for the Route 24, Bayshore Drive, Greens Way and School Lane/Banks Road intersections along Long Neck Road.

- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, DeIDOT will require dedication of right-of-way along the site's frontage on Long Neck Road and School Lane. By this regulation, this dedication is to provide a minimum of 40 feet of right-of-way from the physical centerline of Long Neck Road and 30 feet of right-of-way from the physical centerline of School Lane. The following right-of-way dedication note is required, "**An X-foot wide right-of-way is hereby dedicated to the State of Delaware, as per this plat.**"

- In accordance with Section 3.2.5.1.2 of the Manual, DelDOT will require the establishment of a 15-foot wide permanent easement across the property frontage on Long Neck Road and School Lane. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the site. The following note is required, **“A 15-foot wide permanent easement is hereby established for the State of Delaware, as per this plat.”**
- Referring to Section 3.4.2.1 of the Manual, the following items, among other things, are required on the Record Plan:
  - A Traffic Generation Diagram. See Figure 3.4.2-a for the required format and content.
  - Depiction of all existing entrances within 450 feet of the entrances on Long Neck Road and within 300 feet of the entrance on School Lane.
  - Notes identifying the type of off-site improvements, agreements (signal, letter) contributions and when the off-site improvements are warranted.
- Section 3.5 of the Manual provides DelDOT’s requirements with regard to connectivity. The requirements in Sections 3.5.1 through 3.5.3 shall be followed for all development projects having access to state roads or proposing DelDOT maintained public streets for subdivisions. A driveway connection should be provided to from Phase 3 to Turnstone Court in the Bayshore development and a pedestrian connection should be provided from Phase 3 to the Long Neck Elementary School.
- Section 3.5.4.2 of the Development Coordination Manual addresses requirements for shared-use paths and sidewalks. For projects in Level 1 and 2 Investment Areas, installation of paths or sidewalks along the frontage on State-maintained roads is required. DelDOT anticipates requiring the developer build Shared Use Paths along their frontage on both Long Neck Road and School Lane.
- Referring to Section 3.5.5 of the Manual, existing and proposed transit stops and associated facilities as required by the Delaware Transit Corporation (DTC) or DelDOT shall be shown on the Record Plan. DART Route 215 provides seasonal service on Long Neck Road and the developer should anticipate a requirement to provide bus stops at Bayshore Drive and Greens Way.
- In accordance with Section 3.8 of the Manual, storm water facilities, excluding filter strips and bioswales, shall be located a minimum of 20 feet from the ultimate State right-of-way along Long Neck Road and School Lane.
- In accordance with Section 5.2.9 of the Manual, the Auxiliary Lane Worksheet should be used to determine whether auxiliary lanes are warranted at the site entrances and how long those lanes should be. The worksheet can be found at <http://www.deldot.gov/Business/subdivisions/index.shtml>.

- In accordance with Section 5.14 of the Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.

**Response – The developer will coordinate with DelDOT regarding the necessary improvements and agreements. Construction plans will be per DelDOT requirements.**

**State Historic Preservation Office – Contact Carlton Hall 736-7404**

- There are no known archaeological sites, or known National Register-listed or eligible properties on the parcel.
- If any project or development proceeds, the developer should be aware of the Unmarked Human Burials and Human Skeletal Remains Law (Del. C. Title 7, Ch. 54).
- If there is federal involvement, in the form of licenses, permits, or funds, the federal agency, often through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project’s effects on any known or potential cultural or historic resources. For further information on the Section 106 process please review the Advisory Council on Historic Preservation’s website at: [www.achp.gov](http://www.achp.gov)

**Response – Noted.**

**Recommendations/Additional Information**

This section includes a list of site specific suggestions that are intended to enhance the project. These suggestions have been generated by the State Agencies based on their expertise and subject area knowledge. **These suggestions do not represent State code requirements.** They are offered here in order to provide proactive ideas to help the applicant enhance the site design, and it is hoped (**but in no way required**) that the applicant will open a dialogue with the relevant agencies to discuss how these suggestions can benefit the project.

**Department of Transportation – Contact Bill Brockenbrough 760-2109**

- The applicant should expect a requirement that any substation and/or wastewater facilities will be required to have access from an internal driveway with no direct access to Long Neck Road or School Lane.
- The applicant should expect a requirement that all PLUS and Technical Advisory Committee (TAC) comments be addressed prior to submitting plans for review.
- Please be advised that the Standard General Notes have been updated and posted to the DelDOT website. Please begin using the new versions and look for the revision dates of March 21, 2019 and March 25, 2019. The notes can be found at <https://www.deldot.gov/Business/subdivisions/>

**Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352**

**Source Water Protection**

- There is a public well on the adjacent parcel and a large portion of the subject parcel, at the southwestern corner, lies within the wellhead protection area. The capacity of the well is greater



than 50,000 gallons per day; Sussex County regulates construction within Wellhead Protection Areas with specific requirements for wells drawing greater than 50,000 gallons/day. The applicant should work with the county to meet these requirements.

**Water Quality**

- Minimizing the removal of forest cover and reducing the number and size of ponds from what is proposed would improve water quality. Green technology stormwater management is preferred over excess use of ponds which create problems with nuisance geese and algae.

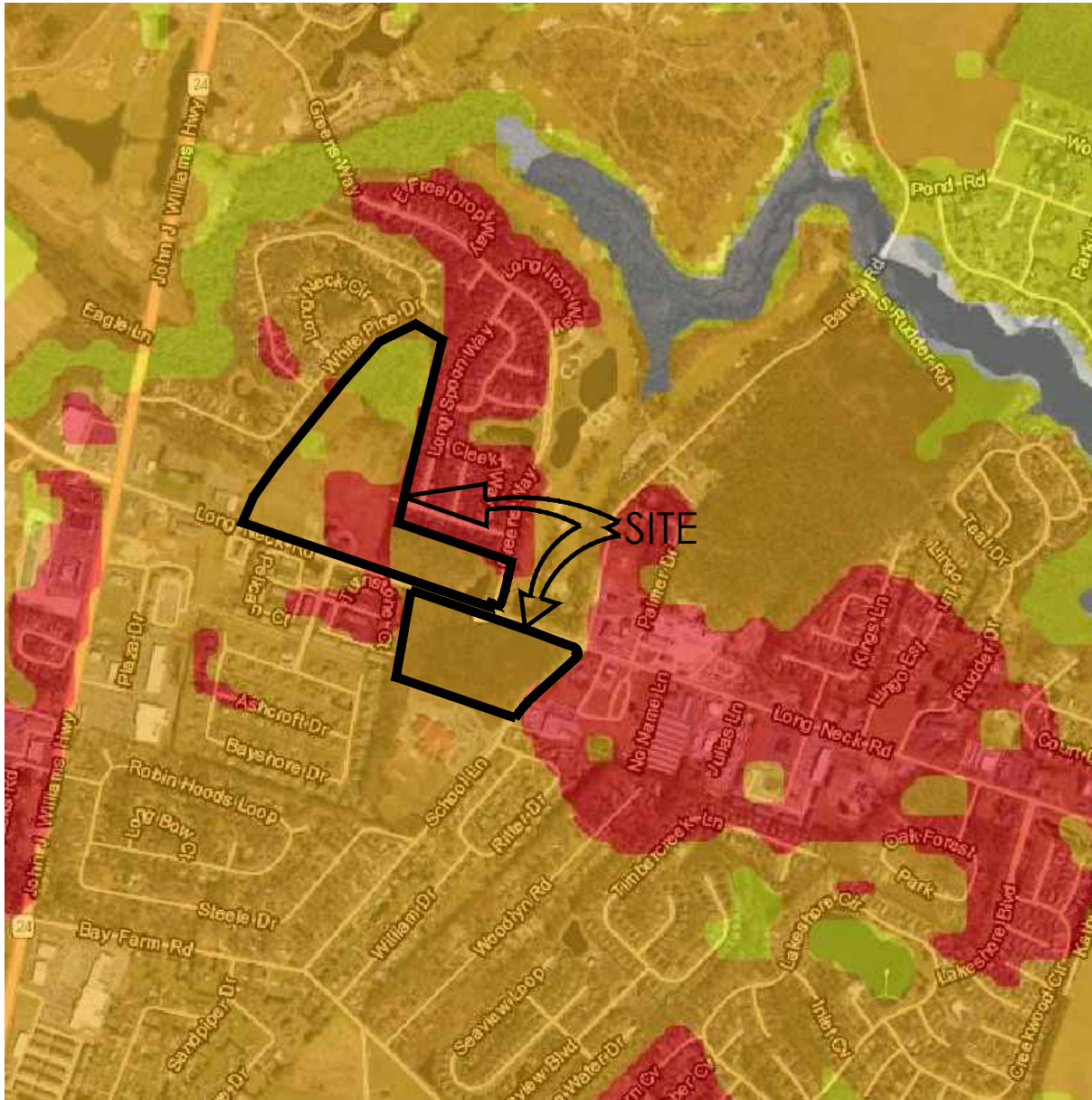
**Response – The developer acknowledges the non-required additional information from the various agencies.**

**Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.**

This concludes our response. If you have any questions, please contact us at your convenience.

Sincerely,  
Solutions, IPERM

  
Jason Palkewicz, PE



-  INVESTMENT LEVEL 1
-  INVESTMENT LEVEL 3
-  INVESTMENT LEVEL 2
-  INVESTMENT LEVEL 4

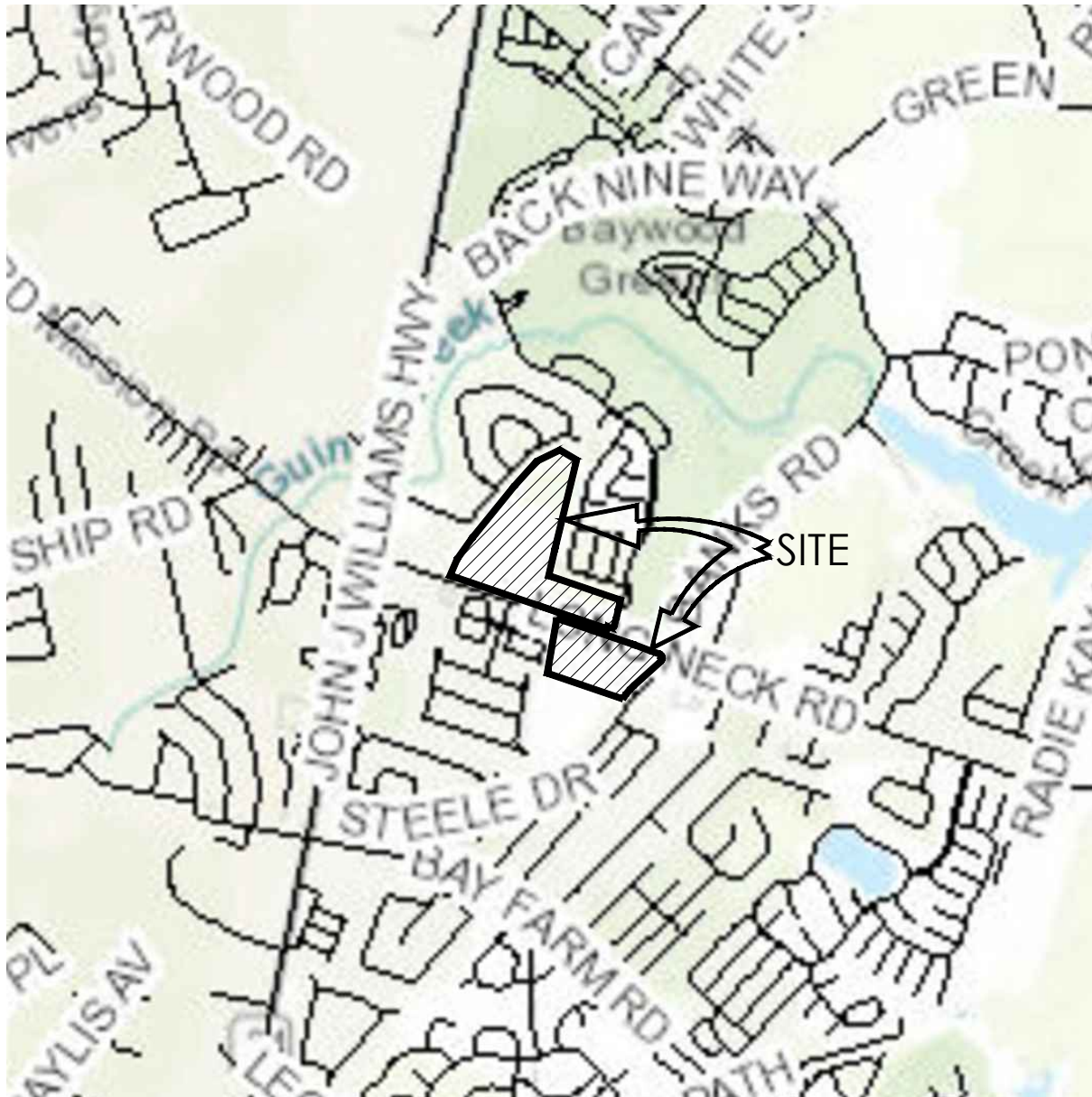
NOTE:  
 IMAGE TAKEN FROM  
 DELAWARE STATE STRATEGIES  
 2020 MAP.



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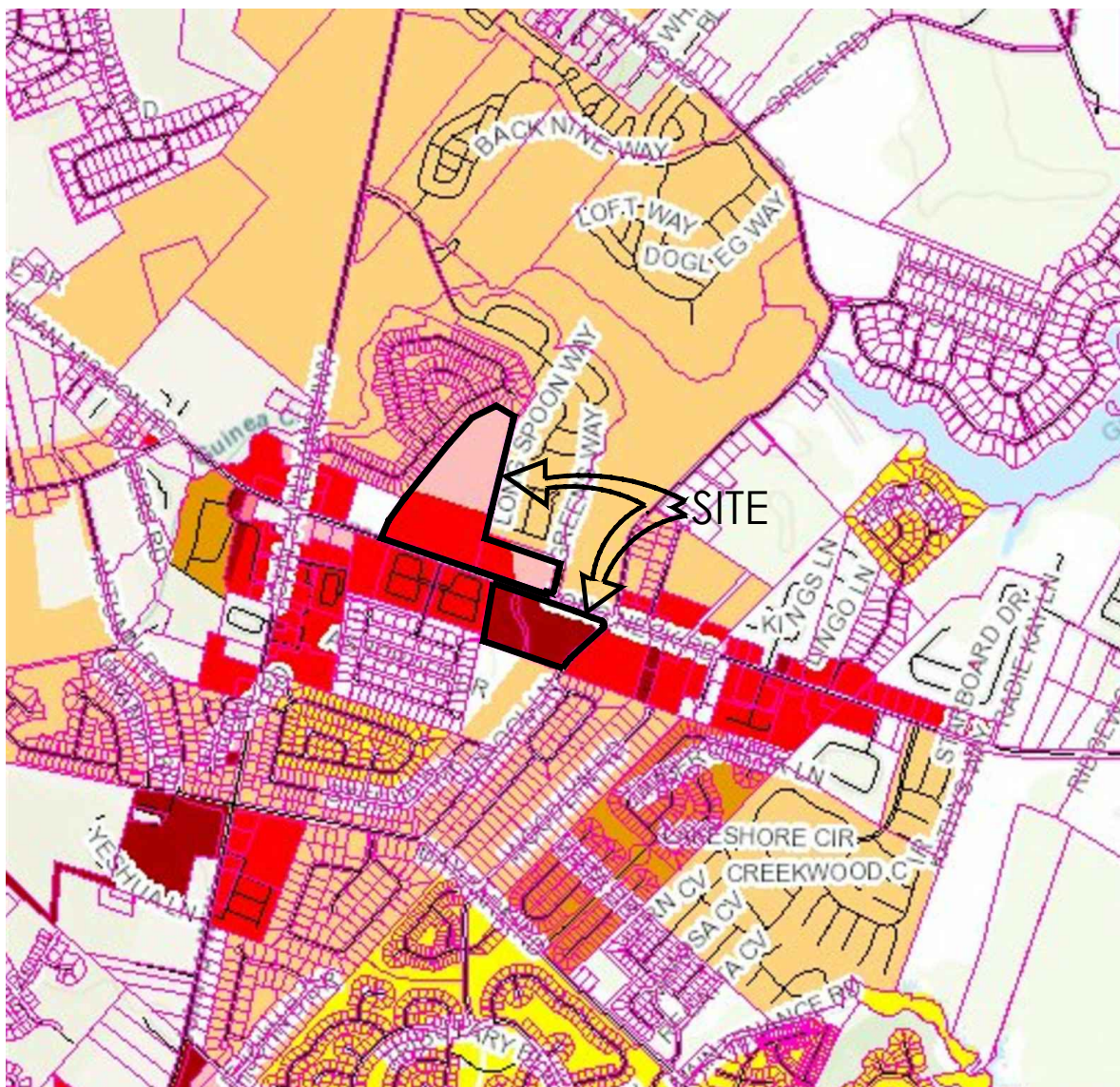
STATE SPENDING STRATEGIES  
**BAYWOOD GARDENS**  
 SUSSEX COUNTY, DELAWARE

Drawn:	ML
Scale:	N.T.S.
Date:	6/17/20
Job No:	G10005



NOTE:  
IMAGE TAKEN FROM THE SUSSEX  
COUNTY ON-LINE MAPPER  
(PRINTED 8/12/20)

 solutions Engineering Environmental Construction	303 North Bedford Street Georgetown, DE 19947 T. 302.297.9215 www.solutionsipem.com Copyright © 2018	DEVELOPED & PROTECTED LANDS <b>BAYWOOD GARDENS</b> SUSSEX COUNTY, DELAWARE	Drawn: ML
			Scale: N.T.S.
			Date: 6/17/20
			Job No: G10005



- |   |                                 |   |                               |
|---|---------------------------------|---|-------------------------------|
|  | AGRICULTURAL - AR-1             |  | NEIGHBORHOOD BUSINESS - B-1   |
|  | MEDIUM RESIDENTIAL - MR         |  | COMMERICAL RESIDENTIAL - CR-1 |
|  | GENERAL RESIDENTIAL - GR        |  | GENERAL COMMERICAL - C-1      |
|  | HIGH DENSITY RESIDENTIAL - HR-1 |   |                               |

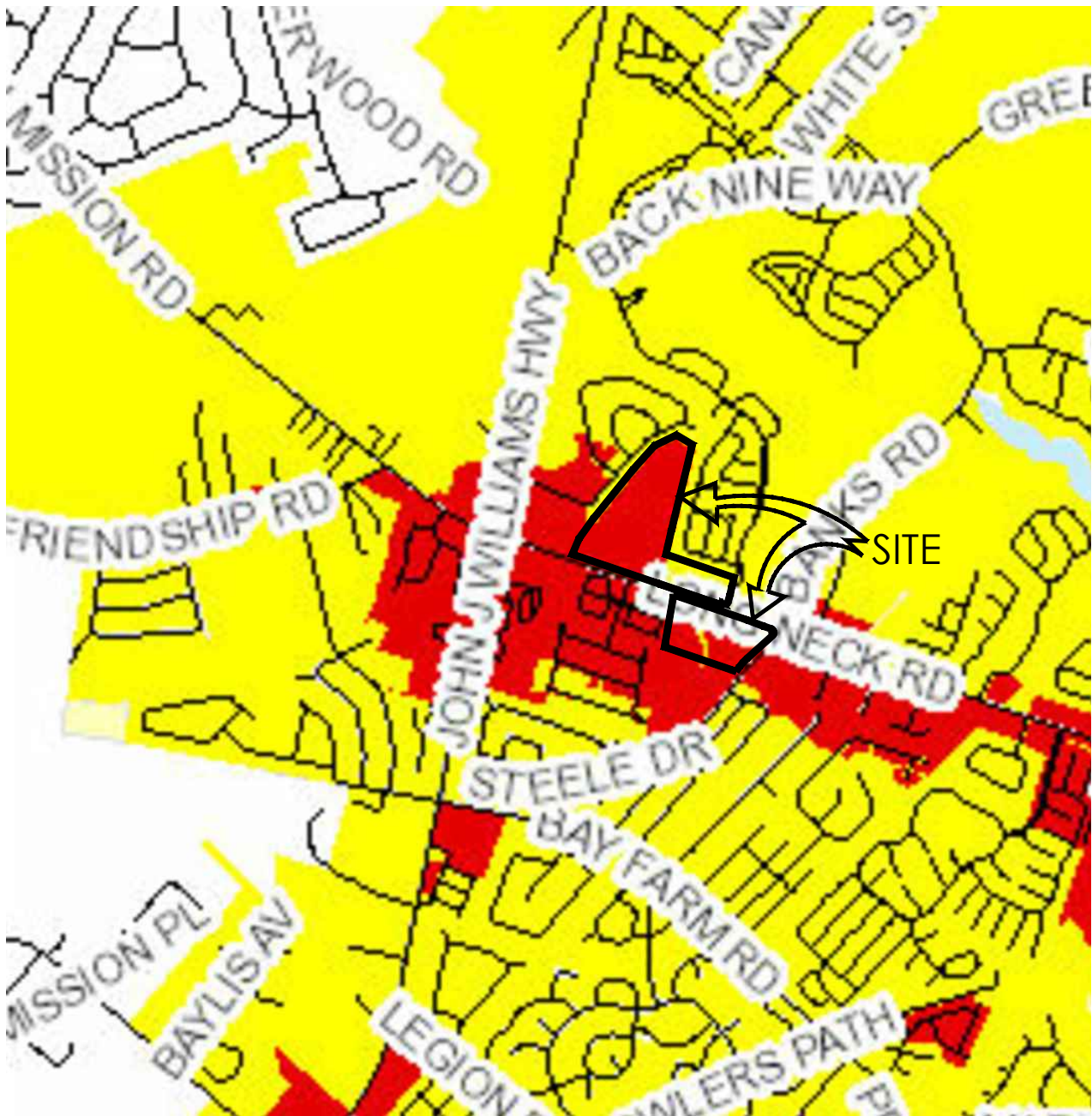
**NOTE:**  
 IMAGE TAKEN FROM THE  
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 ZONING MAP.



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ZONING MAP  
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COASTAL AREAS



LOW DENSITY AREA



COMMERCIAL AREAS

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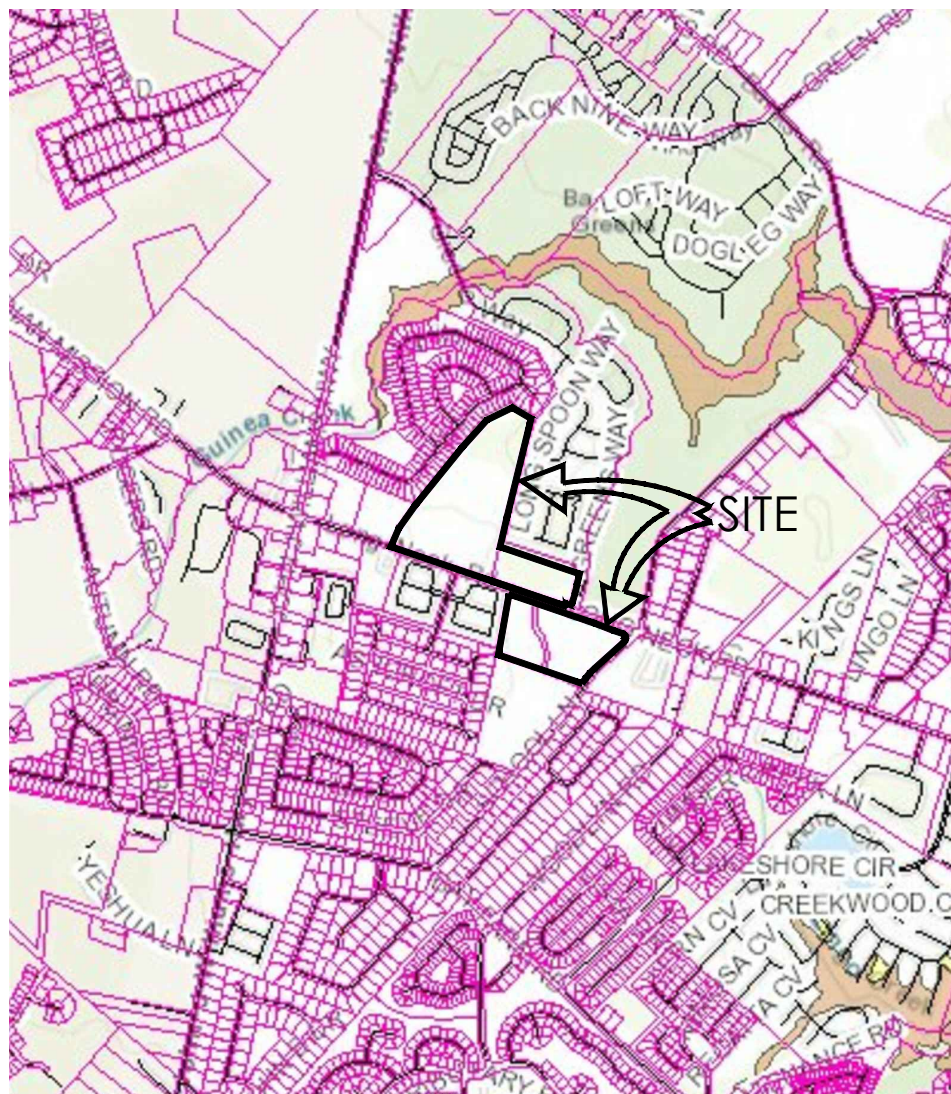
FUTURE LAND USE  
**BAYWOOD GARDENS**  
SUSSEX COUNTY, DELAWARE

Drawn:	ML
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Job No:	G10005



NOTE:  
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EARTH (IMAGE DATE JUNE  
2018).

 solutions Environmental Engineering & Construction	303 North Bedford Street Georgetown, DE 19947 T. 302.297.9215 www.solutionsipem.com Copyright © 2018	VICINITY MAP <b>BAYWOOD GARDENS</b> SUSSEX COUNTY, DELAWARE	Drawn: ML
			Scale: N.T.S.
			Date: 6/17/20
			Job No: G10005



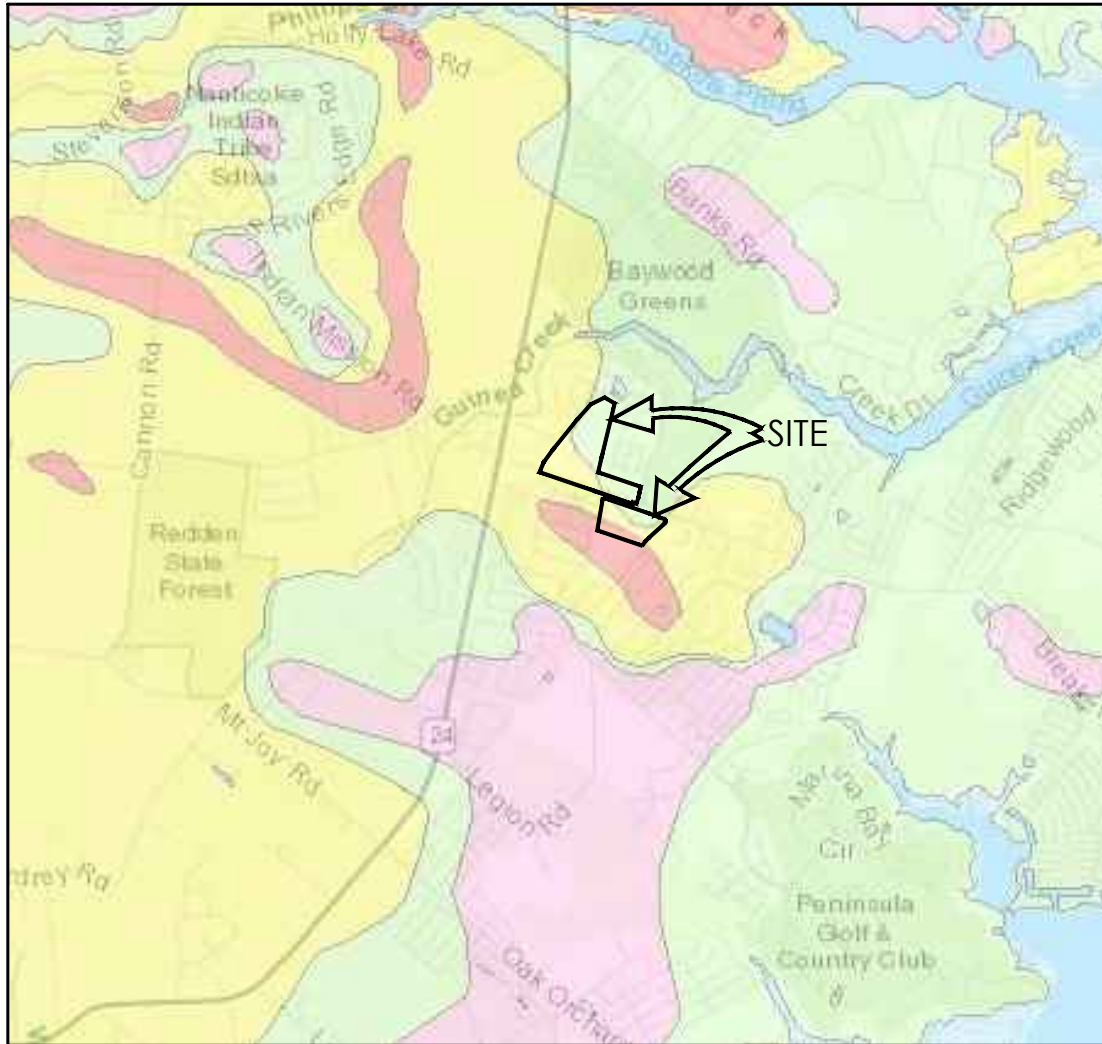
THE PROPERTIES AREA LOCATED WITHIN FLOOD ZONE X (UNSHADED) - AREAS DETERMINED TO OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FIRM MAP NUMBERS 10005C03430K AND 10005C0343K, MAPS REVISED MARCH 16, 2015.







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FLOOD MAP  
**BAYWOOD GARDENS**  
SUSSEX COUNTY, DELAWARE

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-  EXCELLENT GROUNDWATER RECHARGE
-  GOOD GROUNDWATER RECHARGE
-  FAIR GROUNDWATER RECHARGE
-  POOR GROUNDWATER RECHARGE

NOTE:  
IMAGE TAKEN FROM THE  
DELAWARE GEOLOGICAL SURVEY



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## GROUNDWATER RECHARGE MAP BAYWOOD GARDENS SUSSEX COUNTY, DELAWARE

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Job No:	G10005



September 7, 2017

Robert W. Tunnell III  
Tunnell Companies, L.P.  
34026 Anna's Way  
Unit 1  
Long Neck, DE 19966

1277 McD Drive  
Dover, Delaware 19901  
Phone 302-744-9855  
Fax 302-744-9160  
www.hcea.com

Reference: Report of Field Infiltration Testing for:  
**Baywood Gardens**  
Long Neck, Delaware  
HCEA Project No. D17076

Dear Mr. Tunnell,

As requested, Hillis-Carnes Engineering Associates, Inc. (HCEA) has completed hand auger borings and field infiltration testing at the referenced site. HCEA performed 11 hand augers and 9 infiltration tests on the property. The test depths and locations were selected by HCEA with input from Solutions IPEM. This letter summarizes the results of the hand augers and infiltration testing. HCEA previously performed borings and test pits on this site in 2008 (HCEA Project Number S08158).

HCEA performed hand auger borings on the site on August 2 and 3, 2017. The hand auger borings were labeled B-1 through B-7. The hand auger borings were augered depths of 10 feet below existing grades, except at location B-2 running sands were encountered. The boring locations are shown on Figure 2 in the Appendix.

The records of soil exploration for the hand auger borings are attached in the Appendix. These borings indicate a subsurface profile consisting of SAND (USCS: SP to SP-SM, USDA: Sand), silty SAND (USCS: SM, USDA: Sandy Loam to Loamy Sand), clayey SAND (USCS: SC, USDA: Sandy Clay Loam to Clay Loam) and lean CLAY (USCS: CL, USDA: Clay Loam).

HCEA performed grain size analyses on samples corresponding to the infiltration test locations. The results are included in the appendix of this report.

HCEA encountered groundwater seepage at depths between 5.0 and 9.7 feet below grade in the hand auger borings. The high groundwater level of 5.0 feet in boring B-2 was unusual compared to the rest of the site. Groundwater was either not encountered or was encountered at depths of 8 feet or more in the borings other than B-2. These results are in good agreement with HCEA's 2008 report which estimated a seasonal high groundwater level of 8.5 feet below existing grade.

HCEA set temporary piezometers for delayed groundwater readings in 5 of the boring locations. The results of the delayed groundwater readings are shown on the following table.

**Baywood Gardens  
Report of Field Infiltration Testing**

**HCEA Project No. D17076**

Boring	Groundwater Depth (ft)
B-1	9.7
B-2	5.0
B-4	8.0
B-5	dry
B-8	9.4

Based on the piezometer readings, HCEA believes that the seasonal high groundwater level is approximately 8 feet below grade. HCEA attributes the higher groundwater level at B-2 to a perched water condition.

Due to the seasonal high groundwater elevation, conventional basement construction is not recommended. Any below-grade structures must remain 7-feet or less below grade, or be designed to be permanently below the water table. HCEA recommends additional groundwater readings if below-grade structures are proposed in the vicinity of boring location B-2.

HCEA performed single ring, falling head infiltration testing in general accordance with ASTM D 5126 at the locations indicated on the following table. Based on the results of the infiltration testing results, HCEA calculated the following hydraulic conductivities:

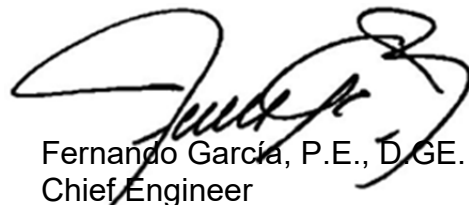
Test Location	Test Depth (ft)	Hydraulic Conductivity (in/hr)	USDA Classification
B-2	1.8	2.98	Sandy Loam
B-3	3.0	1.11	Sandy Loam
B-5	2.5	1.20	Loamy Sand
B-6	3.0	1.79	Sand
B-7	3.3	0.22	Loamy Sand
B-8	3.3	0.85	Loamy Sand
B-9	3.5	0.02	Loamy Sand
B-10	2.7	0.61	Sandy Loam
B-11	3.2	0.47	Loamy Sand

HCEA appreciates the opportunity to be of assistance to you during this phase of your project. If you have any questions regarding this report, please contact our office at (302) 744-9855.

Respectfully Submitted,  
**HILLIS-CARNES ENGINEERING ASSOCIATES, INC.**



Jeremy M. Boehm, P.E.  
Project Engineer

Fernando Garcia, P.E., D.G.E.  
Chief Engineer

**HILLIS-CARNES ENGINEERING ASSOCIATES**

# GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND  
ENVIRONMENTAL CONSULTANTS

*A Practicing Geoprofessional Business Association Member Firm*



March 5, 2020

Tunnell Companies, LP  
34026 Anna's Way  
Suite 1  
Long Neck, Delaware 19966

Attn: Mr. Mr. Robert Tunnell, III

Re: Report of Subsurface Exploration  
***Baywood Villas***  
Long Neck, Delaware

Ladies & Gentlemen:

In accordance with our agreement dated September 26, 2019, Geo-Technology Associates, Inc. (GTA) has performed a subsurface exploration for the stormwater management (SWM) areas and pump station area, for the above referenced project. The purpose of the subsurface exploration was to evaluate the estimated normal seasonal high groundwater elevation; discuss suitability of the subsoils to facilitate infiltration practices at selected test locations; present the subsoil conditions encountered at selected borings, and provide preliminary recommendations for pump station and pond construction. A concept plan prepared by Solutions IPEM was referenced for this report. The results of our subsurface exploration are summarized below.

Referring to the attached Site Location Plan, the site is situated along the north side of Long Neck Road approximately 1/4-mile east of John J. Williams Highway (Route 24), in the Long Neck area of Sussex County, Delaware. The project site is situated within an almost rectangular shaped parcel and consists of a mix of mature woods and open grass covered areas. The property generally slopes downward in a northwestern direction, with the ground surface at the exploration locations ranging from Elevation 26 to 16 Mean Sea Level (MSL), as determined by Solutions IPEM.

According to the Geologic Map of the Rehoboth Beach Quadrangle, Delaware Geologic Map Series No. 16 (2011) published by the Delaware Geological Survey, the site is within the Coastal Plain Physiographic Province. Coastal Plain sediments below the surficial deposits exposed in the site area were generally deposited in commonly estuarine environments of Quaternary geologic age. The Pleistocene deposits are designated as the Lynch Heights Formation and typically consist of "... well-sorted fine to coarse sand to pebble laminae and silty clay laminae." Please review the referenced map for further details regarding this geologic unit.

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◆ Abingdon, MD ◆ Baltimore, MD ◆ Laurel, MD ◆ Frederick, MD ◆ Waldorf, MD ◆ Sterling, VA ◆ Fredericksburg, VA ◆ Malvern, OH  
◆ Somerset, NJ ◆ NYC Metro ◆ New Castle, DE ◆ Georgetown, DE ◆ York, PA ◆ Quakertown, PA ◆ Charlotte, NC ◆ Raleigh, NC

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From review of the USDA Soil Survey, the soils predominately conform to Fort Mott-Henlopen complex/loamy sand (0 to 2 percent slopes). Also present are soils that conform to Henlopen loamy sand (2 to 5 percent slopes) and Hurlock loamy sand (0 to 2 percent slopes). The soils map information is attached.

From review of the attached Monthly Groundwater Depth for Qe44-01, Columbia Aquifer, taken from the Delaware Geological Survey website, the groundwater depth at Well Qe44-01 (east of Laurel, Delaware), was below the normal seasonal high during the period when the borings were performed during February 2020. It should be noted that the magnitude of fluctuation between the current groundwater level and the seasonal high groundwater level decreases towards the coast.

GTA performed 19 Standard Penetration Test (SPT) borings, designated as SWM-1 through SWM-18 and PS-1, to depths ranging from 8 to 40 feet below the ground surface. Longer-term water readings were taken two to fourteen days after completion and the holes were backfilled after the longer-term water readings were taken. The exploration locations were selected and staked with ground surface elevations determined by Solutions IPeM. Relative locations are shown on the attached Exploration Location Plan. The exploration locations indicated on the plan should be considered approximate. The exploration logs are attached.

The soils were visually classified in accordance with the Unified Soil Classification System (USCS) and the United States Department of Agriculture (USDA) classification system. Beneath an approximately 4 to 8-inch thick surface topsoil layer, the explorations generally encountered native subsoils visually classified as predominately consisting of Clayey SANDs (USCS: SC; USDA: Sandy Clay Loam), Silty SANDs (SM; Sandy Loam), Lean Clay (CL; Clay Loam), Silt (ML; Silt Loam), Poorly-graded SAND (SP; Sand), and Poorly-graded SANDs with Silt (SP-SM; Loamy Sand/Sand). The relative densities of the granular soils were very loose to medium dense based on SPT N-values of 2 to 20 blows per foot (bpf). The consistencies of fine-grained soils were medium stiff to very stiff based on SPT N-values of 6 to 20 bpf.

GTA’s estimate of the seasonal high groundwater level at the deeper borings is based upon water levels below seasonal high; and soil coloring, mottling and/or saturation. The results of the groundwater level readings and GTA’s opinion of the estimated seasonal high groundwater depth are summarized as follows:

**GROUNDWATER DATA SUMMARY**

Exploration No.	Existing Ground Surface Elevation (MSL)	Depth Below Existing Ground Surface (ft.)/ Elevation (MSL) to Groundwater at Completion	Depth Below Existing Ground Surface (ft.)/ Elevation (MSL) to Groundwater At One to Five Days After Completion	*Depth Below Existing Ground Surface (ft.)/ Elevation (MSL) to Estimated Seasonal High Groundwater
PS-1	EL 20.3	18.5 / EL 1.8	8.0 / EL 12.3 (Perched)	13 / EL 7
SWM-1	EL 21.0	Dry to 16 / Dry to EL 5.0	9.6 / EL 11.4 (Perched)	15 / EL 6
SWM-2	EL 18.9	Dry to 14 / Dry to EL 4.9	Dry to 12 / Dry to EL 6.9	12 / EL 7
SWM-3	EL 19.8	Dry to 16 / Dry to EL 3.8	Dry to 11 / Dry to EL 8.8	13 / EL 7
SWM-4	EL 17.9	Dry to 14 / Dry to EL 3.9	Dry to 9 / Dry to EL 8.9	11 / EL 7

Exploration No.	Existing Ground Surface Elevation (MSL)	Depth Below Existing Ground Surface (ft.)/ Elevation (MSL) to Groundwater at Completion	Depth Below Existing Ground Surface (ft.)/ Elevation (MSL) to Groundwater At One to Five Days After Completion	*Depth Below Existing Ground Surface (ft.)/ Elevation (MSL) to Estimated Seasonal High Groundwater
SWM-5	EL 16.4	Dry to 12 / Dry to EL 4.4	Dry to 12 / Dry to EL 4.4	8 / EL 8
SWM-6	EL 16.8	Dry to 12 / Dry to EL 4.8	Dry to 12 / Dry to EL 4.8	9 / EL 8
SWM-7	EL 16.1	Dry to 12 / Dry to EL 4.1	Dry to 11 / Dry to EL 5.1	8 / EL 8
SWM-8	EL 15.9	Dry to 8 / Dry to EL 7.9	Dry to 8 / Dry to EL 7.9	8 / EL 8
SWM-9	EL 19.0	Dry to 12 / Dry to EL 7.0	Dry to 12 / Dry to EL 7.0	10 / EL 9
SWM-10	EL 19.0	Dry to 12 / Dry to EL 7.0	Dry to 10 / Dry to EL 9.0	10 / EL 9
SWM-11	EL 20.7	Dry to 14 / Dry to EL 6.7	Dry to 14 / Dry to EL 6.7	12 / EL 9
SWM-12	EL 25.3	Dry to 18 / Dry to EL 7.3	17.9 / EL 7.4	15 / EL 10
SWM-13	EL 25.7	Dry to 18 / Dry to EL 7.7	Dry to 10 / Dry to EL 15.7	16 / EL 10
SWM-14	EL 23.4	Dry to 14 / Dry to EL 9.4	Dry to 12 / Dry to EL 11.4	13 / EL 10
SWM-15	EL 24.4	Dry to 18 / Dry to EL 6.4	Dry to 12 / Dry to EL 12.4	14 / EL 10
SWM-16	EL 21.7	Dry to 14 / Dry to EL 7.7	7.0 / EL 14.7 (Perched)	12 / EL 10
SWM-17	EL 19.9	Dry to 12 / Dry to EL 7.9	6.1 / EL 13.8 (Perched)	10 / EL 10
SWM-18	EL 21.1	Dry to 14 / Dry to EL 7.1	Dry to 12 / Dry to EL 9.1	11 / EL 10

\*Seasonal high groundwater estimate based upon observed soil mottling, color and/or saturation and should be considered approximate.

The groundwater levels can be expected to fluctuate with seasonal changes, precipitation, and other factors such as development activity. Please refer to the exploration logs provided in the attachments for further information.

Selected samples obtained from the borings were tested for grain-size analysis, Atterberg Limits and natural moisture contents. The grain-size analysis and Atterberg Limits testing were performed to determine the Unified Soil Classification System (USCS) designation for the soil. The results of testing are as follows:

**SUMMARY OF LABORATORY TESTING**

EXPLORATION NO.	DEPTH (FT.)	USCS CLASSIFICATION	LL (%)	PI (%)	NMC %
SWM-13	1 – 4	Silty SAND (SM)	NP	NP	12.1

Note: LL=Liquid Limit PI=Plastic Index NP=Non-plastic NMC=Natural Moisture Content NT=Not Tested

A near-surface bulk sample was taken from Boring SWM-13, and was tested for moisture-density relationship in accordance with the Standard Proctor (ASTM D-698) method for use in evaluating the suitability of these soils for reuse as fill. Results of these tests are summarized in the following table.

**SUMMARY OF COMPACTION**  
**(ASTM D 698, the Standard Proctor)**

EXPLORATION NO.	DEPTH (FT)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	NATURAL MOISTURE (%)
SWM-13	1 – 4	120.9	12.4	12.1

Please refer to the attached laboratory test results for additional information.

The guidelines established in the *Delaware Post Construction Stormwater BMP Standards & Specifications*, dated February 2019 indicate that the minimum infiltration rate for all runoff reduction and infiltration practices is one-inch per hour. Also, a vertical separation of at least two-feet from the seasonal high groundwater elevation or limiting layer is required for all infiltration practices unless an underdrain is provided.

We estimate seasonal high groundwater to range from approximate Elevation 6 to 10 MSL. Predominant subsurface soils observed in the test borings consisted of Poorly-graded SANDs with Silt to Silty SANDs which generally correspond to Loamy Sand and Sandy Loam in accordance with the USDA Soil Classification System. Loamy Sand and Sandy Loam soils are typically good to marginal soils for infiltration practices. At Borings SWM-1 through SWM-7, SWM-11 through SWM-14 and SWM-16 through SWM-18, interbedded areas of Clayey SANDs, SILT or Lean CLAYs which visually correspond to Sandy Clay Loam, Silt Loam and Clay Loam have poor infiltration characteristics. With the predominant presence of soils with poor infiltration characteristics, wet pond construction appears more suitable for this site. If shallow infiltration facilities are considered, field infiltration testing should be performed prior to designing infiltration facilities on the site.

To facilitate wet pond construction, a pond liner should be considered. A sufficient quantity of USCS SC and CL materials may be available on site and may be considered for a pond liner. If a sufficient quantity is not available, as an alternative, a Geosynthetic Clay Liner (GCL; Bentonite matrix) or an appropriate PVC liner with relief valves may be used. Both types of liners will need to be provided with a 1-foot thick granular soil cover. The GCL or PVC liners should be installed in accordance with manufacturer's recommendations. On-site granular soils are considered suitable for use as a pond liner cover material if they are dried to near optimum. Pond liner cover materials should meet AASHTO classification designation A-2-4 or more granular and be approved by GTA.

Prior to construction of pond fill embankment and after stripping the surface topsoil, GTA recommends to construct a four-foot deep (below stripped ground surface and stepped below the spillway invert) cutoff trench along the pond embankment length and extending to the 10-year event elevation at each end of the fill embankment alignment. Also, upon completion of the cutoff trench, an embankment core should extend to the top elevation of the 10-year event. The side slopes of the cutoff trench and embankment core should be at 1H:1V inclination or flatter. The bottom of the cutoff trench and the top of embankment core should be at least 4 feet

wide. The cutoff and embankment core should be formed of USCS CL or SC materials. The balance of embankment may be constructed of onsite materials conforming to USCS SC, SM, SP-SM or SP.

Structural fill should be constructed in maximum 8-inch loose lifts and compacted to 95 percent of the maximum dry density as determined by ASTM D-698 (AASHTO T-99). If practical, GTA recommends reinforced concrete pipe be used as the principal spillway pipe. Also, a concrete cradle and anti-seep collar should be provided for the spillway pipe.

For wet pond construction, water levels may be above at least a portion of the pond bottom level during construction. The contractor should be prepared to stabilize and dewater pond excavations. Subgrades excavated below the water table will be prone to instability and softening.

All SWM pond construction should conform to *Delaware Conservation Practice Standard Pond Code 378 and Code 521*, latest editions and *Delaware Sediment and Stormwater Regulations*, latest edition, as applicable.

The proposed pump station at Boring PS-1 may be supported on a mat slab type foundation. The foundation may be proportioned for a maximum net allowable soil bearing pressure of 2,000 pounds per square foot (psf). Foundations should be supported on the USCS SP-SM granular soils. Disturbed, very loose layers should be excavated to a stable stratum. Proposed subgrade should be reestablished with AASHTO No. 57 crushed stone or in accordance with GTA's recommendations in the field at the time of construction. Use of a mud mat or crushed stone layer may be required to stabilize and protect the foundation subgrade.

Referring to log PS-1, the on-site soils beneath the topsoil that conform to USCS SC are not suitable for reuse as structural backfill material for the pump station. Excavated materials conforming to SM, SP-SM, or SP classifications will be suitable for reuse as structural fill, however, materials excavated near or below groundwater are anticipated to require substantial drying prior to reuse as structural backfill (compacted to 95 percent of ASTM D698).

Based on the proposed depth of the excavation required for the pump station, groundwater will impact the construction of the proposed pump station. Well points will be required to dewater the excavation during construction. The foundation/floor slab of the proposed pump station will likely be subjected to permanent uplift pressures. GTA recommends that the pump station bottom slab be designed to resist these uplift forces and should be watertight. Use of a relatively thick mat slab may be required to balance the uplift forces. The structure will also be subjected to hydrostatic and unbalanced earth pressures and must be designed to resist such lateral pressures.

GTA recommends that the following soil design parameters be used for the pump station construction:

Friction Angle	$\phi = 30$ degrees
Active Pressure Coefficient*	$K_a = 0.3$
At Rest Pressure Coefficient*	$K_o = 0.5$
Passive Pressure Coefficient*	$K_p = 3.0$
Moist Unit Weight of Soil	125 pcf
Saturated Unit Weight of Soil	130 pcf
Submerged Unit Weight of Soil	67.6 pcf
Design Groundwater Elevation*	7 MSL at PS-1

*\*Level backfill condition*

### ***Limitations***

This report, including all supporting exploration logs, field data, field notes, estimates, and other documents prepared by GTA in connection with this project, has been prepared for the exclusive use of Tunnell Companies, LP pursuant to the agreement between GTA and Tunnell Companies, LP dated September 26, 2019, and in accordance with generally accepted engineering practice. All terms and conditions set forth in the Agreement are incorporated herein by reference. No warranty, express or implied, is given herein. Use and reproduction of this report by any other person without the expressed written permission of GTA and Tunnell Companies, LP is unauthorized and such use is at the sole risk of the user.

The analysis and recommendations contained in this report are based on the data obtained from limited observation and testing of the encountered materials. Explorations indicate soil and groundwater conditions only at specific locations and times and only to the depths penetrated. They do not necessarily reflect strata variations that may exist between the exploration locations. Consequently, the analysis and recommendations must be considered preliminary until the subsurface conditions can be verified by direct observation at the time of construction. If variations in subsurface conditions from those described are noted during construction, recommendations in this report may need to be re-evaluated.

In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report are verified in writing. Geo-Technology Associates, Inc. is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analysis without the expressed written authorization of Geo-Technology Associates, Inc.

The scope of our services for this geotechnical exploration did not include any environmental assessment or investigation for the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater or air, on or below or around this site. Any statements in this report or on the logs regarding odors or unusual or suspicious items or conditions observed are strictly for the information of our Client. The subject matter of this



report is limited to the facts and matters stated herein. Absence of a reference to any other conditions or subject matter shall not be constructed by the reader to imply approval by the writer.

We appreciate the opportunity to be of assistance on this project. Should you have any questions or require additional information, please contact our office at (302) 855-9761.

Sincerely,  
**GEO-TECHNOLOGY ASSOCIATES, INC.**



Travis P. Caraway, EIT  
Project Geotechnical Professional



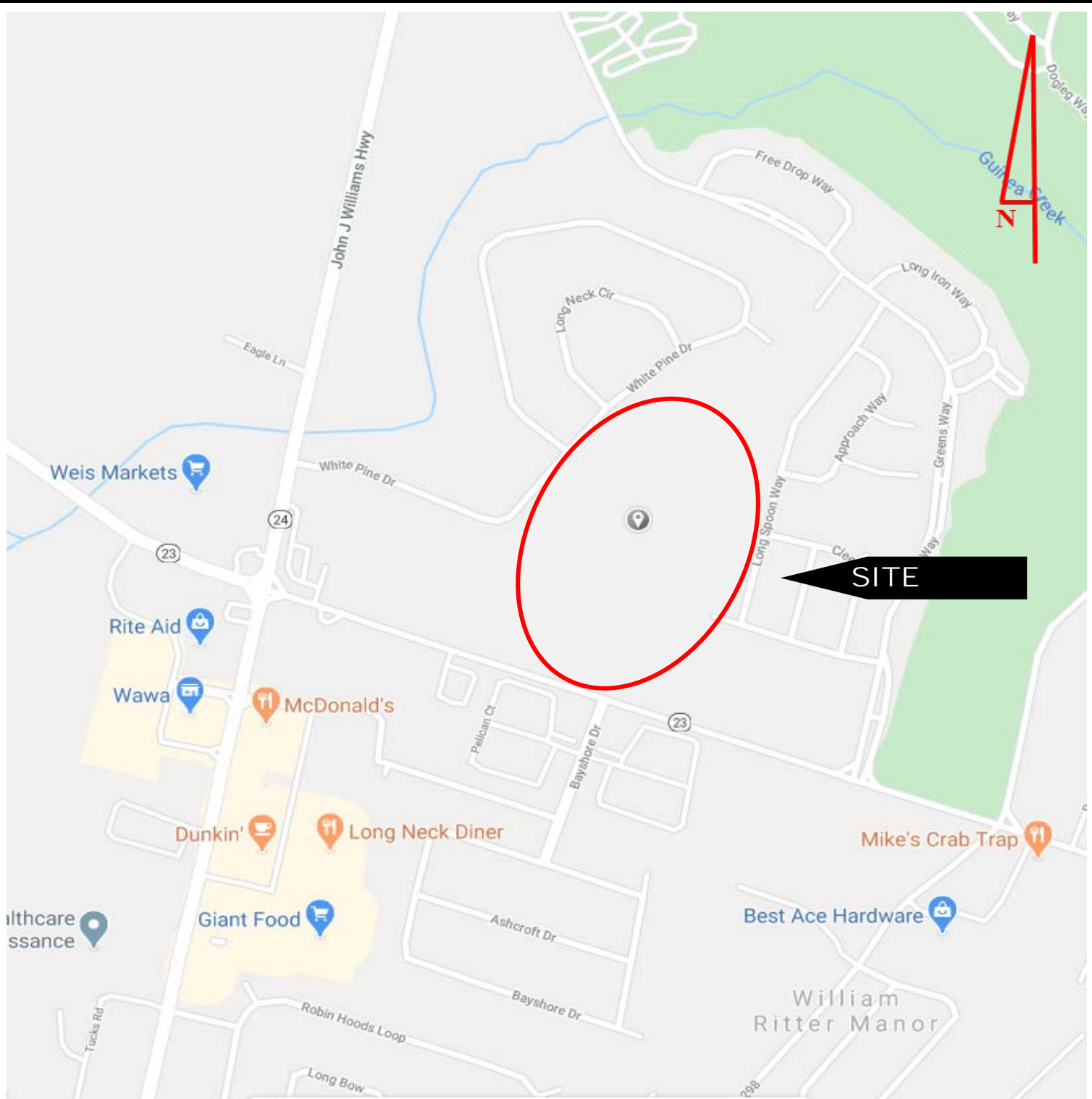
Gregory R. Sauter, P.E  
Vice President



GRS/TPC/llh  
31200023

S:\1 Job File\2020 Projects\31200023-Baywood Villas\Report\Baywood Villas - GTA Report for Subsurface Exploration.doc

Attachments: Site Location Plan (1 page)  
Exploration Location Plan (1 page)  
USDA Soil Survey Map (3 pages)  
Qe44-01 Monthly Groundwater Depth (1 page)  
Notes for Exploration Logs (1 page)  
Exploration Logs (19 pages)  
Particle Size Distribution Report (1 page)  
Moisture Density Relationship Report (1 page)  
GBA – Important Information about your Geotechnical Engineering Report (2 pages)



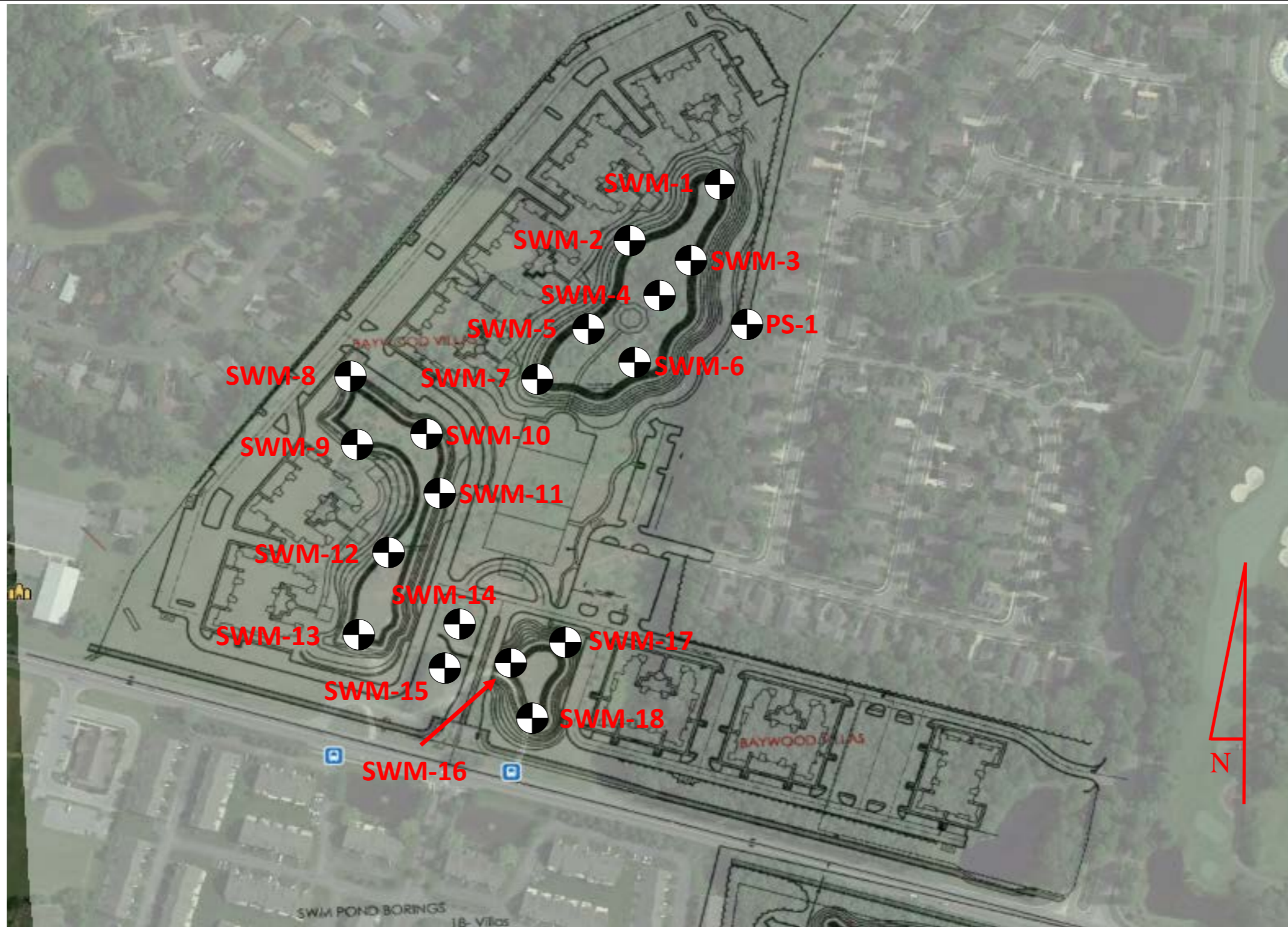
Site Location Plan taken from Google Maps




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 Georgetown, Delaware 19947  
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**Site Location Plan**  
**Baywood Villas**  
**Sussex County, Delaware**

SCALE	DATE	DRAWN BY	DESIGN BY	REVIEW BY	JOB NO.
NTS	March 2020	GTA	Google Maps	GRS	31200023



Exploration Location Plan taken from Google Earth and a concept plan designed by Solutions IPEM.

 Boring Location



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**Exploration Location Plan**  
**Baywood Villas**  
**Sussex County, Delaware**

SCALE	DATE	DRAWN BY	DESIGN BY	REVIEW BY	JOB NO.	Figure
1" ~230'	January 2020	GTA	Solutions	GRS	31200023	2

Soil Map—Sussex County, Delaware  
(Baywood Villas)



Soil Map may not be valid at this scale.

Map Scale: 1:3,450 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

2/27/2020  
Page 1 of 3


## 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 1:24,000.

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: Sussex County, Delaware

Survey Area Data: Version 20, Sep 13, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 21, 2018—Mar 12, 2019

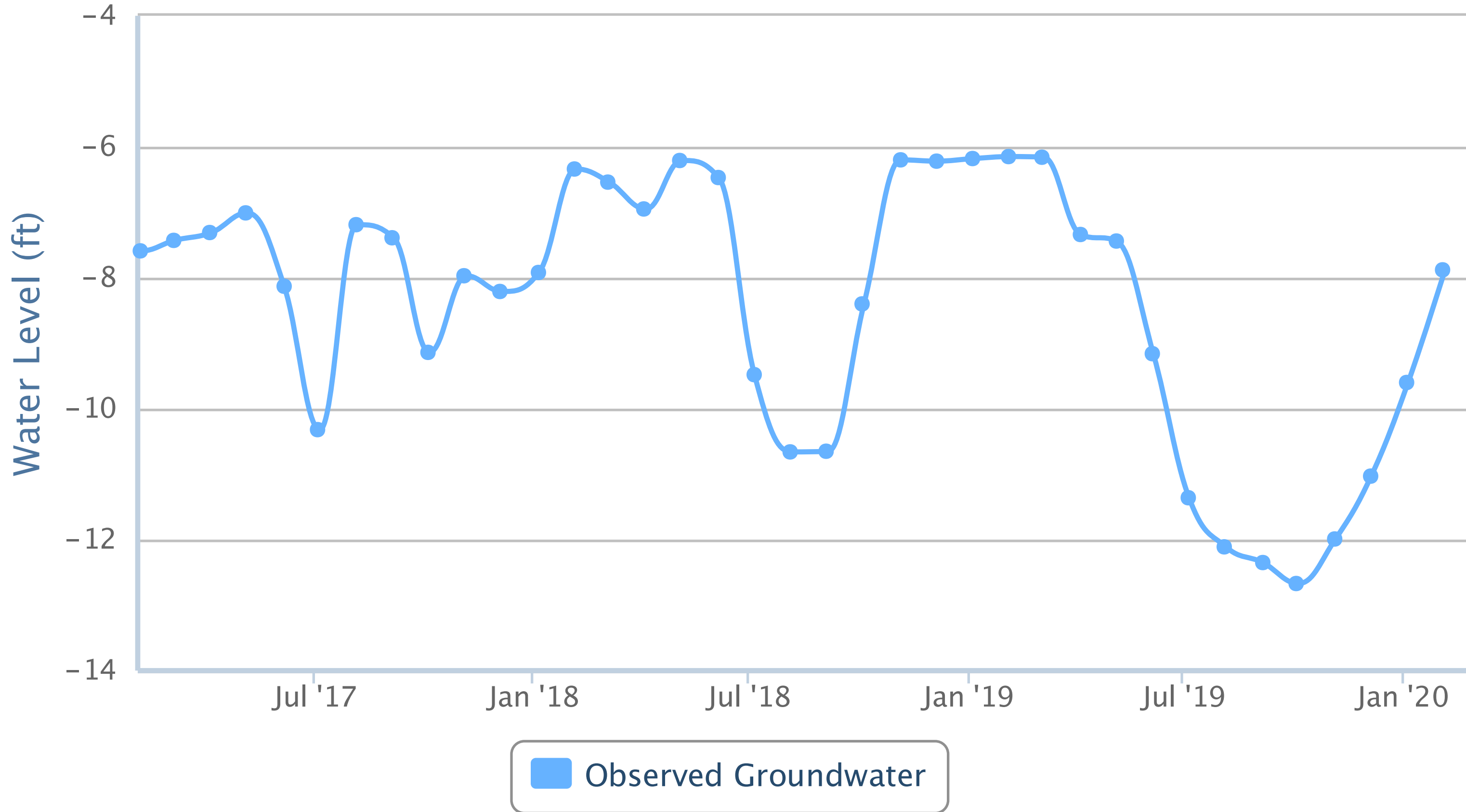
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FhA	Fort Mott-Henlopen complex, 0 to 2 percent slopes	25.9	81.6%
FmA	Fort Mott loamy sand, 0 to 2 percent slopes	0.4	1.2%
HpB	Henlopen loamy sand, 2 to 5 percent slopes	4.8	15.1%
HuA	Hurlock loamy sand, 0 to 2 percent slopes	0.6	2.0%
<b>Totals for Area of Interest</b>		<b>31.7</b>	<b>100.0%</b>

# Monthly Groundwater Depth for Qe44-01, Columbia Aquifer

Delaware Geological Survey



# Baywood Gardens

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## Environmental Assessment and Public Facilities Evaluation Report

The proposed development, Baywood Gardens, is in conformity with the Sussex County Zoning requirements for the Coastal Zone.

Application process: All developments containing 50 or more dwelling units are subject to the Coastal Zone performance requirements. An environmental assessment and public facility evaluation report and sketch plan (report) are required to be submitted to the Director of Planning and Zoning. Below is the report which finds:

- (a) The proposed drainage design will include the use of both a closed system storm drain and open system drainage network. Storm water management will be in conformity with the current storm water management regulations including managing both water quantity and quality. Stormwater management devices could include constructed wetlands, bio-swales, infiltration basins, filter strips, ponds, etc.
- (b) Potable water and fire protection will be provided for Baywood Gardens. The site will be served by Tidewater Utilities. Potable water demands are anticipated to be approximately 128,000 gallons per day. Irrigation, if provided, will be by non-potable well or drawn from storm water management facilities.
- (c) Wastewater collection and treatment will be provided for the site by Inland Bays Preservation Company and Sussex County. The proposed collection and treatment of the wastewater generated from the site will not have an adverse effect on the quality of groundwater and surface waters.
- (d) The proposed development will be designed to provide safe and efficient vehicular travel patterns on site. Site access to Long Neck Road and School Lane will be in accordance with DeIDOT's *Development Coordination Manual* and the approved TIS reports.
- (e) No proposed or federally listed endangered or threatened species are known to exist on the site.
- (f) The site does not contain non-tidal wetlands.
- (g) The site has been planned to maintain areas of open space throughout the site. The plan provides a total of 27.5 +/- acres (51.9%) of interconnected open space. Open space amenities will include storm water management, recreation facilities, walking trails, buffers, etc.
- (h) The internal access roadway will be privately owned and maintained by the HOA within private easements and rights-of-way. Road width and pavement thicknesses shall be in conformity with Sussex County Standards. Potable water mains and sanitary sewer mains will be publicly owned and maintained within rights-of-way and/or utility easements. Storm water drainage and management facilities will be privately owned and maintained by the HOA.



- (i) The project is within the commercial and tourist area of Long Neck. As such it will offer not only an economic boost from tax revenue and tourism but will also provide jobs associated with land development construction and home building.
- (j) There are no historic sites referenced on the property. The developer will comply with all state and federal law should sites be discovered.
- (k) The proposed application is in conformity with the current Sussex County Comprehensive Plan. Specifically, the site is located in the Coastal Area and Commercial Area (a request has been made to remove the site from the Commercial Area). The site is within the existing Inland Bays Preservation and Sussex County sewer service area. Also, the site will be provided water by Tidewater Utilities.
- (l) The design of the Baywood Gardens development provided superior living experience in a manner which is consistent with the Comprehensive Plan.

***Jason Palkewicz, Professional Engineer***  
***Vice President***

**EDUCATION**

BE, Environmental Eng., 1995  
Hofstra University

MS, Civil Eng., 1999  
University of Toledo

**REGISTRATIONS**

- Professional Engineer  
MD # 25088
- Professional Engineer  
DE # 12083
- Professional Engineer  
VA # 035417

**MEMBERSHIPS**

- LEED, AP

**PROFESSIONAL SUMMARY**

Mr. Palkewicz is a Professional Engineer and Project Manager with licenses in Maryland, Virginia and Delaware, with over 20 years of experience successfully overseeing all phases of planning, engineering and survey projects for government and private-sector clients. He is a highly skilled team leader, detail oriented with the ability to solve problems with limited resources while never losing sight of the big picture.

**SPECIAL PROJECT EXPERIENCE**

- **Pot-Nets Bayside, Sussex County, DE** – Provided design and permitting drawings for the rehabilitation and replacement of approximately 10,000 lf of vinyl marina bulkhead including dozens of piers, hundreds of piles and two boat launching facilities.
- **Pelican Point, Sussex County, DE** – Prepared construction drawings and plats for a 379 unit residential along Rte 5 outside of Long Neck. Plans included roadway, grading, sediment and erosion control, potable water, gravity sanitary sewer and sanitary pump station
- **Seagull Square, University of Salisbury, MD** – The civil engineer project manager for this mixed use public/private development consisting of approximately 600 student beds and 23,000 s.f. of Main Street style retail. Worked with the developer, State and City to acquire City sewer and water services to the site. Negotiated with MDSHA to gain access from Business Route 13, including easement abandonment, right-of-way plats and intersection improvements. LEED responsibilities included the Sustainable Site portion of the accreditation.
- **East Fields, Fruitland, MD** – Prepared construction drawings and plats for a 120 unit residential subdivision on Main Street in Fruitland. Plans included roadway, grading, sediment and erosion control, potable water, gravity sanitary sewer and sanitary pump station.

## Preliminary Land Use Service (PLUS)

### Delaware State Planning Coordination

122 William Penn Street • Dover, DE 19901 • Phone: 302-739-3090 • Fax: 302-739-5661

**Purpose of PLUS - -The PLUS process is intended to provide consolidated State comments regarding the proposed project. The Applicant is encouraged to submit the application during the concept stages of planning as this process often offers recommendations for changes to the plan. The application should be submitted after the pre-application meeting with the local jurisdiction but before formal application is made.**

Please complete this PLUS application in its entirety. **All questions must be answered. If a question is unknown at this time or not applicable, please explain.** Unanswered questions on this form could lead to delays in scheduling your review. This form will enable the state staff to review the project before the scheduled meeting and to have beneficial information available for the applicant and/or developer at the time of review. If you need assistance or clarification, please call the State Planning Office at (302) 739-3090.

2019-05-09

PLUS Number (to be completed by OSPC): \_\_\_\_\_ 1/2  
 Investment Level Per Strategies for State Policies and Spending (to be determined by OSPC): \_\_\_\_\_

1. Project Title/Name: Baywood Gardens

2. Location ( please be specific): Intersections of School Lane and Long Neck Road.

3. Parcel Identification #: 234-23, P 273.01, 273.02, 273.03, 273.05, & P/O 270      4. County or Local Jurisdiction Name: where project is located: Sussex County

5. If contiguous to a municipality, are you seeking annexation: N/A

6. Owner's Name: ABC Woodlands, LLC      Baywood, LLC

Address: PO Box 1389      34026 Annas Way, Suite 1

City: Easton      Long Neck      State: MD      DE      Zip: 21601      19966

Phone:      Fax:      Email:

7. Equitable Owner/Developer (**This Person is required to attend the PLUS meeting**): Robert Tunnell, III

Address: 34026 Annas Way, Suite 1

City: Long Neck      State: DE      Zip: 19966

Phone: 302.945.9300      Fax:      Email: rtunnell@potnets.com

8. Project Designer/Engineer: Solutions IPEM

Address: 303 North Bedford Street

City: Georgetown      State: DE      Zip: 19947

Phone: 302.297.9215      Fax:      Email: jpalkewicz@solutionsipem.com

9. **Please Designate a Contact Person, including phone number, for this Project:** Jason Palkewicz, PE

Information Regarding Site:	
10. Type of Review: <input checked="" type="checkbox"/> Rezoning, if not in compliance with certified comprehensive plan <input type="checkbox"/> Site Plan Review <input type="checkbox"/> Subdivision	
11. Brief Explanation of Project being reviewed: Site plan and rezoning for apartment complex.  If this property has been the subject of a previous LUPA or PLUS review, please provide the name(s) and date(s) of those applications. 2005-04-16 & 2018-06-05	
12. Area of Project (Acres +/-): 54.38    Number of Residential Units: 514    Commercial square footage:	
13. Present Zoning: B-1, C-1, & CR-1	14. Proposed Zoning: HR/RPC
15. Present Use: Single Family Home	16. Proposed Use: Apartments
17. Water: <input type="checkbox"/> Central (Community system) <input type="checkbox"/> Individual On-Site <input checked="" type="checkbox"/> Public (Utility) Service Provider Name:  Will a new public well be located on the site? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
18. Wastewater: <input type="checkbox"/> Central (Community system) <input type="checkbox"/> Individual On-Site <input checked="" type="checkbox"/> Public (Utility) Service Provider Name:  Will a new community wastewater system be located on this site? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
19. If residential, describe style and market segment you plan to target (Example- Age restricted): All ages.	
20. Environmental impacts:  How many forested acres are presently on-site? 22.72    How many forested acres will be removed? 18.58  To your knowledge, are there any wetlands, as defined by the U.S. Army Corps of Engineers or the Department of Natural Resources and Environmental Control, on the site? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Are the wetlands: <input type="checkbox"/> Tidal    Acres: <input type="checkbox"/> Non-tidal    Acres:  If "Yes", have the wetlands been delineated? <input type="checkbox"/> Yes <input type="checkbox"/> No  Has the Army Corps of Engineers signed off on the delineation? <input type="checkbox"/> Yes <input type="checkbox"/> No  Will the wetlands be directly impacted and/or do you anticipate the need for wetland permits? <input type="checkbox"/> Yes <input type="checkbox"/> No    If "Yes", describe the impacts:  How close do you anticipate ground disturbance to wetlands, streams, wells, or waterbodies? _____	
21. Does this activity encroach on or impact any tax ditch, public ditch, or private ditch (ditch that directs water off-site)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
22. List the proposed method(s) of stormwater management for the site: Wet ponds, underground storage, filter strips, etc.	
23. Is open space proposed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    If "Yes," how much?    Acres: 10 +/-  What is the intended use of the open space (for example, active recreation, passive recreation, stormwater management, wildlife habitat, historical or archeological protection)? Stormwater, active recreation, buffers, etc.	
24. Are you considering dedicating any land for community use (e.g., police, fire, school)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

25. Please estimate How many vehicle trips will this project generate on an average weekday? A trip is a vehicle entering or exiting. If traffic is seasonal, assume peak season: 2,827

What percentage of those trips will be trucks, excluding vans and pick-up trucks? Less than 5%

26. Will the project connect to state maintained roads?  Yes  No

27. Please list any locations where this project physically could be connected to existing or future development on adjacent lands and indicate your willingness to discuss making these connections. Baywood Greens

28. Are there existing sidewalks?  Yes  No; bike paths  Yes  No  
Are there proposed sidewalks?  Yes  No; bike paths  Yes

Is there an opportunity to connect to a larger bike, pedestrian, or transit network?  Yes  No

29. To your knowledge, is this site in the vicinity of any known historic/cultural resources or sites?  Yes  No

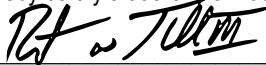
Has this site been evaluated for historic and/or cultural resources?  Yes  No

Would you be open to a site evaluation by the State Historic Preservation Office?  Yes  No

30. To promote an accurate review of your parcel's features, would you permit a State agency site visit?  Yes  No  
Person to contact to arrange visit: \_\_\_\_\_ phone number: \_\_\_\_\_

31. Are any federal permits, licensing, or funding anticipated?  Yes  No

I hereby certify that the information on this application is complete, true and correct, to the best of my knowledge.



4/11/19

Signature of property owner

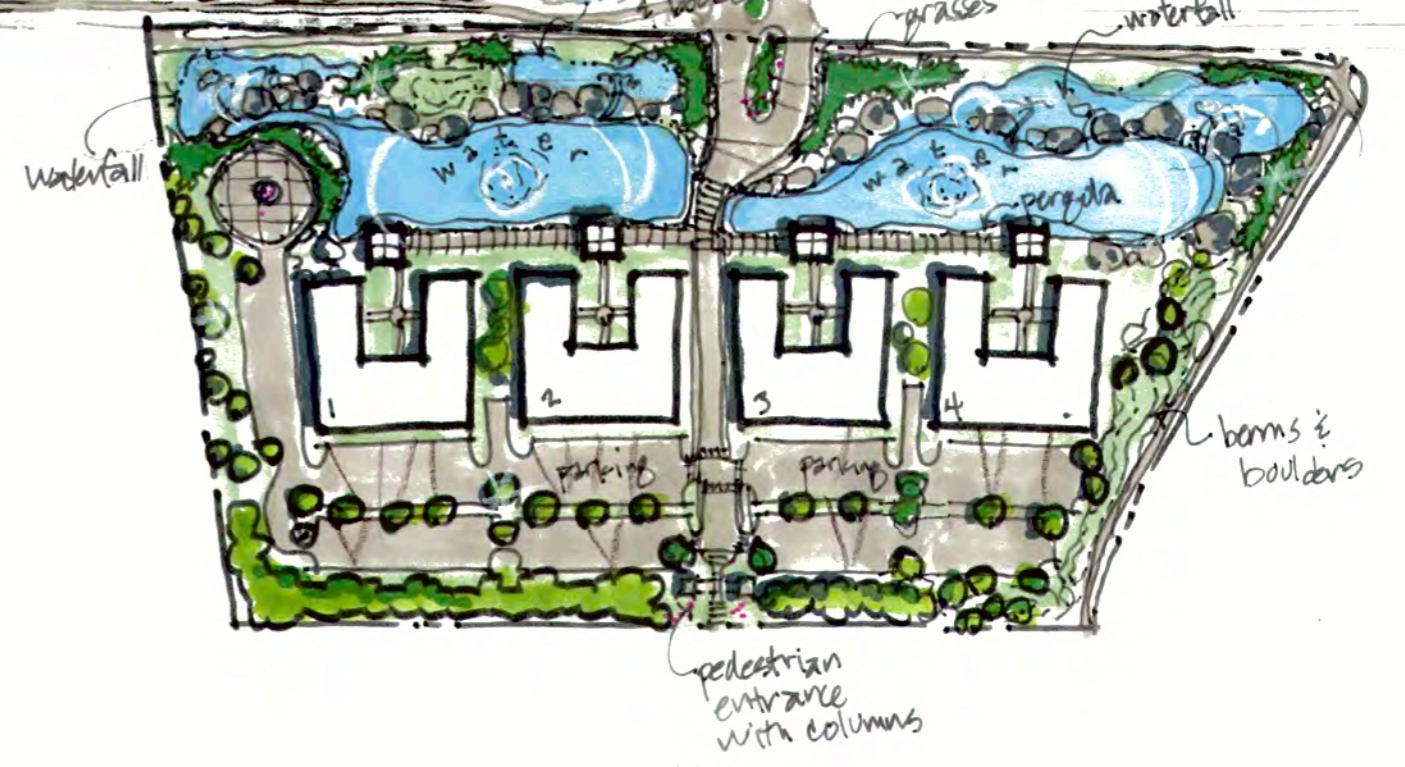
Date

Signature of Person completing form  
(If different than property owner)

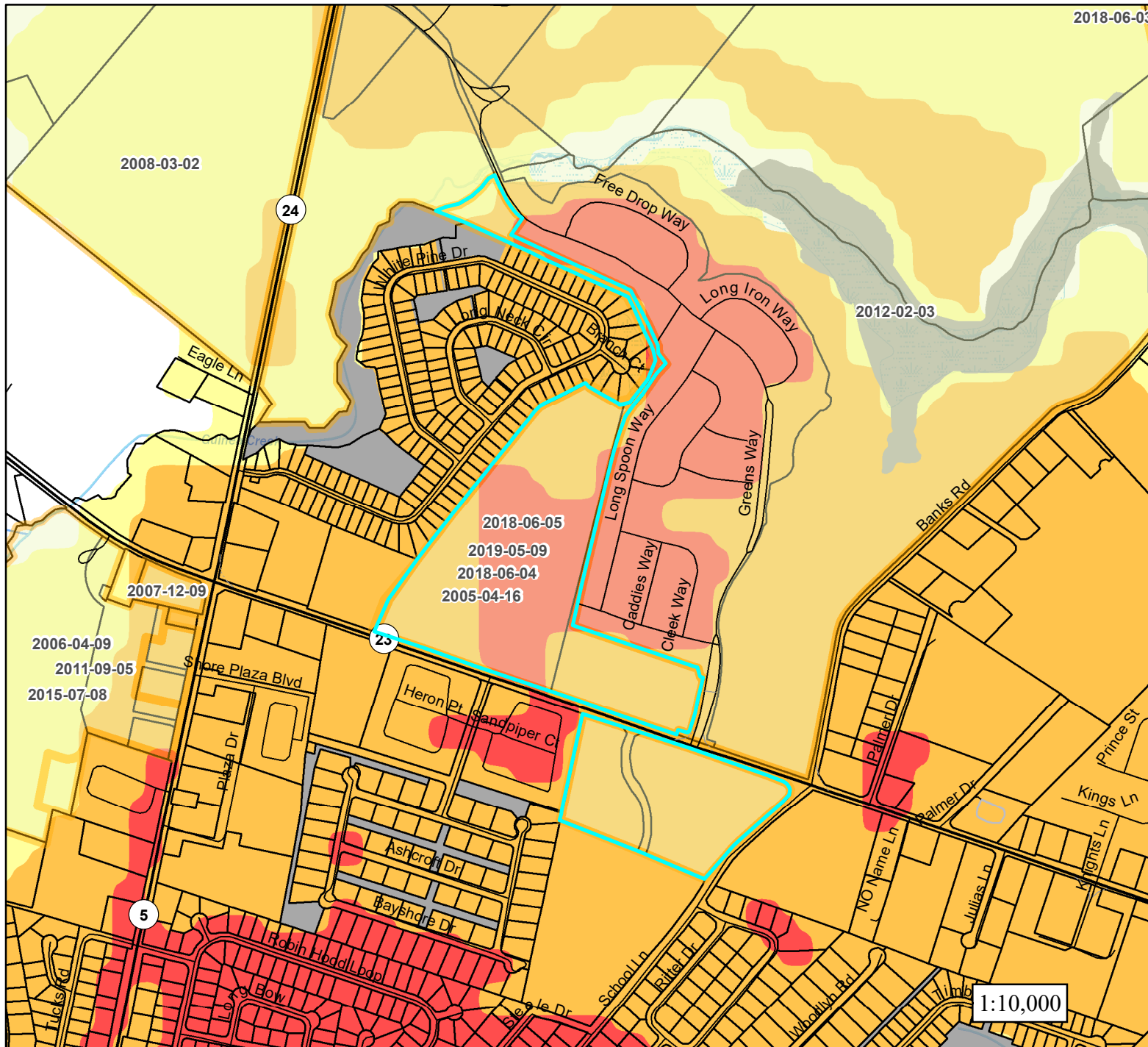
Date

**Signed application must be received before application is scheduled for PLUS review.**

This form should be returned to the Office of State Planning electronically at PLUS@state.de.us along with an electronic copy of any site plans and development plans for this site. Site Plans, drawings, and location maps should be submitted as image files (JPEG, GIF, TIF, etc.) or as PDF files. GIS data sets and CAD drawings may also be submitted. If electronic copy of the plan is not available, contact the Office of State Planning at (302) 739-3090 for further instructions. A signed copy should be forwarded to the Office of State Planning, 122 William Penn Street, Dover, DE 19901. Thank you for this input. Your request will be researched thoroughly. Please be sure to note the contact person so we may schedule your request in a timely manner.



# Preliminary Land Use Service (PLUS)



## Baywood Gardens 2019-05-09

**Legend**

**2015 State Strategies**

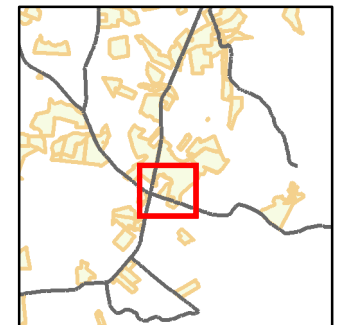
- Level 1
- Level 2
- Level 3
- Level 4
- Out of Play

**PLUS Project Areas**

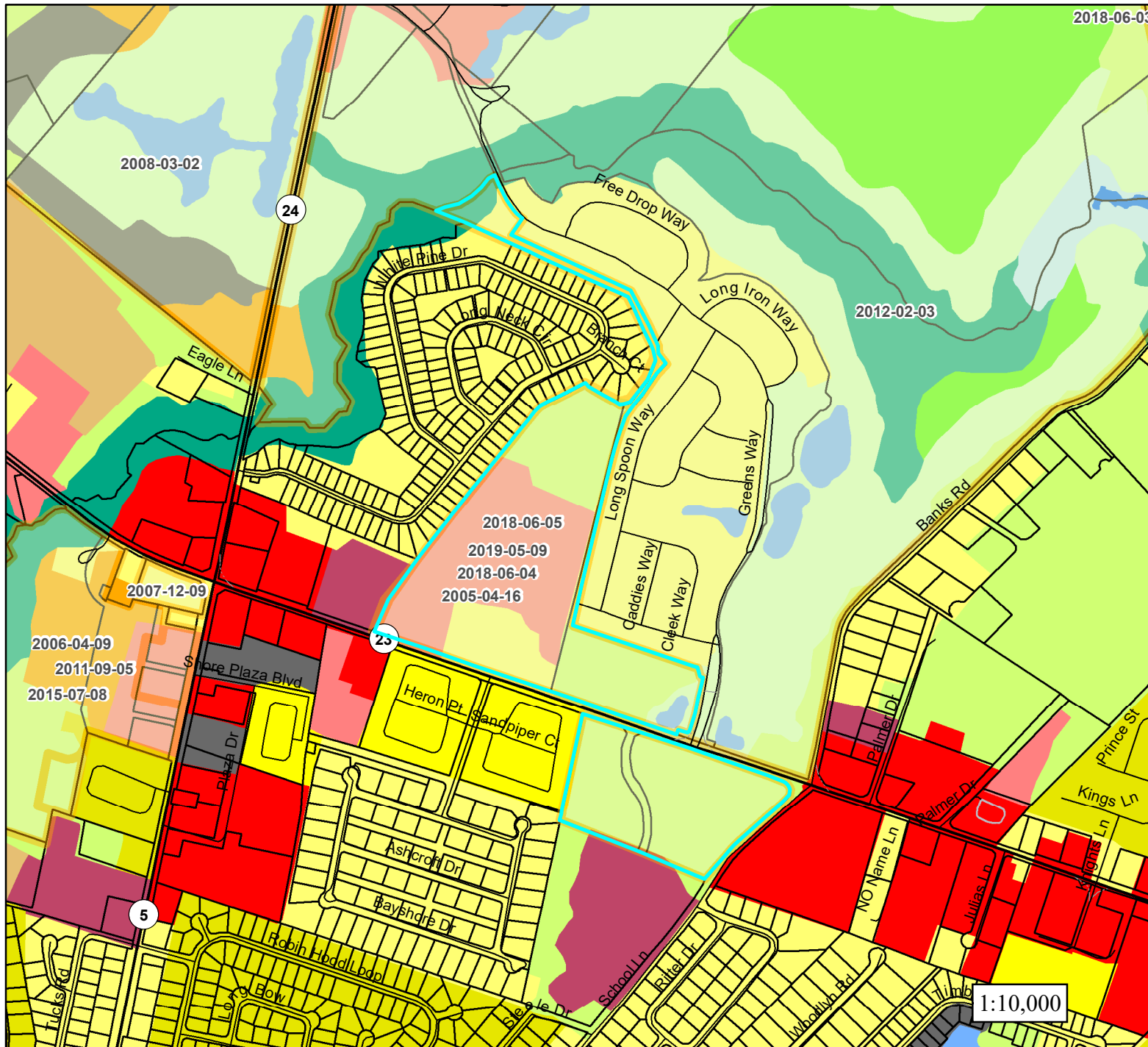
**type**

- Comp Plans
- All Other PLUS Reviews

### Location Map



# Preliminary Land Use Service (PLUS)



## Baywood Gardens 2019-05-09

**Legend**

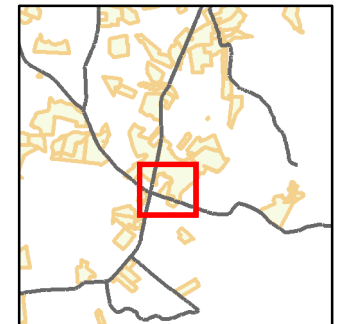
**2012 Land Use  
LULC Category**

- 110
- Single Family Dwellings
- Multi-Family Dwellings
- Mobile Home Parks/Courts
- Commercial
- Industrial
- Transportation/Communication/Utilities
- Mixed Urban/Built-up
- Institutional/Governmental
- Recreational
- Farms, Pasture, Cropland
- Confined Animal Feeding Operations/Feedlots/Holding
- Rangeland
- Orchards/Nurseries/Horticulture
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Brush Rangeland
- Clear-cut
- Man-made Reservoirs and Impoundments
- Marinas/Port Facilities/Docks
- Open Water
- Emergent Wetlands - Tidal and Non-tidal
- Forested Wetlands - Tidal and Non-tidal
- Scrub/Shrub Wetlands - Tidal and Non-tidal
- Sandy Areas and Shoreline
- Extraction and Transitional

**PLUS Project Areas  
type**

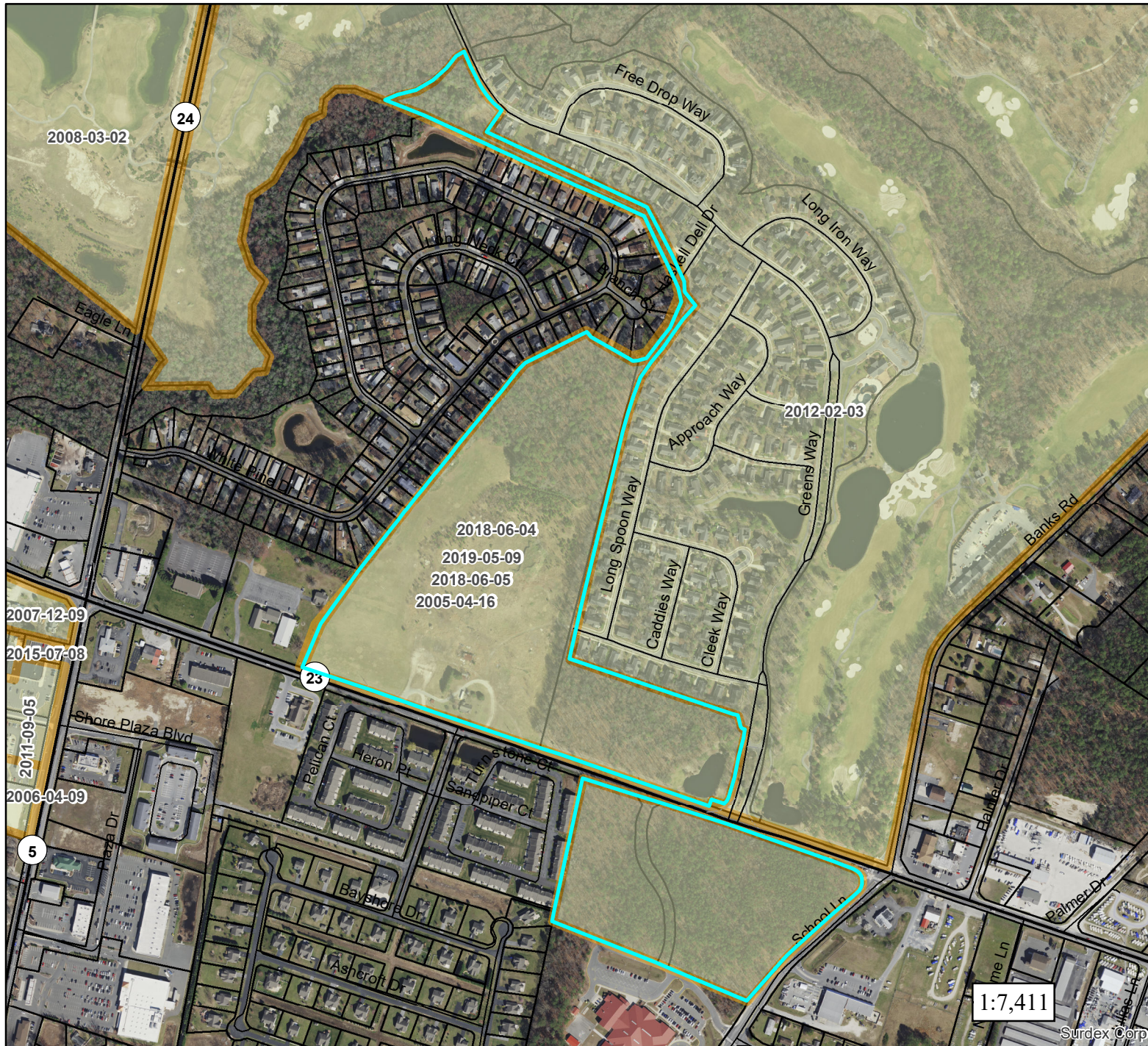
- Comp Plans
- All Other PLUS Reviews

## Location Map





# Preliminary Land Use Service (PLUS)



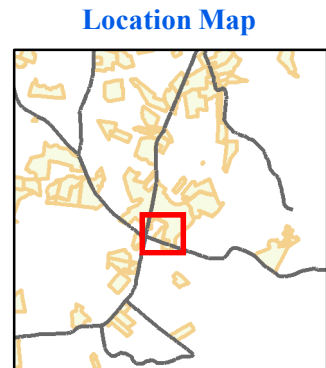
**Baywood Gardens**  
2019-05-09

**Legend**

**PLUS Project Areas**

**type**

- Comp Plans
- All Other PLUS Reviews





STATE OF DELAWARE  
EXECUTIVE DEPARTMENT  
OFFICE OF STATE PLANNING COORDINATION

June 19, 2019

Mr. Jason Palkewicz, PE  
Solutions IPEM  
303 North Bedford Street  
Georgetown, DE 19947

RE: PLUS review 2019-05-09; Baywood Gardens

Dear Mr. Palkewicz:

Thank you for meeting with State agency planners on May 22, 2019 to discuss the Baywood Gardens project. According to the information received, you are seeking review of a rezoning of 54.38 acres from B-1, C-1, and CR-1 to HR/PC in anticipation of 514 apartment units along Long Neck Road in Sussex County.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. **The developers will also need to comply with any Federal, State, and local regulations regarding this property. We also note that as Sussex County has governing authority over this land the developers will need to comply with any and all regulations/restrictions set forth by the County.**

**Strategies for State Policies and Spending**

This project is located in Investment Level 1 and 2 according to the *Strategies for State Policies and Spending*. This site is also located in the Coastal Area growth zone of the recently certified SC comp plan. Investment Level 1 & 2 reflect areas that are already developed in an urban or suburban fashion, where infrastructure is existing or readily available, and where future redevelopment or infill projects are expected and encouraged by State policy. State investments will support growth in these areas.

## **Code Requirements/Agency Permitting Requirements**

### **Department of Transportation – Contact Bill Brockenbrough 760-2109**

- The site access on Long Neck Road (Delaware Route 23) and School Lane (Sussex Road 298) must be designed in accordance with DelDOT's Development Coordination Manual, which is available at <http://www.deldot.gov/Business/subdivisions/index.shtml?dc=changes>.
- Pursuant to Section P.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. The form needed to request the meeting and guidance on what will be covered there and how to prepare for it is located at [https://www.deldot.gov/Business/subdivisions/pdfs/Meeting\\_Request\\_Form.pdf?08022017](https://www.deldot.gov/Business/subdivisions/pdfs/Meeting_Request_Form.pdf?08022017).
- Section P.5 of the Manual addresses fees that are assessed for the review of development proposals. DelDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when construction plans are submitted for review.
- Per Section 2.2.2.1 of the Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. From the PLUS application, the total daily trips are estimated at 2,827 vehicle trip ends per day. DelDOT calculates a higher number, 3,845 vehicle trip ends per day, but regardless the warrant for a TIS is met.

DelDOT has met with the developer's engineers about this project twice regarding TIS, once in September 2018 to set a scope for a TIS for Phases 1 and 2 of the development, the part on the north side of Long Neck Road and once in April 2019 to set a scope for a TIS for Phase 3 of the development, the part on the south side of Long Neck Road. See the attached memoranda dated September 18, 2018 and April 24, 2019.

At the April 2019 meeting, DelDOT informed the applicant and their engineers that left turns into Phase 3 of the development from Long Neck Road cannot be accommodated and that consequently a secondary access would need to be provided on School Lane. That secondary access is not shown on the concept sketch accompanying the PLUS application.

The primary purpose of a TIS is to determine the need for off-site transportation improvements. Without prejudging the results of either TIS, DelDOT expects to require a contribution to the DelDOT project at the intersection of Delaware Route 24 and Long Neck Road and signal agreements for the Route 24, Bayshore Drive, Greens Way and School Lane/Banks Road intersections along Long Neck Road.

- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, DelDOT will require dedication of right-of-way along the site's frontage on Long Neck Road and School Lane. By this regulation, this dedication is to provide a minimum of 40 feet of right-of-way from the physical centerline of Long Neck Road and 30 feet of right-of-way from the physical centerline of School Lane. The following right-of-way dedication note is required, "**An X-foot wide right-of-way is hereby dedicated to the State of Delaware, as per this plat.**"
- In accordance with Section 3.2.5.1.2 of the Manual, DelDOT will require the establishment of a 15-foot wide permanent easement across the property frontage on Long Neck Road and School Lane. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the site. The following note is required, "**A 15-foot wide permanent easement is hereby established for the State of Delaware, as per this plat.**"
- Referring to Section 3.4.2.1 of the Manual, the following items, among other things, are required on the Record Plan:
  - A Traffic Generation Diagram. See Figure 3.4.2-a for the required format and content.
  - Depiction of all existing entrances within 450 feet of the entrances on Long Neck Road and within 300 feet of the entrance on School Lane.
  - Notes identifying the type of off-site improvements, agreements (signal, letter) contributions and when the off-site improvements are warranted.
- Section 3.5 of the Manual provides DelDOT's requirements with regard to connectivity. The requirements in Sections 3.5.1 through 3.5.3 shall be followed for all development projects having access to state roads or proposing DelDOT maintained public streets for subdivisions. A driveway connection should be provided to from Phase 3 to Turnstone Court in the Bayshore development and a pedestrian connection should be provided from Phase 3 to the Long Neck Elementary School.
- Section 3.5.4.2 of the Development Coordination Manual addresses requirements for shared-use paths and sidewalks. For projects in Level 1 and 2 Investment Areas, installation of paths or sidewalks along the frontage on State-maintained roads is required. DelDOT anticipates requiring the developer build Shared Use Paths along their frontage on both Long Neck Road and School Lane.
- Referring to Section 3.5.5 of the Manual, existing and proposed transit stops and associated facilities as required by the Delaware Transit Corporation (DTC) or DelDOT shall be shown on the Record Plan. DART Route 215 provides seasonal service on Long

Neck Road and the developer should anticipate a requirement to provide bus stops at Bayshore Drive and Greens Way.

- In accordance with Section 3.8 of the Manual, storm water facilities, excluding filter strips and bioswales, shall be located a minimum of 20 feet from the ultimate State right-of-way along Long Neck Road and School Lane.
- In accordance with Section 5.2.9 of the Manual, the Auxiliary Lane Worksheet should be used to determine whether auxiliary lanes are warranted at the site entrances and how long those lanes should be. The worksheet can be found at <http://www.deldot.gov/Business/subdivisions/index.shtml>.
- In accordance with Section 5.14 of the Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.

#### **State Historic Preservation Office – Contact Carlton Hall 736-7404**

- There are no known archaeological sites, or known National Register-listed or eligible properties on the parcel.
- If any project or development proceeds, the developer should be aware of the Unmarked Human Burials and Human Skeletal Remains Law (Del. C. Title 7, Ch. 54).
- If there is federal involvement, in the form of licenses, permits, or funds, the federal agency, often through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. For further information on the Section 106 process please review the Advisory Council on Historic Preservation's website at: [www.achp.gov](http://www.achp.gov)

#### **Recommendations/Additional Information**

This section includes a list of site specific suggestions that are intended to enhance the project. These suggestions have been generated by the State Agencies based on their expertise and subject area knowledge. **These suggestions do not represent State code requirements.** They are offered here in order to provide proactive ideas to help the applicant enhance the site design, and it is hoped (**but in no way required**) that the applicant will open a dialogue with the relevant agencies to discuss how these suggestions can benefit the project.

#### **Department of Transportation – Contact Bill Brockenbrough 760-2109**

- The applicant should expect a requirement that any substation and/or wastewater facilities will be required to have access from an internal driveway with no direct access to Long Neck Road or School Lane.

- The applicant should expect a requirement that all PLUS and Technical Advisory Committee (TAC) comments be addressed prior to submitting plans for review.
- Please be advised that the Standard General Notes have been updated and posted to the DelDOT website. Please begin using the new versions and look for the revision dates of March 21, 2019 and March 25, 2019. The notes can be found at <https://www.deldot.gov/Business/subdivisions/>

**Department of Natural Resources and Environmental Control – Contact Michael**

**Tholstrup 735-3352**

**Source Water Protection**

- There is a public well on the adjacent parcel and a large portion of the subject parcel, at the southwestern corner, lies within the wellhead protection area. The capacity of the well is greater than 50,000 gallons per day; Sussex County regulates construction within Wellhead Protection Areas with specific requirements for wells drawing greater than 50,000 gallons/day. The applicant should work with the county to meet these requirements.

**Water Quality**

- Minimizing the removal of forest cover and reducing the number and size of ponds from what is proposed would improve water quality. Green technology stormwater management is preferred over excess use of ponds which create problems with nuisance geese and algae.

**Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.**

Thank you for the opportunity to review this project. If you have any questions, please contact me at 302-739-3090.

Sincerely,



Constance C. Holland, AICP

Director, Office of State Planning Coordination

CC: Sussex County



March 11, 2020

Mrs. Constance C. Holland, AICP, State Planning Director  
Haslet Armory  
122 Martin Luther King Jr. Blvd. South  
Dover, DE 19901

RE: PLUS review 2019-05-09; Baywood Gardesns

Dear Mrs. Holland:

Please allow this letter to serve as our response to the PLUS review of the Baywood Gardens community. Answers to comments have been provided following each comment taken directly from your comment letter for ease of use. Our responses are in red and a different font for ease in review.

Thank you for meeting with State agency planners on May 22, 2019 to discuss the Baywood Gardens project. According to the information received, you are seeking review of a rezoning of 54.38 acres from B-1, C-1, and CR-1 to HR/PC in anticipation of 514 apartment units along Long Neck Road in Sussex County.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. **The developers will also need to comply with any Federal, State, and local regulations regarding this property. We also note that as Sussex County has governing authority over this land the developers will need to comply with any and all regulations/restrictions set forth by the County.**

**Response – The developer will comply with all Federal, State and Local regulations regarding the development of this property. The developer will comply with any and all regulations / restrictions set forth by Sussex County.**

#### **Strategies for State Policies and Spending**

This project is located in Investment Level 1 and 2 according to the *Strategies for State Policies and Spending*. This site is also located in the Coastal Area growth zone of the recently certified SC comp plan. Investment Level 1 & 2 reflect areas that are already developed in an urban or suburban fashion, where infrastructure is existing or readily available, and where future redevelopment or infill projects are expected and encouraged by State policy. State investments will support growth in these areas.

**Response – Noted.**

## Code Requirements/Agency Permitting Requirements

### Department of Transportation – Contact Bill Brockenbrough 760-2109

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- In accordance with Section 5.14 of the Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.

Response – The developer will coordinate with DelDOT regarding the necessary improvements and agreements. Construction plans will be per DelDOT requirements.

**State Historic Preservation Office – Contact Carlton Hall 736-7404**

- There are no known archaeological sites, or known National Register-listed or eligible properties on the parcel.
- If any project or development proceeds, the developer should be aware of the Unmarked Human Burials and Human Skeletal Remains Law (Del. C. Title 7, Ch. 54).
- If there is federal involvement, in the form of licenses, permits, or funds, the federal agency, often through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. For further information on the Section 106 process please review the Advisory Council on Historic Preservation's website at: [www.achp.gov](http://www.achp.gov)

Response – Noted.

**Recommendations/Additional Information**

This section includes a list of site specific suggestions that are intended to enhance the project. These suggestions have been generated by the State Agencies based on their expertise and subject area knowledge. **These suggestions do not represent State code requirements.** They are offered here in order to provide proactive ideas to help the applicant enhance the site design, and it is hoped (**but in no way required**) that the applicant will open a dialogue with the relevant agencies to discuss how these suggestions can benefit the project.

**Department of Transportation – Contact Bill Brockenbrough 760-2109**

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**Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352**

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than 50,000 gallons per day; Sussex County regulates construction within Wellhead Protection Areas with specific requirements for wells drawing greater than 50,000 gallons/day. The applicant should work with the county to meet these requirements.

**Water Quality**

- Minimizing the removal of forest cover and reducing the number and size of ponds from what is proposed would improve water quality. Green technology stormwater management is preferred over excess use of ponds which create problems with nuisance geese and algae.

**Response – The developer acknowledges the non-required additional information from the various agencies.**

**Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.**

This concludes our response. If you have any questions, please contact us at your convenience.

Sincerely,  
Solutions, IPEM

  
Jason Palkewicz, PE



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

November 27, 2019

Ms. Betty Tustin  
The Traffic Group, Inc.  
104 Kenwood Court  
Berlin, MD 21811

Dear Ms. Tustin:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Baywood Gardens** (Tax Parcels 234-23.00-270.00 & 273.05) development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this review letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

A handwritten signature in black ink that reads "Troy Brestel".

Troy Brestel  
Project Engineer

TEB:km

Enclosures

cc with enclosures: Mr. Robert Tunnell, III, Tunnell Companies  
Ms. Constance C. Holland, Office of State Planning Coordination  
Ms. Janelle Cornwell, Sussex County Planning and Zoning  
Mr. Andrew Parker, McCormick Taylor, Inc.  
DelDOT Distribution

## DelDOT Distribution

Brad Eaby, Deputy Attorney General  
Shanté Hastings, Director, Transportation Solutions (DOTS)  
Drew Boyce, Director, Planning  
Mark Luszcz, Deputy Director, DOTS  
Michael Simmons, Assistant Director, Project Development South, DOTS  
J. Marc Coté, Assistant Director, Development Coordination  
T. William Brockenbrough, Jr., County Coordinator, Development Coordination  
Peter Haag, Chief Traffic Engineer, Traffic, DOTS  
Alastair Probert, South District Engineer, South District  
Gemez Norwood, South District Public Works Manager, South District  
Susanne Laws, Sussex Subdivision Review Coordinator, Development Coordination  
David Dooley, Service Development Planner, Delaware Transit Corporation  
Mark Galipo, Traffic Engineer, Traffic, DOTS  
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning  
John Andrescavage, Sussex County Subdivision Reviewer, Development Coordination  
Claudy Joinville, Project Engineer, Development Coordination



November 25, 2019

Mr. Troy E. Brestel  
Project Engineer  
DelDOT Division of Planning  
P.O. Box 778  
Dover, DE 19903

RE: Agreement No. 1773  
Traffic Impact Study Services  
**Task No. 1A Subtask 27A – Baywood Gardens**

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for Baywood Gardens residential development prepared by The Traffic Group, Inc dated June 20, 2019. The Traffic Group prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the Baywood Gardens residential development, proposed to be located on the north side of Long Neck Road (Delaware Route 23 / Sussex Road 22), east of Delaware Route 24 in the Long Neck area of Sussex County, Delaware. The proposed development would consist of 353 low-rise multi-family homes. Two full-movement access points are proposed, one along Long Neck Road across from Bayshore Drive and the other on Greens Way. The development is planned to be built in two phases, with construction anticipated to be complete in 2027.

The subject land is located on an approximately 38-acre assemblage of parcels. The land is currently split zoned as C-1 (General Commercial) and B-1 (Neighborhood Business). The developer plans to rezone the property to HR-RPC (High Density Residential, Residential Planned Community District).

DelDOT currently has one capital project within the area of study. The SR 24 at SR 5 / SR 23 Intersection Improvements Project (State Contract No. T201200903) includes the intersections of Delaware Route 24 & Indian Mission Road / Long Neck Road and Delaware Route 24 & White Pine Drive and several commercial entrances along Delaware Route 24. The need for the project was identified, in part, through DelDOT's Hazard Elimination Program (HEP). The proposed improvements associated with this project include various operational and safety improvements at and near these intersections, such as adding channelization islands at accesses, extending turn lanes, adding sidewalk, and adding bike lanes. Other proposed improvements include relocating the entrance of the Timber Acres community to align with Plaza Drive, and reconstructing both traffic signals. This project is currently in the design and right of way acquisition phase, with construction anticipated to begin in the spring of 2021.

Following submission of the TIS, DelDOT further considered the impact of traffic from several other developments in the area that were not contemplated in the original scope of the TIS. Based on this, it was determined that an additional through lane in each direction is going to be needed along Delaware Route 24. As such, the developer should make an equitable share contribution towards the cost of the both the aforementioned SR 24 at SR 5 / SR 23 Intersection Improvements Project and the future widening of Delaware Route 24, as described below in Item No. 3.

Based on our review, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Long Neck Rd and Bayshore Dr / Site Access	Unsignalized	2027 with development Saturday (Case 3)
Delaware Route 24 and Long Neck Rd / Indian Mission Rd	Signalized	2027 with development Saturday (Case 3)
Delaware Route 24 and White Pine Dr	Unsignalized	2027 without development weekday PM & Saturday (Case 2); 2027 with development weekday PM & Saturday (Case 3)
Delaware Route 24 and Greens Way	Unsignalized	2027 without development weekday PM & Saturday (Case 2); 2027 with development weekday PM & Saturday (Case 3)
Delaware Route 24 and Banks Rd	Unsignalized	2027 without development weekday AM, PM & Saturday (Case 2); 2027 with development weekday AM, PM & Saturday (Case 3)
Delaware Route 24 and Holly Lake Rd	Unsignalized	2018 Existing Saturday (Case 1); 2027 without development weekday PM & Saturday (Case 2); 2027 with development weekday PM & Saturday (Case 3)
Indian Mission Rd and E. Stonewater Creek Blvd / Surf Board Blvd	Unsignalized	2027 with development weekday AM & Saturday (Case 3)
Indian Mission Rd and Cannon Rd	Unsignalized	2027 without development weekday AM, PM & Saturday (Case 2); 2027 with development weekday AM, PM & Saturday (Case 3)
Indian Mission Rd and Harmons Hill Rd / Phillips Branch Rd	Unsignalized	2027 without development weekday AM, PM & Saturday (Case 2); 2027 with development weekday AM, PM & Saturday (Case 3)

Long Neck Road and Bayshore Drive / Site Access

This unsignalized intersection experiences LOS deficiencies in the Saturday midday peak hour during 2027 with development (with the addition of the site driveway as the fourth leg of the intersection). The Saturday deficiencies are for the northbound Bayshore Drive (LOS F) and southbound site driveway (LOS E) approaches, with 95<sup>th</sup> percentile queue lengths of approximately two vehicles (50 feet) southbound and four vehicles (100 feet) northbound. Because the deficiencies are only anticipated to occur during the summer Saturday peak hour, and the queue lengths are relatively short, no additional improvements are recommended at this intersection beyond those described below in Item No. 1.

#### Delaware Route 24 and Long Neck Road / Indian Mission Road

This signalized intersection experiences LOS deficiencies in the Saturday midday peak hour during 2027 with development. To mitigate the delays and queues, the developer should contribute toward DelDOT's SR 24 at SR 5 / SR 23 Intersection Improvements Project as described below in Item No. 3.

#### Delaware Route 24 and White Pine Drive

This unsignalized intersection experiences LOS deficiencies in the weekday PM and Saturday midday peak hours during the future scenarios without Baywood Gardens and with Baywood Gardens. The deficiencies are for the westbound White Pine Drive approach, which is anticipated to operate at LOS E during those peak hours, with 95<sup>th</sup> percentile queue lengths of less than two vehicles (50 feet). This intersection is included in DelDOT's SR 24 at SR 5 / SR 23 Intersection Improvements Project, with improvements to include a southbound left-turn lane on Delaware Route 24 at White Pine Drive and a two-way center-turn-lane on Delaware Route 24 south of White Pine Drive. The developer is recommended to contribute toward the DelDOT project as described below in Item No. 3, and will not be required to implement additional improvements beyond those which DelDOT has already evaluated and designed for this location.

#### Delaware Route 24 and Greens Way

This unsignalized intersection experiences LOS deficiencies in the weekday PM and Saturday midday peak hours during the future scenarios without Baywood Gardens and with Baywood Gardens. The deficiencies are for the westbound Greens Way approach, which is anticipated to operate at LOS E during the future PM peak hours and LOS F during the future Saturday peak hours, with 95<sup>th</sup> percentile queue lengths of less than two vehicles (50 feet). The LOS F deficiencies are only anticipated to occur during the summer Saturday peak hour, the queue lengths are relatively short, and this intersection already has separate turn lanes on each approach. Therefore, no improvements are recommended at this intersection.

#### Delaware Route 24 and Banks Road

This unsignalized intersection experiences LOS deficiencies in the weekday AM, PM and Saturday midday peak hours during the future scenarios without Baywood Gardens and with Baywood Gardens. All LOS deficiencies would occur on the westbound Banks Road approach. It is anticipated that the projected LOS deficiencies would be resolved by installing a signal at this intersection when warranted, as described below in Item No. 4. The developer should perform a Traffic Signal Justification Study at a later time when required by DelDOT to determine if and when the signal is warranted.

#### Delaware Route 24 and Holly Lake Road

This unsignalized intersection experiences LOS deficiencies in the Saturday midday peak hour under all scenarios and the weekday PM peak hour during both 2027 scenarios. The deficiencies are for the stop-controlled eastbound Holly Lake Road approach, which has one shared lane for lefts and rights. This approach operates at LOS E during the existing Saturday peak hour and at LOS F during all 2027 scenarios (PM and Saturday peak hours). As described below in Item No. 5, the developer should contribute to an improvement that is recommended for implementation by



the Keastone Bay development project, which would add a separate right-turn lane on the eastbound Holly Lake Road approach to alleviate delays and reduce queue lengths. While the added turn lane would not completely eliminate the LOS deficiencies, it is anticipated to significantly reduce delays and queue lengths on eastbound Holly Lake Road.

#### Indian Mission Road and E. Stonewater Creek Boulevard / Surf Board Boulevard

This unsignalized intersection experiences LOS deficiencies in the weekday AM and Saturday midday peak hours under the 2027 with Baywood Gardens scenario. The eastbound approach operates at LOS E during the AM peak hour and the westbound approach operates at LOS E during the Saturday peak hour. Anticipated 95<sup>th</sup> percentile queue lengths on the 2027 with development scenario are always less than one vehicle (25 feet) on the low-volume eastbound approach, and always less than three vehicles (75 feet) on the westbound approach. This intersection already has separate turn lanes on each approach. For all of these reasons, no improvements are recommended at this intersection.

#### Indian Mission Road and Cannon Road

This unsignalized intersection experiences LOS deficiencies in the weekday AM, PM and Saturday midday peak hours during the future scenarios without Baywood Gardens and with Baywood Gardens. The LOS deficiencies would occur on the eastbound Cannon Road approach, which is anticipated to operate at LOS F during each peak hour of all the future scenarios. The projected LOS deficiencies would be resolved by installing a traffic signal at this intersection, as described below in Item No. 6.

#### Indian Mission Road and Harmons Hill Road / Phillips Branch Road

This unsignalized intersection experiences LOS deficiencies in the weekday AM, PM and Saturday midday peak hours during the future scenarios without Baywood Gardens and with Baywood Gardens. The LOS deficiencies would occur on both the eastbound Harmons Hill Road and westbound Phillips Branch Road approaches, which are anticipated to operate at LOS F during each peak hour of all the future scenarios. Future 95<sup>th</sup> percentile queue lengths would be greater than ten vehicles (250 feet) on each minor street approach. The projected LOS deficiencies would be resolved by installing a traffic signal at this intersection, as described below in Item No. 7.

Should the County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should construct a full-movement site access on Long Neck Road. This proposed site driveway should be constructed directly across from Bayshore Drive. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound Bayshore Drive	One shared left/right-turn lane	One shared left/through/right-turn lane
Southbound Site Access	Does not exist	One shared left-turn/through lane and one right-turn lane
Eastbound Long Neck Road	One through lane and one right-turn lane	One left lane, one through lane and one right lane
Westbound Long Neck Road	One shared left-turn/through lane and one bypass lane	One left lane, one through lane and one right lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT’s Development Coordination Section to determine final turn-lane lengths during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Northbound Bayshore Drive	N/A	N/A
Southbound Site Access	N/A	60 feet *
Eastbound Long Neck Road	195 feet **	190 feet **
Westbound Long Neck Road	120 feet **	190 feet **

\* Initial turn-lane length based on storage length per queuing analysis, with 50-foot minimum.

\*\* Initial turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*.

2. The developer should construct a full-movement site access on Greens Way. This proposed driveway should be located approximately halfway between Long Neck Road and Long Spoon Way. The proposed configuration is shown in the table below.

<b>Approach</b>	<b>Current Configuration</b>	<b>Proposed Configuration</b>
Northbound Greens Way	One through lane	One shared left-turn/through lane
Southbound Greens Way	One through lane	One shared through/right turn-lane
Eastbound Site Access	Does not exist	One shared left/right turn-lane

3. The developer should coordinate with DelDOT regarding an equitable share contribution toward DelDOT’s SR 24 at SR 5 / SR 23 Intersection Improvements Project. The amount of the contribution should be determined through coordination with DelDOT’s Development Coordination Section. As described on page 2, the contribution amount should account for the cost of both the DelDOT project as presently planned and the future widening of Delaware Route 24 to include an additional through lane in each direction.
4. The developer should enter into a traffic signal agreement with DelDOT for design and construction of a future traffic signal for the intersection of Delaware Route 24 and Banks Road. The agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT’s discretion. The developer should coordinate with DelDOT on the design details and implementation of the traffic signal. The agreement should provide for installation and activation of the signal at DelDOT’s discretion.

Entering into a Traffic Signal Revolving Fund agreement for this intersection is an option instead of the traditional traffic signal agreement. The developer should coordinate with DelDOT’s Development Coordination Section regarding the appropriate type of agreement needed and details thereof.

5. The developer should coordinate with DelDOT regarding an equitable share contribution toward improvements at the intersection of Delaware Route 24 and Holly Lake Road. An improvement has been recommended for implementation by the Keastone Bay development project, which consists of adding a separate right-turn lane on the eastbound Holly Lake Road approach. This eastbound right-turn lane is initially recommended to be 125 feet in length (excluding taper). The developer should coordinate with DelDOT’s Development Coordination Section to determine details for the contribution and design.

6. The developer should enter into a traffic signal agreement with DelDOT for design and construction of a future traffic signal for the intersection of Indian Mission Road and Cannon Road. The agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT's discretion. The developer should coordinate with DelDOT on the design details and implementation of the traffic signal. The agreement should provide for installation and activation of the signal at DelDOT's discretion.

Entering into a Traffic Signal Revolving Fund agreement for this intersection is an option instead of the traditional traffic signal agreement. The developer should coordinate with DelDOT's Development Coordination Section regarding the appropriate type of agreement needed and details thereof.

7. The developer should enter into a traffic signal agreement with DelDOT for design and construction of a future traffic signal for the intersection of Indian Mission Road and Harmons Hill Road / Phillips Branch Road. The agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT's discretion. The developer should coordinate with DelDOT on the design details and implementation of the traffic signal. The agreement should provide for installation and activation of the signal at DelDOT's discretion.

Entering into a Traffic Signal Revolving Fund agreement for this intersection is an option instead of the traditional traffic signal agreement. The developer should coordinate with DelDOT's Development Coordination Section regarding the appropriate type of agreement needed and details thereof.

8. The following bicycle, pedestrian, and transit improvements should be included:
  - a. Adjacent to the proposed right-turn lane on westbound Long Neck Road at the proposed site access opposite Bayshore Drive, a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.
  - b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
  - c. Utility covers should be made flush with the pavement.
  - d. If clubhouses or other community facilities are constructed as shown on the site plan, bicycle parking should be provided near building entrances. Where building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.

- e. A minimum 15-foot wide easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontage along Long Neck Road.
- f. Within the easement along Long Neck Road, a minimum of a ten-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed along the site frontage. The shared-use path should be constructed from the western edge of the site frontage (approximately 750 feet west of the proposed site access) to the east side of Greens Way, where it should connect to the existing path. Crosswalks will be required across the proposed site access and across Greens Way. The shared-use path should have a minimum of a five-foot buffer from the roadway. At the western end, the shared-use path should connect to the limits of the SR 24 at SR 5 / SR 23 Intersection Improvements Project in accordance with DelDOT's *Shared-Use Path and/or Sidewalk Termination Reference Guide* dated August 1, 2018. The developer should coordinate with DelDOT's Development Coordination Section to determine exact location and details of the shared-use path connections at the property boundaries.
- g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings within the development. Type 3 curb ramps are discouraged.
- h. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. These internal sidewalks should connect to the proposed shared-use path along Long Neck Road, as well as to other surrounding residential developments via internal connections.
- i. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.
- j. The developer should coordinate with the Delaware Transit Corporation (DTC) regarding the possibility of including a bus stop to be located along the Long Neck Road site frontage.

Improvements in this TIS may be considered "significant" under DelDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT's website at [http://deldot.gov/Publications/manuals/de\\_mutcd/index.shtml](http://deldot.gov/Publications/manuals/de_mutcd/index.shtml).



Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DeDOT's subdivision review process.

Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at [ajparker@mccormicktaylor.com](mailto:ajparker@mccormicktaylor.com) if you have any questions concerning this review.

Sincerely,

**McCormick Taylor, Inc.**

A handwritten signature in black ink, appearing to read "Andrew J. Parker".

Andrew J. Parker, P.E., PTOE  
Project Manager

Enclosure

## **General Information**

**Report date:** June 20, 2019

**Prepared by:** The Traffic Group, Inc.

**Prepared for:** Baywood LLC

**Tax parcel:** 234-23.00-270.00, and 273.05

**Generally consistent with DelDOT's Development Coordination Manual:** Yes

## **Project Description and Background**

**Description:** The proposed Baywood Gardens would consist of 353 low-rise multi-family homes.

**Location:** The Baywood Gardens development is proposed to be located on the north side of Long Neck Road (Delaware Route 23 / Sussex Road 22), east of Delaware Route 24 in the Long Neck area of Sussex County, Delaware. A site location map is included on Page 11.

**Amount of land to be developed:** approximately 38 acres

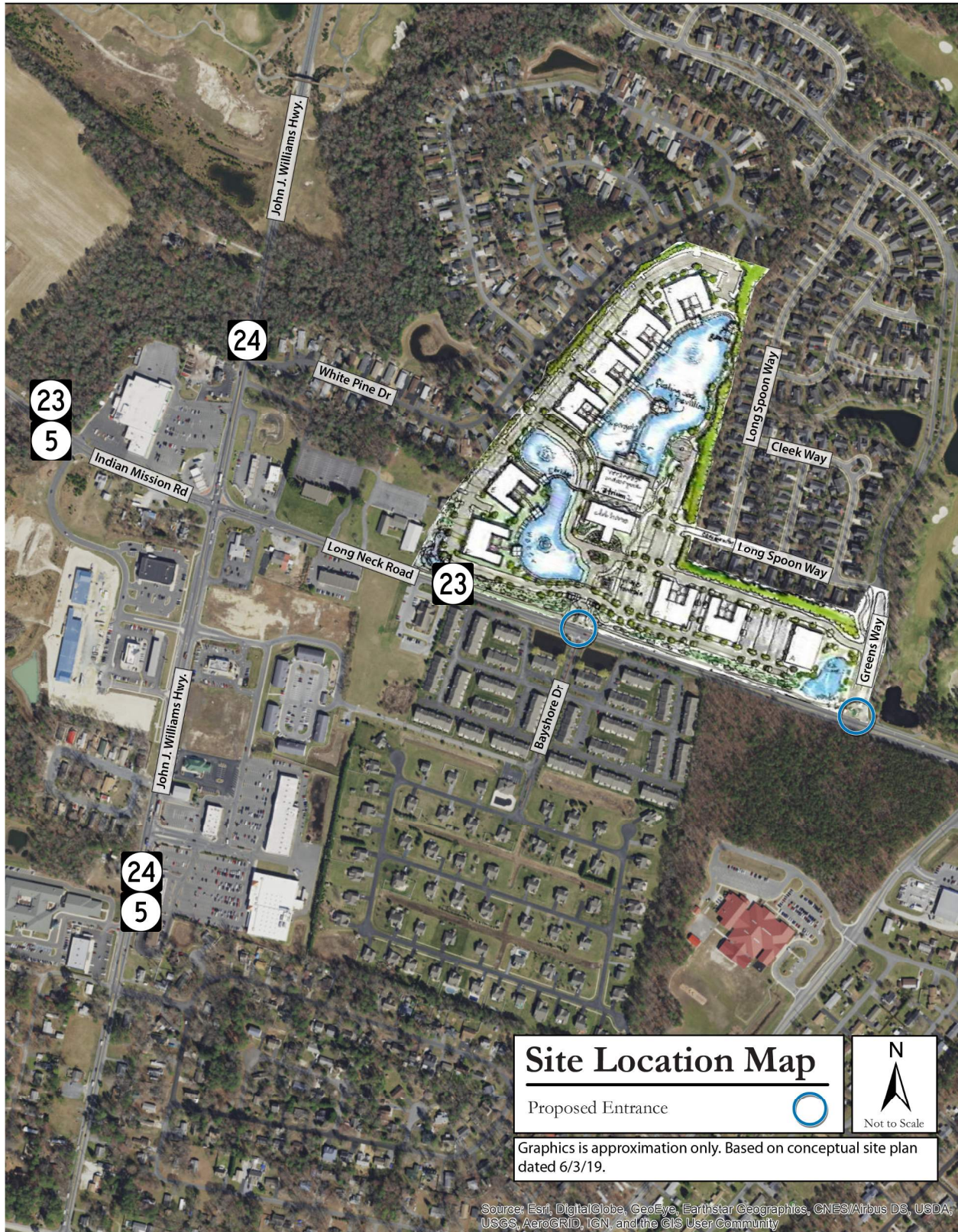
**Land use approval(s) needed:** Subdivision and rezoning approval. The land is currently split zoned as C-1 (General Commercial) and B-1 (Neighborhood Business). The developer plans to rezone the property to HR-RPC (High Density Residential, Residential Planned Community District).

**Proposed completion date:** The development will be built in two phases, with construction anticipated to be complete in 2027

**Proposed access locations:** Two full movement access points are proposed, one along Long Neck Road across from Bayshore Drive and the other on Greens Way.

**Daily Traffic Volumes (per DelDOT Traffic Summary 2018):**

- 2018 Average Annual Daily Traffic on Long Neck Road: 11,338





## **2015 Delaware Strategies for State Policies and Spending**

### **Location with respect to the Strategies for State Policies and Spending Map of Delaware:**

The proposed Baywood Gardens development is located within an Investment Level 1 and 2 area.

#### *Investment Level 1*

Areas of the state designated as Investment Level 1 are most prepared for growth and are where the state can make cost-effective infrastructure investments in schools, roads, and public safety. In these areas, state investments and policies should support and encourage a wide range of uses and densities, promote a variety of transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. Investment Level 1 areas are often municipalities, towns, or urban/urbanizing places. Density is generally higher than in the surrounding areas. Overall, it is the state's intent to use its spending and management tools to maintain and enhance community character, to promote well-designed and efficient new growth, and to facilitate redevelopment in Investment Level 1 Areas.

#### *Investment Level 2*

Investment Level 2 reflects areas where growth is anticipated by local, county, and State plans in the near-term future. This investment level has many diverse characteristics. These areas can be composed of less developed areas within municipalities, rapidly growing areas in the counties that have or will have public water and wastewater services and utilities, areas that are generally adjacent to or near Investment Level 1 Areas, smaller towns and rural villages that should grow consistently with their historic character, and suburban areas with public water, wastewater, and utility services. These areas have been shown to be the most active portion of Delaware's developed landscape. They serve as transition areas between Level 1 and the more open, less populated areas. They generally contain a limited variety of housing types, predominantly detached single-family dwellings.

In Investment Level 2, state investments and policies should support and encourage a wide range of uses and densities, promote other transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity.

Investments should encourage departure from the typical single-family-dwelling developments and promote a broader mix of housing types and commercial sites encouraging compact, mixed-use development where applicable. Overall, the State's intent is to use spending and management tools to promote well-designed development in these areas. Such development provides for a variety of housing types, user-friendly transportation systems, and provides essential open spaces and recreational facilities, other public facilities, and services to promote a sense of community. Investment Level 2 areas are prime locations for designating "pre-permitted areas."

**Proposed Development’s Compatibility with Strategies for State Policies and Spending:**

The proposed Baywood Gardens Residential development is comprised of a 38.17 acre assemblage of parcels with 353 low rise multi-family homes located within an Investment Levels 1 and 2 area. Investment Levels 1 and 2 reflect areas where growth is anticipated in the near-term future. Developments in these areas should generally provide a mix of higher-density land uses, a variety of housing types, promote walking/cycling/transit, and make efficient use of existing public infrastructure/services. As such, the proposed development generally appears to comply with the guidelines of the 2015 “Strategies for State Policies and Spending.”

**Comprehensive Plan**

**Sussex County Comprehensive Plan:**

*(Source: Sussex County Comprehensive Plan, March 2019)*

The Sussex County Comprehensive Plan 2045 Future Land Use Map indicates that the proposed development parcels are within a combination of Coastal Area and Commercial Area. Both are categorized as a Growth Areas.

Coastal Area: Sussex County has designated the areas around Rehoboth Bay, Indian River Bay, and Little Assawoman Bay (the inland bays) as Coastal Areas. Coastal Areas generally encompass areas on the south-eastern side of Sussex County within what was previously referred to as the Environmentally Sensitive Developing Areas of prior Comprehensive Plans. The updated name more accurately reflects the function of this land use classification. While the Coastal Area is a Growth Area, additional considerations should be taken into account in this Area that may not apply in other Growth Areas.

The Coastal Area designation is intended to recognize two characteristics. First, this region is among the most desirable locations in Sussex County for new housing, as is reflected in new construction data and real estate prices. Second, this region contains ecologically important and sensitive characteristics as well as other coastal lands which help to absorb floodwaters and provide extensive habitat for native flora and fauna. This area also has significant impact upon water quality within the adjacent bays and inlets as well as upon natural the region’s various habitats. And, these factors are themselves part of the reason that this Area is so desirable- making the protection of them important to both the environment and the economy.

The County has significant initiatives to extend public sewer service to replace inadequate on-site systems. Careful control of stormwater runoff is also an important concern in keeping sediment and other pollutants out of the Inland Bays.

The challenge in this region is to safeguard genuine natural areas and mitigate roadway congestion without stifling the tourism and real estate markets which: a) provide many jobs; b) create business for local entrepreneurs; and c) help keep local tax rates low.

The following guidelines should apply to future growth in Coastal Areas:

- Permitted Uses – Coastal Areas are areas that can accommodate development provided special environmental concerns are addressed. A range of housing types should be permitted in Coastal Areas, including single-family homes, townhouses, and multi-family units. Retail and office uses are appropriate but larger shopping centers and office parks should be confined to selected locations with access along arterial roads. Appropriate mixed-use development should also be allowed. In doing so, careful mixtures of homes with light commercial, office and institutional uses can be appropriate to provide for convenient services and to allow people to work close to home. Major new industrial uses are not proposed in these areas.
- Densities – Sussex County’s base density of 2 units per acre is appropriate throughout this classification; however, medium and higher density (4-12 units per acre) can be appropriate in certain locations. Medium and higher density could be supported in areas: where there is central water and sewer; near sufficient commercial uses and employment centers; where it is in keeping with the character of the area; where it is along a main road or at/or near a major intersection; where there is adequate Level of Service; or where other considerations exist that are relevant to the requested project and density. A clustering option permitting smaller lots and additional flexibility in dimensional standards is encouraged on tracts of a certain minimum size, provided significant permanent common open space is preserved and the development is connected to central water and sewer service. The preservation of natural resources or open space is strongly encouraged in this land use classification. The County should revisit environmental protection in the Coastal Areas.

Specific regulations governing cluster developments are designated by zoning district. There currently is an option where density can be increased with optional density bonuses for certain zoning districts. Those optional bonuses may involve payment of fees that fund permanent land preservation elsewhere in the County, or other options. RPC’s are encouraged to allow for a mix of housing types and to preserve open space and natural areas/resources. Cluster development that allows for smaller lots and flexibility in dimensional standards is encouraged if the developer uses a cluster option that results in permanent preservation of a substantial percentage of the tract and/or natural areas/resources. Master planning should be encouraged especially for large-scale developments on large parcels or groups of parcels, higher density and mixed-use developments to provide flexibility in site design.

All applicants for developments of a minimum size (as specified in zoning) should continue to be required to provide information that analyzes the development’s potential environmental impacts, including effects on stormwater runoff, nitrogen and phosphorous loading, wetlands, woodlands, wastewater treatment, water systems, and other matters that affect the ecological sensitivity of the inland bays.

- Infrastructure – Central water and sewer facilities are strongly encouraged. If central utilities are not possible, permitted densities should be limited to two units per acre provided a septic permit can be approved.

**Commercial Area:** Commercial Areas include concentrations of retail and service uses that are mainly located along arterials, and highways. As opposed to small, traditional downtown areas that are often historic and pedestrian-friendly, Commercial Areas include commercial corridors, shopping centers, and other medium and large commercial vicinities geared towards vehicular traffic. In addition to primary shopping destinations, this area would also be the appropriate place to locate hotels, motels, car washes, auto dealerships, and other medium and larger scale commercial uses not primarily targeted to the residents of immediately adjacent residential areas. These more intense uses should be located along main roads or near major intersections. Institutional and commercial uses may be appropriate depending on surrounding uses. Mixed-use buildings may also be appropriate for these areas.

**Proposed Development's Compatibility with Comprehensive Plan:** The proposed Baywood Gardens commercial development is planned to be developed as 353 low rise multi-family homes on a 38.17-acre assemblage of parcels. The site is currently split zoned C-1 (General Commercial) and B-1 (Neighborhood Business). The developer plans to rezone the property to HR-RPC (High Density Residential, Residential Planned Community District). The purpose of these districts is to permit variety in housing types and provide for residential densities appropriate for areas which are or will be served by public sanitary sewer and water systems and which are well-located with respect to major thoroughfares, shopping facilities and centers of employment. The proposed development appears to comply with the characteristics of High Density Residential in general as well as the *Permitted Uses* for the Coastal Area.

While the type of use proposed for this site appears to be permitted in this location by the Comprehensive Plan, there are specific regulations that must be followed. For these reasons and due to a density of greater than 2 units per acre, this development raises questions regarding consistency with Sussex County regulations; therefore additional discussion may be required.

### **Relevant Projects in the DelDOT Capital Transportation Program**

DelDOT currently has one capital project within the area of study. The SR 24 at SR 5 / SR 23 Intersection Improvements Project (State Contract No. T201200903) includes the intersections of Delaware Route 24 & Indian Mission Road / Long Neck Road and Delaware Route 24 & White Pine Drive and several commercial entrances along Delaware Route 24. The need for the project was identified, in part, through DelDOT's Hazard Elimination Program (HEP). The proposed improvements associated with this project include various operational and safety improvements at and near these intersections, such as adding channelization islands at accesses, extending turn lanes, adding sidewalk, and adding bike lanes. Other proposed improvements include relocating the entrance of the Timber Acres community to align with Plaza Drive, and reconstructing both traffic signals. This project is currently in the design and right of way acquisition phase, with construction anticipated to begin in the spring of 2021.

### **Trip Generation**

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Tenth Edition, published by the Institute of Transportation

Engineers (ITE). The following land uses were utilized to estimate the amount of new traffic generated for this development:

- 353 Low Rise Multi-Family Homes (ITE Land Use Code 220)

Table 1  
BAYWOOD GARDENS PEAK HOUR TRIP GENERATION

Land Use	Weekday AM Peak Hour of Adjacent Street			Weekday PM Peak Hour of Adjacent Street			SAT Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
353 Low Rise Multi-Family Houses	36	122	158	114	67	181	188	160	348

Table 2  
BAYWOOD GARDENS DAILY TRIP GENERATION

Land Use	Weekday Daily		
	In	Out	Total
353 Unit Low Rise Multi-Family Housing	1,314	1,314	2,628

### Overview of TIS

#### **Intersections examined:**

- 1) Long Neck Road & Bayshore Drive / Site Access
- 2) Greens Way & Site Access
- 3) Long Neck Road & Greens Way
- 4) Delaware Route 24 & Indian Mission Road / Long Neck Road
- 5) Delaware Route 24 & White Pine Drive
- 6) Delaware Route 24 & Greens Way
- 7) Delaware Route 24 & Banks Road (Sussex Road 298)
- 8) Delaware Route 24 & Holly Lake Road (Sussex Road 301)
- 9) Indian Mission Road & E. Stonewater Creek Boulevard / Surf Board Boulevard
- 10) Indian Mission Road & Cannon Road (Sussex Road 307)
- 11) Indian Mission Road & Harmons Hill Road / Phillips Branch Road (Sussex Road 302)

#### **Conditions examined:**

- 1) 2018 existing conditions (case 1)
- 2) 2027 without Baywood Gardens development (case 2)
- 3) 2027 with Baywood Gardens development (case 3)

**Peak hours evaluated:** Weekday morning and evening and Saturday mid-day peak hours

**Committed developments considered:**

- 1) Bridlewood at Baywood (350 single-family detached houses)
- 2) Pelican Point (400 single-family detached houses; 121 already built)
- 3) Independence (f.k.a Indigo Run) (450 single-family detached houses; 284 already built)
- 4) Acadia (f.k.a. Insight at Lewes Point) (238 single-family detached houses)
- 5) Headwater Cove (f.k.a. The Woods at Burton Pond) (164 single-family detached houses)
- 6) Burton Pond (265 single-family detached houses and 100 multi-family mid-rise units)
- 7) Deerbrook (120 single-family detached houses)
- 8) Peninsula Lakes (588 single-family detached houses (143 already built) and 72 multi-family low-rise units)
- 9) Baylis Estates (136 single-family detached houses)
- 10) Peninsula Square (40,000 square feet of retail space, 15,000 square feet of medical office space, a 6,200 square-foot high turn-over sit-down restaurant, 144 apartments, and a 100-room hotel)

**Intersection Descriptions**

**1) Long Neck Road & Bayshore Drive / Site Access**

**Type of Control:** Three-leg stop-controlled intersection; proposed four-leg stop controlled intersection

**Northbound approach:** (Bayshore Drive) existing one shared left/right-turn lane, stop controlled; proposed one shared left/through/right-turn lane, stop controlled

**Southbound approach:** (Site Access) proposed one shared left-turn/through lane and one right-turn lane, stop controlled

**Eastbound approach:** (Long Neck Road) existing one through lane and one right-turn lane; proposed one left-turn lane, one through lane and one right-turn lane

**Westbound approach:** (Long Neck Road) existing one shared left-turn/through lane and one bypass lane; proposed one shared left-turn/through lane and one right-turn lane

**2) Greens Way & Site Access**

**Type of Control:** no existing intersection; proposed three-leg stop controlled intersection

**Northbound approach:** (Greens Way) One shared left-thru lane

**Southbound approach:** (Greens Way) One shared thru-right lane

**Eastbound approach:** (Site Access) One shared left-right turn lane, stop controlled

**3) Long Neck Road & Greens Way**

**Type of Control:** One-way stop (T-intersection)

**Southbound approach:** (Greens Way) One left-turn lane, one channelized right-turn lane, stop controlled

**Eastbound approach:** (Long Neck Road) One left-turn lane, one thru lane

**Westbound approach:** (Long Neck Road) One thru lane, one right-turn lane

- 4) Delaware Route 24 & Indian Mission Road / Long Neck Road**  
**Type of Control:** signalized four-leg intersection  
**Northbound approach:** (Delaware Route 24) One left-turn lane, one thru lane, one channelized right-turn lane  
**Southbound approach:** (Delaware Route 24) One left-turn lane, one thru lane, one channelized right-turn lane  
**Eastbound approach:** (Indian Mission Road) One left-turn lane, one thru lane, one channelized right-turn lane  
**Westbound approach:** (Long Neck Road) One left turn lane, one thru lane, one channelized right-turn lane
  
- 5) Delaware Route 24 & White Pine Drive**  
**Type of Control:** One-way stop (T-intersection)  
**Northbound approach:** (Delaware Route 24) One shared thru-right turn lane  
**Southbound approach:** (Delaware Route 24) One shared left-thru lane, one bypass lane  
**Eastbound approach:** (White Pine Drive) One shared left-right turn lane, stop controlled
  
- 6) Delaware Route 24 & Greens Way**  
**Type of Control:** Two-way stop-controlled intersection  
**Northbound approach:** (Delaware Route 24) One left-turn lane, one thru lane, one channelized right-turn lane  
**Southbound approach:** (Delaware Route 24) One left-turn lane, one thru lane, one channelized right-turn lane  
**Eastbound approach:** (Greens Way) One shared left-thru lane, one channelized right turn lane, stop controlled  
**Westbound approach:** (Greens Way) One shared left-thru lane, one channelized right turn lane, stop controlled
  
- 7) Delaware Route 24 & Banks Road**  
**Type of Control:** One-way stop (T-intersection)  
**Northbound approach:** (Delaware Route 24) One thru lane, one right-turn lane  
**Southbound approach:** (Delaware Route 24) One left-turn lane, one thru lane  
**Westbound approach:** (Banks Road) One left-turn lane, one right-turn lane, stop controlled
  
- 8) Delaware Route 24 & Holly Lake Road**  
**Type of Control:** One-way stop (T-intersection)  
**Northbound approach:** (Delaware Route 24) One shared left-thru lane  
**Southbound approach:** (Delaware Route 24) One thru lane, one right-turn lane  
**Eastbound approach:** (Holly Lake Road) One shared left-right turn lane, stop controlled

**9) Indian Mission Road & E. Stonewater Creek Boulevard / Surf Board Boulevard**

**Type of Control:** Two-way stop-controlled intersection

**Northbound approach:** (Indian Mission Road) One left-turn lane, one thru lane, one right-turn lane

**Southbound approach:** (Indian Mission Road) One left-turn lane, one thru lane, one right-turn lane

**Eastbound approach:** (E. Stonewater Creek Boulevard) One shared left-thru lane, one right-turn lane, stop controlled

**Westbound approach:** (Surf Board Boulevard) One shared left-thru lane, one right-turn lane, stop controlled

**10) Indian Mission Road & Cannon Road**

**Type of Control:** One-way stop (T-intersection)

**Northbound approach:** (Indian Mission Road) One shared left-thru-right lane

**Southbound approach:** (Indian Mission Road) One shared left-thru-right lane

**Eastbound approach:** (Cannon Road) One shared left-thru-right lane, stop controlled

**Westbound approach:** (driveway) One shared left-thru-right lane, stop controlled

**11) Indian Mission Road & Harmons Hill Road / Phillips Branch Road**

**Type of Control:** Two-way stop-controlled intersection

**Northbound approach:** (Indian Mission Road) One shared left-thru-right lane

**Southbound approach:** (Indian Mission Road) One shared left-thru-right lane

**Eastbound approach:** (Harmons Hill Road / Phillips Branch Road) One shared left-thru-right lane, stop controlled

**Westbound approach:** (Harmons Hill Road / Phillips Branch Road) One shared left-thru-right lane, stop controlled

**Safety Evaluation**

**Crash Data:** Review of crash data is not included at this time.

**Sight Distance:** The study area generally consists of straight and flat roadways and there are few potential visual obstructions. Sight distance appears adequate throughout the study area. No problematic sight distance issues have been reported or indicated by crash data.

**Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** The Traffic Group contacted and representative from DART, Delaware Transit Corporation (DTC) to determine existing and planned transit services near the proposed development. The nearest existing transit service is DART bus route 215, which travels along Delaware Route 24 and on Long Neck Road directly past the site. There are currently bus stops located at Delaware Route 24 & Holly Lake Road, Long Neck Road & Greens Way, and Long Neck Road & Bayshore Drive.

**Planned transit service:** Based on coordination with DTC representatives, there are plans for bus stops along Delaware Route 24 near Long Neck Road / Indian Mission Road. It is requested that



if any improvements are made to the locations with existing or future transit service, that the bus stops be brought up to DelDOT M-9 standards.

**Existing bicycle and pedestrian facilities:** According to the Sussex County bicycle map, Delaware Route 24 and Long Neck Road are classified as Regional Bicycle Routes. Both roads are noted as high-traffic roads with shoulders on both sides. Existing bicycle facilities in the study area include bike lanes along eastbound Long Neck Road, along both directions of Indian Mission Road, along Delaware Route 24 at Greens Way, and in the northbound, southbound and eastbound directions at Delaware Route 24 & Long Neck Road / Indian Mission Road.

Existing pedestrian facilities in the study area include sidewalk along the south side of Long Neck Road at Bayshore Drive and along both sides of Indian Mission Road near Stonewater Creek Boulevard / Surf Board Boulevard.

**Planned bicycle and pedestrian facilities:** The Traffic Group contacted a representative from DelDOT's Statewide and Regional Planning Section regarding bicycle and pedestrian facilities. A multi-use path is requested along the frontage of Long Neck Road. A crosswalk is requested across Greens Way and a connection to the existing path on the east side of the property.

### **Previous Comments**

In a review letter dated March 28, 2019, DelDOT indicated that the revised Preliminary TIS was acceptable contingent upon modifications to a number of exhibits.

It appears that all substantive comments from DelDOT's TIS Scoping Memorandum, Traffic Count Review, Preliminary TIS Review, Revised Preliminary TIS Review, and other correspondence were addressed in the Final TIS submission.

### **General HCS Analysis Comments**

*(see table footnotes on the following pages for specific comments)*

- 1) For signalized intersections, the TIS and McCormick Taylor applied heavy vehicle factors (HV) by lane group using existing data. The TIS and McCormick Taylor generally assumed future HV to be the same as existing HV at all intersections. There are some discrepancies between the TIS and McCormick Taylor's heavy vehicle factor calculations. Both the TIS and McCormick Taylor assumed 3% HV for future movements to and from the proposed site access points (as per DelDOT's Development Coordination Manual).
- 2) For existing conditions, the TIS and McCormick Taylor determined and utilized overall intersection peak hour factors (PHF). The TIS and McCormick Taylor assumed future PHF to be the same as existing PHF at all existing intersections. At the site entrances, future PHF were based on DelDOT's Development Coordination Manual. The TIS and McCormick Taylor used different PHF at Indian Mission Road & Stonewater Creek Road (AM Peak) and Delaware Route 24 & Greens Way (all scenarios).

- 3) For analyses of all intersections, the TIS assumed 0% grade for all movements. McCormick Taylor utilized field data for existing grades and assumed future grades to be the same.
- 4) The TIS and McCormick Taylor used different Right Turn on Red and pedestrian volumes when analyzing some intersections. All volumes for McCormick Taylor's analyses were taken directly from traffic counts in Appendix A of the TIS.
- 5) Some discrepancies exist between the TIS and McCormick Taylor's analysis for eastbound volumes at Greens Way & Site Access. All volumes for McCormick Taylor's 2027 Total Peak Hour analyses were taken directly from Exhibit 12.
- 6) Some discrepancies exist between the TIS and McCormick Taylor's lane usage assumed for analysis. All lane usage information for McCormick Taylor's analyses was taken from Exhibit 2 of the TIS, and backchecked with field view information.
- 7) The TIS and McCormick Taylor used different signal timings when analyzing the signalized intersections in some cases.
- 8) For analyses of signalized intersections, the TIS and McCormick Taylor used a base saturation flow rate of 1,750 pc/hr/ln per DelDOT's Development Coordination Manual for all peak hours.

Table 3  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>1</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Long Neck Rd &amp; Bayshore Dr / Site Access</b>						
2018 Existing (case 1)						
Westbound Long Neck Road – Left	A (8.0)	A (8.4)	A (8.7)	A (8.0)	A (8.5)	A (8.7)
Northbound Bayshore Drive	B (15.0)	B (13.7)	C (21.1)	C (16.0)	B (14.4)	C (23.6)
2027 Background Traffic (case 2)						
Westbound Long Neck Road – Left	A (8.1)	A (8.7)	A (9.0)	A (8.1)	A (8.7)	A (9.0)
Northbound Bayshore Drive	C (17.2)	C (15.6)	D (26.0)	C (18.7)	C (16.6)	D (30.1)
2027 Total Traffic (case 3)						
Eastbound Long Neck Road – Left	A (8.6)	A (8.4)	A (9.7)	A (8.6)	A (8.4)	A (9.7)
Westbound Long Neck Road – Left	A (8.1)	A (8.7)	A (9.0)	A (8.1)	A (8.7)	A (9.0)
Northbound Bayshore Drive	D (27.6)	C (23.0)	F (122.5)	D (31.3)	D (25.5)	F (176.4)
Southbound Baywood Gardens Access	C (16.1)	C (15.4)	E (36.2)	C (16.1)	C (15.4)	E (36.3)

<sup>1</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 4  
PEAK HOUR LEVELS OF SERVICE (LOS)  
*based on Traffic Impact Study for Baywood Gardens*  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>2</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Greens Way &amp; Site Access</b>						
2027 Total Traffic (case 3)						
Eastbound Site Access	A (8.5)	A (8.5)	A (8.7)	A (8.8)	A (8.8)	A (9.1)
Northbound Greens Way – Left	A (7.3)	A (7.3)	A (7.4)	A (7.3)	A (7.3)	A (7.4)

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<sup>2</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 5  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>3</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Long Neck Rd &amp; Greens Way</b>						
2018 Existing (case 1)						
Eastbound Long Neck Road – Left	A (8.6)	A (8.0)	A (8.7)	A (8.6)	A (8.0)	A (8.7)
Southbound Greens Way	B (13.6)	B (14.3)	C (19.4)	B (13.5)	B (14.3)	C (19.5)
2027 Background Traffic (case 2)						
Eastbound Long Neck Road – Left	A (8.8)	A (8.2)	A (9.0)	A (8.9)	A (8.2)	A (9.0)
Southbound Greens Way	C (15.0)	C (16.4)	C (23.5)	B (15.0-)	C (16.5)	C (23.6)
2027 Total Traffic (case 3)						
Eastbound Long Neck Road – Left	A (8.9)	A (8.2)	A (9.2)	A (8.9)	A (8.2)	A (9.2)
Southbound Greens Way	C (15.5)	C (17.1)	D (25.8)	C (15.4)	C (17.2)	D (25.9)

<sup>3</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 6  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Signalized Intersection <sup>4</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>DE 24 &amp; Long Neck Rd / Indian Mission Rd</b>						
2018 Existing (case 1)	C (23.9)	C (25.3)	C (34.4)	C (21.7)	C (23.2)	C (30.4)
2027 Background Traffic (case 2)	C (30.3)	D (35.2)	E (56.5)	C (26.9)	C (30.7)	D (48.7)
2027 Total Traffic (case 3)	C (32.3)	D (39.0)	E (71.9)	C (28.3)	C (33.8)	E (62.0)

<sup>4</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 7  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>5</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>DE 24 &amp; White Pine Dr</b>						
2018 Existing (case 1)						
Westbound White Pine Drive	C (15.2)	C (22.1)	C (24.3)	C (15.2)	C (22.1)	C (24.3)
Southbound DE 24 – Left	A (9.3)	A (8.8)	A (9.1)	A (9.3)	A (8.8)	A (9.1)
2027 Background Traffic (case 2)						
Westbound White Pine Drive	C (20.3)	E (38.2)	E (44.0)	C (20.4)	E (38.2)	E (44.0)
Southbound DE 24 – Left	A (10.0)	A (9.6)	A (9.9)	B (10.0+)	A (9.6)	A (9.9)
2027 Total Traffic (case 3)						
Westbound White Pine Drive	C (21.0)	E (40.2)	E (49.4)	C (21.1)	E (40.2)	E (49.4)
Southbound DE 24 – Left	B (10.1)	A (9.7)	A (10.0)	B (10.1)	A (9.7)	B (10.0+)

<sup>5</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 8  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>6</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>DE 24 &amp; Greens Way</b>						
2018 Existing (case 1)						
Westbound Greens Way	B (14.9)	C (18.0)	C (22.5)	B (14.6)	C (21.8)	D (25.8)
Southbound DE 24 – Left	A (9.0)	A (8.7)	A (9.3)	A (8.8)	A (8.8)	A (9.2)
2027 Background Traffic (case 2)						
Westbound Greens Way	C (19.8)	D (28.5)	E (40.3)	C (19.3)	E (41.0)	F (53.4)
Southbound DE 24 – Left	A (9.8)	A (9.5)	B (10.3)	A (9.4)	A (9.6)	B (10.1)
2027 Total Traffic (case 3)						
Westbound Greens Way	C (18.2)	D (28.8)	E (42.9)	C (17.2)	E (41.7)	F (57.4)
Southbound DE 24 – Left	A (9.9)	A (9.6)	B (10.6)	A (9.5)	A (9.8)	B (10.5)

<sup>6</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.



Table 9  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>7</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>DE 24 &amp; Banks Rd</b>						
2018 Existing (case 1)						
Westbound Banks Road	B (14.7)	C (15.8)	C (24.5)	B (14.9)	C (16.2)	D (25.5)
Southbound DE 24 – Left	A (8.7)	A (9.6)	A (9.7)	A (8.7)	A (9.6)	A (9.7)
2027 Background Traffic (case 2)						
Westbound Banks Road	D (34.3)	E (39.9)	F (138.5)	E (36.3)	E (43.5)	F (153.5)
Southbound DE 24 – Left	A (9.7)	B (13.7)	B (12.8)	A (9.7)	B (13.7)	B (12.8)
2027 Total Traffic (case 3)						
Westbound Banks Road	E (39.0)	E (43.3)	F (172.9)	E (41.5)	E (47.4)	F (191.4)
Southbound DE 24 – Left	A (9.8)	B (14.0)	B (13.3)	A (9.8)	B (14.0)	B (13.3)
With Improvement – Traffic Signal	C (22.7)	C (24.9)	C (33.1)	C (25.5)	C (25.2)	D (36.3)

<sup>7</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 10  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>8</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>DE 24 &amp; Holly Lake Rd</b>						
2018 Existing (case 1)						
Eastbound Holly Lake Road	C (16.1)	C (23.7)	E (38.9)	C (16.1)	C (23.7)	E (39.0)
Northbound DE 24 – Left	A (8.0)	A (9.2)	A (9.1)	A (8.0)	A (9.2)	A (9.1)
2027 Background Traffic (case 2)						
Eastbound Holly Lake Road	C (21.5)	F (56.3)	F (317.6)	C (21.5)	F (56.7)	F (330.5)
Northbound DE 24 – Left	A (8.6)	B (11.2)	B (10.7)	A (8.6)	B (11.2)	B (10.7)
2027 Total Traffic (case 3)						
Eastbound Holly Lake Road	C (22.5)	F (63.8)	F (454.0)	C (22.5)	F (64.3)	F (477.5)
Northbound DE 24 – Left	A (8.6)	B (11.4)	B (11.1)	A (8.6)	B (11.4)	B (11.1)

<sup>8</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 11  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>9</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Indian Mission Rd &amp; E. Stonewater Creek Blvd / Surf Board Blvd</b>						
2018 Existing (case 1)						
Eastbound Surf Board Blvd	C (18.0)	B (11.9)	B (12.1)	C (21.0)	B (11.9)	B (12.1)
Westbound E. Stonewater Creek Blvd	B (14.4)	C (16.8)	C (19.0)	C (16.4)	C (16.8)	C (19.0)
Northbound Indian Mission Road – Left	A (9.4)	A (8.2)	A (8.1)	A (9.7)	A (8.2)	A (8.1)
Southbound Indian Mission Road – Left	A (8.2)	A (8.2)	A (8.3)	A (8.3)	A (8.2)	A (8.3)
2027 Background Traffic (case 2)						
Eastbound Surf Board Blvd	D (25.9)	B (14.8)	C (15.2)	D (33.0)	B (14.8)	C (15.2)
Westbound E. Stonewater Creek Blvd	C (19.7)	D (26.9)	D (34.2)	D (25.8)	D (26.9)	D (34.1)
Northbound Indian Mission Road – Left	B (10.1)	A (8.7)	A (8.6)	B (10.4)	A (8.7)	A (8.6)
Southbound Indian Mission Road – Left	A (8.7)	A (8.7)	A (8.8)	A (8.9)	A (8.7)	A (8.8)
2027 Total Traffic (case 3)						
Eastbound Surf Board Blvd	D (27.8)	C (15.5)	C (16.5)	E (36.2)	C (15.5)	C (16.3)
Westbound E. Stonewater Creek Blvd	C (21.2)	D (29.6)	E (44.3)	D (28.8)	D (29.6)	E (40.9)
Northbound Indian Mission Road – Left	B (10.1)	A (8.8)	A (8.8)	B (10.5)	A (8.8)	A (8.8)
Southbound Indian Mission Road – Left	A (8.8)	A (8.8)	A (8.9)	A (9.1)	A (8.8)	A (8.8)

<sup>9</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 12  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>10</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Indian Mission Rd &amp; Cannon Rd</b>						
2018 Existing (case 1)						
Eastbound Cannon Road	C (19.6)	C (19.5)	C (17.6)	C (20.8)	C (21.5)	C (18.9)
Westbound Driveway	C (16.3)	-	C (17.9)	C (16.3)	-	C (17.9)
Northbound Indian Mission Road – Left	A (8.2)	A (8.57)	A (8.3)	A (8.2)	A (8.5)	A (8.3)
Southbound Indian Mission Road – Left	A (8.2)	A (8.1)	A (8.1)	A (8.2)	A (8.1)	A (8.1)
2027 Background Traffic (case 2)						
Eastbound Cannon Road	F (93.5)	F (116.3)	F (66.1)	F (99.4)	F (124.8)	F (71.8)
Westbound Driveway	C (24.0)	-	D (30.3)	C (24.1)	-	D (30.3)
Northbound Indian Mission Road – Left	A (8.5)	A (9.6)	A (9.1)	A (8.5)	A (9.6)	A (9.1)
Southbound Indian Mission Road – Left	A (8.7)	A (8.4)	A (8.4)	A (8.7)	A (8.4)	A (8.4)
2027 Total Traffic (case 3)						
Eastbound Cannon Road	F (119.5)	F (150.4)	F (105.7)	F (125.3)	F (158.8)	F (112.4)
Westbound Driveway	D (25.7)	-	E (35.2)	D (25.7)	-	E (35.3)
Northbound Indian Mission Road – Left	A (8.6)	A (9.8)	A (9.3)	A (8.6)	A (9.8)	A (9.3)
Southbound Indian Mission Road – Left	A (8.8)	A (8.5)	A (8.6)	A (8.8)	A (8.5)	A (8.6)
With Improvement – Traffic Signal	C (10.2)	C (8.9)	C (8.4)	B (11.0)	A (9.3)	A (8.5)
With Improvement – Roundabout	N/A	N/A	N/A	A (9.7)	B (10.5)	A (9.1)

<sup>10</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 13  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Baywood Gardens  
Report dated June 20, 2019  
Prepared by The Traffic Group

Unsignalized Intersection <sup>11</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Indian Mission Rd &amp; Harmons Hill Rd / Phillips Branch Rd</b>						
2018 Existing (case 1)						
Eastbound Harmons Hill Rd	D (25.3)	C (17.6)	C (17.8)	D (25.3)	C (17.5)	C (17.8)
Westbound Phillips Branch Rd	D (31.6)	D (25.5)	C (24.5)	D (31.6)	D (25.5)	C (24.5)
Northbound Indian Mission Rd – Left	A (8.4)	A (8.5)	A (8.3)	A (8.4)	A (8.5)	A (8.3)
Southbound Indian Mission Rd – Left	A (8.1)	A (7.9)	A (8.2)	A (8.1)	A (7.9)	A (8.2)
2027 Background Traffic (case 2)						
Eastbound Harmons Hill Rd	F (282.5)	F (170.1)	F (102.2)	F (285.1)	F (170.8)	F (102.7)
Westbound Phillips Branch Rd	F (228.3)	F (332.6)	F (199.6)	F (229.7)	F (333.8)	F (200.4)
Northbound Indian Mission Rd – Left	A (9.0)	A (9.3)	A (9.0)	A (9.0)	A (9.4)	A (9.0)
Southbound Indian Mission Rd – Left	A (8.8)	A (8.3)	A (8.7)	A (8.8)	A (8.3)	A (8.7)
2027 Total Traffic (case 3)						
Eastbound Harmons Hill Rd	F (503.9)	F (239.8)	F (200.0)	F (510.6)	F (241.0)	F (201.2)
Westbound Phillips Branch Rd	F (350.6)	F (468.4)	F (420.5)	F (353.7)	F (470.3)	F (423.1)
Northbound Indian Mission Rd – Left	A (9.1)	A (9.5)	A (9.2)	A (9.1)	A (9.5)	A (9.2)
Southbound Indian Mission Rd – Left	A (8.9)	A (8.3)	A (8.8)	A (8.9)	A (8.3)	A (8.8)
With Improvement – Traffic Signal	B (17.4)	B (13.4)	B (12.0)	B (17.4)	B (13.4)	B (12.0)
With Improvement – Roundabout	N/A	N/A	N/A	B (11.5)	B (11.0)	B (10.8)

<sup>11</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

**Lauren DeVore**

---

**From:** Kevin Dooley <kmdooley@comcast.net>  
**Sent:** Wednesday, May 12, 2021 12:48 PM  
**To:** Planning and Zoning  
**Subject:** The Baywood LLC public hearing on 5/13

**Opposition  
Exhibit**

**CAUTION:** This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe. Contact the IT Helpdesk if you need assistance.

Good afternoon,

Thank you for allowing me to express my opinion in deepest opposition to the proposed 514 apartments being reviewed for approval tomorrow in the Long Neck area. As a resident of the area I am sure you would concur with the significant traffic congestion along the Route 24 corridor even during the winter months.

Please vote against this or ask the developer to revise these unit quantities significantly downward. Thank you for your service to our community.

Kevin Dooley

RECEIVED  
MAY 12 2021  
SUSSEX COUNTY  
PLANNING & ZONING

## Nick Torrance

---

**From:** Kevin Howard <KDHPLAN@msn.com>  
**Sent:** Wednesday, May 12, 2021 8:53 AM  
**To:** Planning and Zoning  
**Subject:** Baywood LLC

**CAUTION:** This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe. Contact the IT Helpdesk if you need assistance.

I am writing in opposition to the applicant's request for rezoning the property off Long Neck Road.

At present, this area is particularly difficult to navigate the entrance/exit of businesses in the area. In addition, the current volume of traffic is extremely high at several points during the day, even those beyond "rush hours". The additional traffic expected from this development on the immediate area and surrounds, is far too much.

There is no "greater good" or necessity that this rezoning would address.

Sussex county needs to improve its control over development and the requirements of builders/developers in resolving issues their activities create.

Kevin and Elizabeth Howard  
24564 Atlantic Drive  
Millsboro

**Nick Torrance**

---

**From:** Hein, John <John.Hein@dell.com>  
**Sent:** Tuesday, May 11, 2021 9:51 PM  
**To:** Planning and Zoning  
**Subject:** I totally disapprove of C/Z 1922 – Baywood, LLC

---

**CAUTION:** This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe. Contact the IT Helpdesk if you need assistance.

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Dell Customer Communication - Confidential

The entire area west of Robinsville Rd has now reached maximum density for both traffic and emergency services. DELDOT's expansion plans for this area are outdated. If an emergency was declared, say due to an approaching hurricane, it would be near impossible to evacuate this area. The expansion of Baywood approved two years ago for an additional 600 homes off of Banks Rd and now plus request will create a very dangerous situation for all of the people in this area. Traffic today on RT24 has reached maximum capacity. What will happen once we add and additional 1,000 more units with an additional 6,000 more daily trips to this outdated road infrastructure.

**John Hein**

*Advisory Systems Engineer*

**Dell Technologies** | Federal and Southeast USA Mainframe Division

Mobile: 631-553-2743

[john.hein@dell.com](mailto:john.hein@dell.com)

Out of Office – June 28 – July 9<sup>th</sup>



**Nick Torrance**

---

**From:** Peggy Diane <peggadyann@yahoo.com>  
**Sent:** Wednesday, May 12, 2021 1:38 PM  
**To:** Planning and Zoning  
**Subject:** Proposed apts on Long Neck Rd

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe. Contact the IT Helpdesk if you need assistance.

I am unable to attend the meeting on 5/13 but want to register my opinion on this proposal.

514 is WAY too many apartments for this area. You are looking at potentially over 1000 more vehicles on roads that are already insufficient due to all the new building currently under way. If anything, it should be condos since apartments tend to lower property values and bring in transient people.

Kindly reconsider the intended use of this land and the already congested roads, with no relief in sight, especially for routes 5, 24 and 23.

Sincerely, Peggy Soltis  
32165 Ivory Gull Way, Long Neck

Sent from my iPhone

**Nick Torrance**

---

**From:** Robert Fitzgerald <bobfitz77@verizon.net>  
**Sent:** Wednesday, May 12, 2021 1:10 PM  
**To:** pandz@sussexcountyde.gov <pandz@sussexcountyde.gov>  
**Subject:** Reference C/Z 1922-Baywood, LLC

**CAUTION:** This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe. Contact the IT Helpdesk if you need assistance.

We are definitely opposed to putting 514 apartments on the property at School Lane and Long Neck Roads by Baywood LLC. Putting that many apartments will bring hundreds if not a thousand more cars to a road right next to an elementary school. This will put our kids and their parents in more danger than already exists on School Lane Rd. Parents picking up their kids from the school are lined up along School Lane Rd all the way to Long Neck Road now.

School Lane Rd is used by many motorists to by pass the terrible traffic on Route 24 now. With all the approved development that still has not been built in the area and the roads not being able to handle the amount of cars we have NOW on the road no one will be able to get around the area. Traffic in the area is terrible now, offseason. In the summer this year it will be a nightmare to get around, especially trying to get to the beaches or to the stores on Rt 113 and Rt 1.

With the over development that has already been approved and our schools in the area over crowded now where will all these extra families send their kids to school.

**Stop the over development already.** Try driving on 24 yourself to see what the over development is doing to the traffic in the area. The turn to get to Rt 24 from Rt 1 backs all the way past the turn off lanes now. This is causing another dangerous situation and it is only going to get worse with the all the building on 24 and on roads like Bay Farm Rd ( Peninsula Lakes and The Peninsula) that has already been approved and on going.

Robert & Janina Fitzgerald  
33453 Marina Bay Circle ( The Peninsula at end of Bay Farm Rd)  
Millsboro, DE 19966

**Nick Torrance**

---

**From:** Kevin Dooley <kmdooley@comcast.net>  
**Sent:** Wednesday, May 12, 2021 12:48 PM  
**To:** Planning and Zoning  
**Subject:** The Baywood LLC public hearing on 5/13

**CAUTION:** This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe. Contact the IT Helpdesk if you need assistance.

Good afternoon,

Thank you for allowing me to express my opinion in deepest opposition to the proposed 514 apartments being reviewed for approval tomorrow in the Long Neck area. As a resident of the area I am sure you would concur with the significant traffic congestion along the Route 24 corridor even during the winter months.

Please vote against this or ask the developer to revise these unit quantities significantly downward. Thank you for your service to our community.

Kevin Dooley

**Nick Torrance**

---

**From:** Mike Magill <mmagill99@gmail.com>  
**Sent:** Wednesday, May 12, 2021 11:46 AM  
**To:** Planning and Zoning  
**Subject:** Haywood Lmc

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The traffic in this area of the proposed 515 apartments is really bad today. I live in Ivery gull's Way and this will cause so many problems the infrastructure cannot handle it please do not approve

Mike Magill

## Nick Torrance

---

**From:** webmaster@sussexcountyde.gov on behalf of Sussex County DE  
<webmaster@sussexcountyde.gov>  
**Sent:** Wednesday, May 12, 2021 8:11 PM  
**To:** Planning and Zoning  
**Subject:** Submission from: Planning & Zoning Commission contact form

RECIPIENTS: Jamie Whitehouse

Submitted on Wednesday, May 12, 2021 - 8:11pm

Opposition  
Exhibit

Name: Jim LaBella  
Email address: labella24@verizon.net  
Phone number: 9736003111  
Subject: Object to Baywood Rezoning

**Message:**

I would ask that the P & Z commission reject the rezoning request form Baywood to build apartments on Long Neck Road. The Rt. 24 area is already overdeveloped and adding 514 apartments will make things go from bad to worse. Please stop this uncontrolled development. The added traffic and the cutting of 18 acres of woodlands makes not sense. Please, vote NO to this project.

Jim LaBella

## Russell Warrington

---

**From:** Frank Soltis <fescls@msn.com>  
**Sent:** Thursday, May 13, 2021 9:31 AM  
**To:** Planning and Zoning  
**Subject:** Rezoning Baywood

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe. Contact the IT Helpdesk if you need assistance.

This proposal to rezone for Baywood should not be passed. Additional traffic in this area will become a nightmare. Also High density housing is another term used rather than low income housing. Developers property owners will trade off areas of property for high density housing to meet requirements for low income housing so other areas can be built with upper scale housing this is common practice in New Jersey. This proposal needs to be stopped in its tracks and be rejected. Frank Soltis, Millsboro, Delaware Sent from my iPhone

**FILE COPY**

Received at Public  
Hearing 05-13-21

CZ NO. 1922, HR-1/RPC

**BAYWOOD, LLC**

**“BAYWOOD GARDENS”**

**PROPOSED CONDITIONS**

- A. The maximum number of multi-family units shall not exceed 514 residential units located in no more than 13 buildings.
- B. All entrance, intersection, traffic signal, roadway and shared use path improvements required by DelDot shall be constructed or funded in accordance with DelDot requirements.
- C. The Development shall be served central sewer by the Inland Bays Preservation Company and Sussex County. Design and construction of the sewer system shall comply with the requirements of the Sussex County Engineering Department.
- D. The Development shall be served central water by Tidewater Utility Company.
- E. Stormwater management and erosion and sedimentation control facilities shall be constructed in accordance with all applicable State and County requirements. These facilities shall be operated in a manner which is consistent with Best Management Practices.
- F. The Central Recreational Complex including the community clubhouse, indoor and outdoor swimming pools shall be completed and open for use prior to issuance of a Certificate of Occupancy for the 161<sup>st</sup> multi-family unit.
- G. Street naming and addressing shall be subject to the review and approval of the County Mapping and Addressing Department.

- H. The location for school bus shelters shall be coordinated with the local school district's transportation manager. The location of the bus stop shelters shall be shown on the Final Site Plan.
- I. No outdoor construction activities or deliveries of dirt, fill or similar activities shall occur at the site except between the hours of 7:30 a.m. through 7:00 p.m., Monday through Friday, and 8:00 a.m. through 5:00 p.m. on Saturdays. There shall be no construction at the site on Sundays.
- J. The design of interior drives shall meet or exceed Sussex County requirements for multi-family development.
- K. Lighted entrance signs, not to exceed 32 square feet per side, shall be permitted at each of the four entrances.
- L. The Applicant and/or a condominium association shall be responsible for the maintenance of entrances, interior drives, parking areas, buildings, buffers, storm water management facilities, recreational amenities, and all other common areas.
- M. As proffered by the Applicant, since this HR-1/RPC rezoning was requested for the specific purpose of development a 514 unit multi-family development as depicted on the RPC preliminary site plan submitted as part of CZ# 1922, in the event the RPC is not developed and is declared null and void by Sussex County pursuant to Section 99-9B or Section 99-40A of the Sussex County Code, then the zoning classification of the land (TM 234-23.00-270.00, 273.01, 273.02, 273.03 and 273.05) shall revert back to the zoning classification in effect on the adoption of CZ#1922 and the HR-1 rezoning shall be deemed null and void.
- N. This recommendation is contingent on Sussex County Council approving the Amendment of the Future Land Use Map so that the entire parcel is identified as being within the Coastal Area of the Comprehensive Plan.
- O. A revised Preliminary Site Plan either depicting or noting these conditions must be submitted to the Sussex County Office of Planning and Zoning.



- P. The Final Site Plan shall contain the approval of Sussex Conservation District for the design and location of all stormwater management areas and erosion and sedimentation control facilities.
  
- Q. The Final Site Plan shall include a landscape plan for all of the buffer areas, showing all of the landscaping and vegetation to be included in the buffer areas.
  
- R. The Final Site Plan shall be subject to the review and approval of Planning and Zoning Commission.

**CZ NO. 1922, HR-1/RPC**

**BAYWOOD, LLC**

**“BAYWOOD GARDENS”**

**PROPOSED FINDINGS**

1. The Applicant is proposing to rezone 54.3 acres of land currently zoned C-1, CR-1 and B-1 to HR-1/RPC for a multi-family unit development containing 514 residential units.
2. The site is located in Investment Level 1 and 2 under the Strategies for State Policies and Spending. These Investment Levels are areas where infrastructure exists or is available and where infill projects are expected and encouraged by State policy because State investments will support growth.
3. Under the County’s 2019 Comprehensive Plan the site is located in the “Coastal Area” and “Commercial Area” which are two of the “Growth Areas” designated in the Plan where future growth is directed.
4. The Comprehensive Plan states that in the “Coastal Area”; higher density development of up to 12 units per acre can be appropriate in areas where: A) central water and sewer are available, B) the location is near sufficient commercial uses and employment centers, C) the development is in character of the area, D) the location is along a main road or near a major intersection, and E) there is an adequate level of service. The location and design of the proposed development complies with all the factors listed supporting higher density development.
5. The proposed HR-1/RPC at this location in the coastal and commercial growth areas designated in the 2019 Comprehensive Plan accomplishes various important goals of the Plan and is consistent with and in accordance with the Plan.

6. The development will be served central water and central sewer by regulated public utility companies.
7. The Applicant has properly addressed the items to be considered in the Environmental Assessment and Public Facility Evaluation Report.
8. The proposed development is in accordance with the 2019 Sussex County Comprehensive Plans. The 2019 Plan states that it is a goal to ensure the provision of safe and decent housing for County residents (Goal 8.1), that the County should explore ways to incentivize private developers to provide more multi-family and affordable housing opportunities (Strategy 8.21.3), that the County will work with private and public agencies to increase affordable rental opportunities (Objective 8.2.2) and facilitate and promote land use policies that enable an increase in the supply of affordable housing in areas with adequate infrastructure (Objective 8.2.3), and promote increasing affordable housing options, including the supply of rental units, near job enters (8.2.3.1). The proposed development is in accordance with the County's goals, objectives, and strategies for affordable housing options for County residents.
9. Based on traffic impact studies reviewed and approved by DelDot, the Applicant will be responsible for significant entrance, intersection, traffic signal, roadway and shared use path improvement required by DelDot mitigating the impact of the development and improving existing traffic conditions.
10. The site contains no state or federal wetlands, is not located in a flood hazard area, and will not result in any negative environmental impact.
11. The proposed development is consistent with the purpose of the HR-1 zoning district and the RPC district. The purpose of the HR-1 district is to permit a variety of housing types and densities appropriate for areas with public sewer and water systems and well located with respect to major roads, shopping facilities and centers of employment. The purpose of the RPC district is to encourage large scale developments to create a superior living environment, protect existing development and achieve

the goals of the Comprehensive Plan. The proposed HR-1/RPC is consistent with the purpose of these districts and accomplish the goals of the Zoning Ordinance and Comprehensive Plan.

12. For the reasons stated and with the conditions recommended the HR-1/RPC rezoning is in accordance with the 2019 Sussex County Comprehensive Plan and promotes the health, safety, morale, convenience, order, prosperity and welfare of the present and future residents of the County.

**PLANNING & ZONING COMMISSION**

ROBERT C. WHEATLEY, CHAIRMAN  
KIM HOEY STEVENSON, VICE-CHAIRMAN  
R. KELLER HOPKINS  
J. BRUCE MEARS  
HOLLY J. WINGATE



**Sussex County**

DELAWARE  
sussexcountyde.gov  
302-855-7878 T  
302-854-5079 F  
JAMIE WHITEHOUSE, AICP  
DIRECTOR

**PLANNING AND ZONING AND COUNTY COUNCIL INFORMATION SHEET**  
Planning Commission Public Hearing Date May 13, 2021

**Application:** CZ 1942 Bay Developers, LLC (Twin Cedars, LLC)

**Applicant:** Bay Developers, LLC  
200 Weston Drive  
Dover, DE 19904

**Owner:** Twin Cedars, LLC (Attention: Mr. James T. Gordon)  
5427 York Lane  
Bethesda, MD 20814

**Site Location:** The parcel is lying on the south side of Zion Church Road (Route 20), approximately 0.55-mile northwest of Bayard Road (S.C.R. 384).

**Current Zoning:** Split-zoned General Commercial (C-1) Zoning District, Commercial Residential (CR-1) District & General Residential (GR) Zoning District

**Proposed Zoning:** General Commercial (C-1) Zoning District & General Residential, Residential Planned Community (GR-RPC)

**Proposed Use:** 168 Apartments, 44 Townhomes, 42 Single-Family Detached Dwellings (254 dwelling units total)

**Comprehensive Land Use Plan Reference:** Coastal Area

**Councilmanic District:** Mr. Rieley

**School District:** Indian River School District

**Fire District:** Roxana Fire District

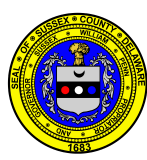
**Sewer:** Sussex County Sewer District

**Water:** Artesian

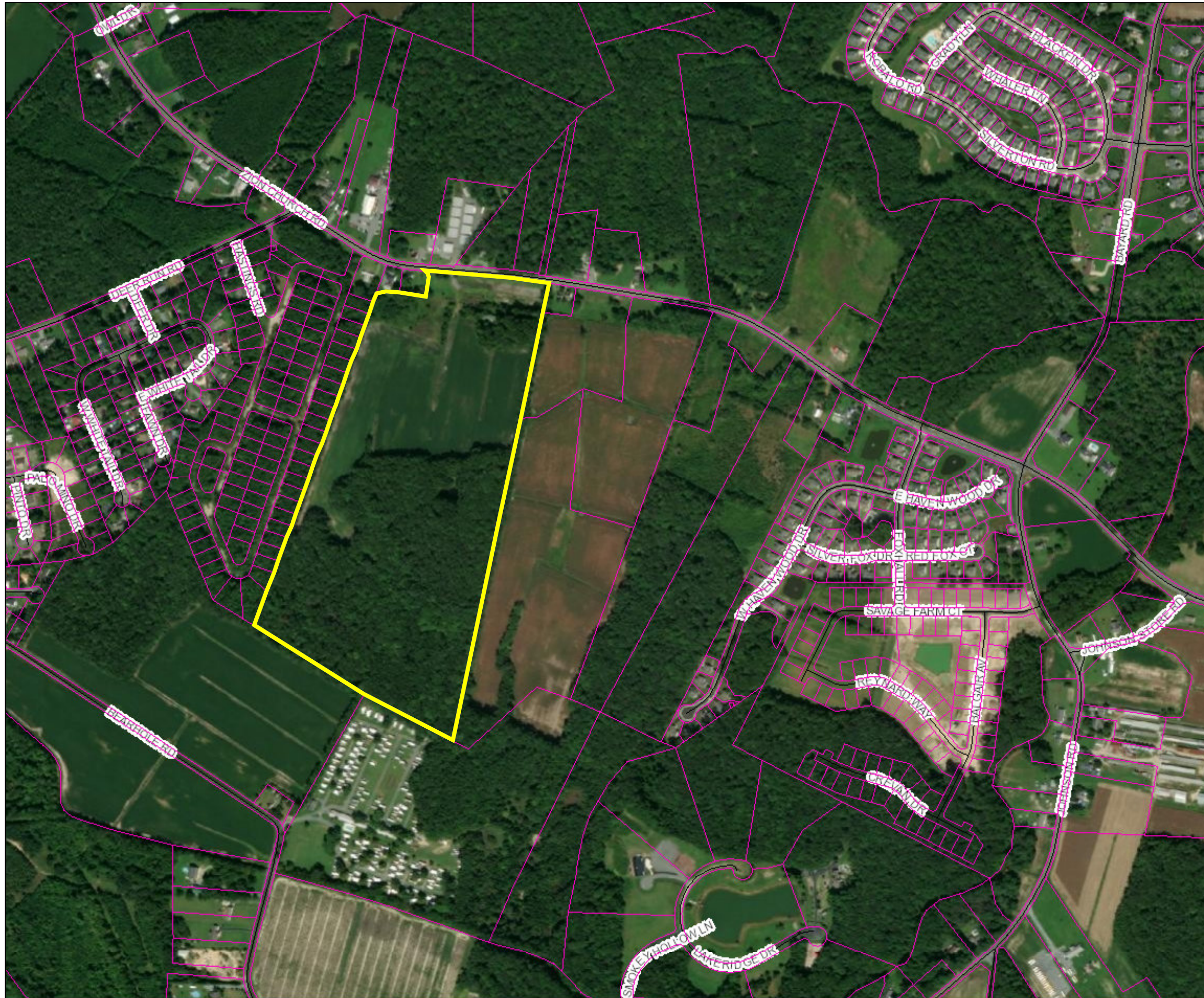
**Site Area:** 64.22 +/- acres

**Tax Map ID.:** 533-11.00-42.00








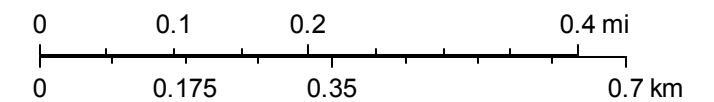
# Sussex County

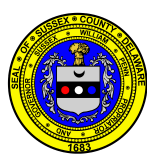


<b>PIN:</b>	533-11.00-42.00
<b>Owner Name</b>	TWIN CEDARS LLC
<b>Book</b>	3395
<b>Mailing Address</b>	5427 YORK LN
<b>City</b>	BETHESDA
<b>State</b>	MD
<b>Description</b>	S/RT 382
<b>Description 2</b>	750'E/RT 388
<b>Description 3</b>	N/A
<b>Land Code</b>	

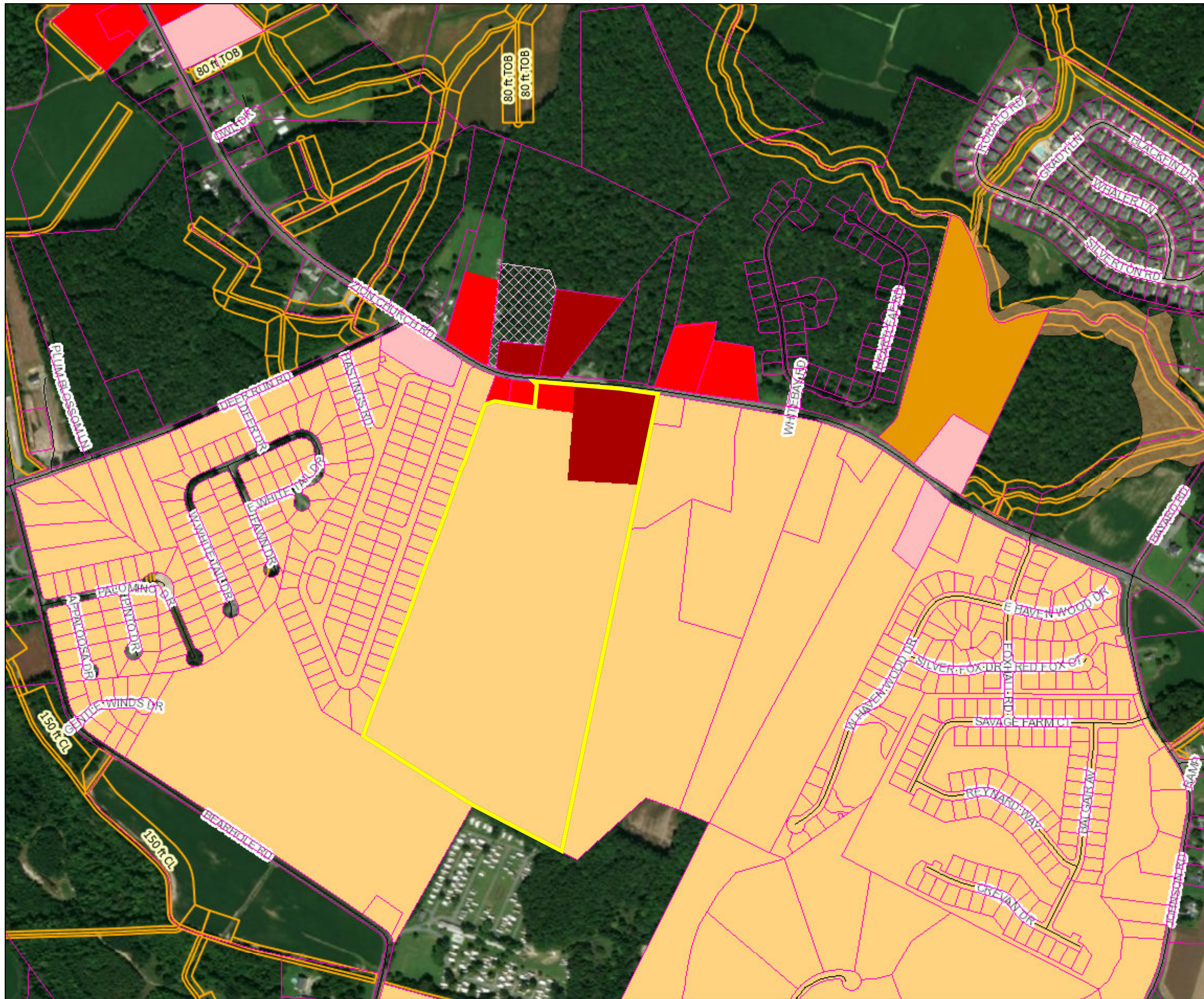
- polygonLayer**
- Override 1
- polygonLayer**
- Override 1
-  Tax Parcels
-  Streets
-  County Boundaries

1:9,028





# Sussex County



<b>PIN:</b>	533-11.00-42.00
<b>Owner Name</b>	TWIN CEDARS LLC
<b>Book</b>	3395
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**polygonLayer**

Override 1

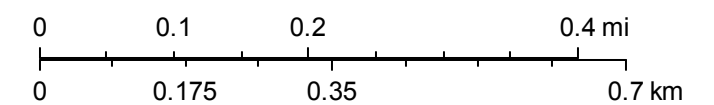
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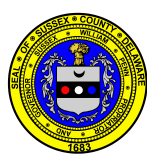
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Tax Parcels

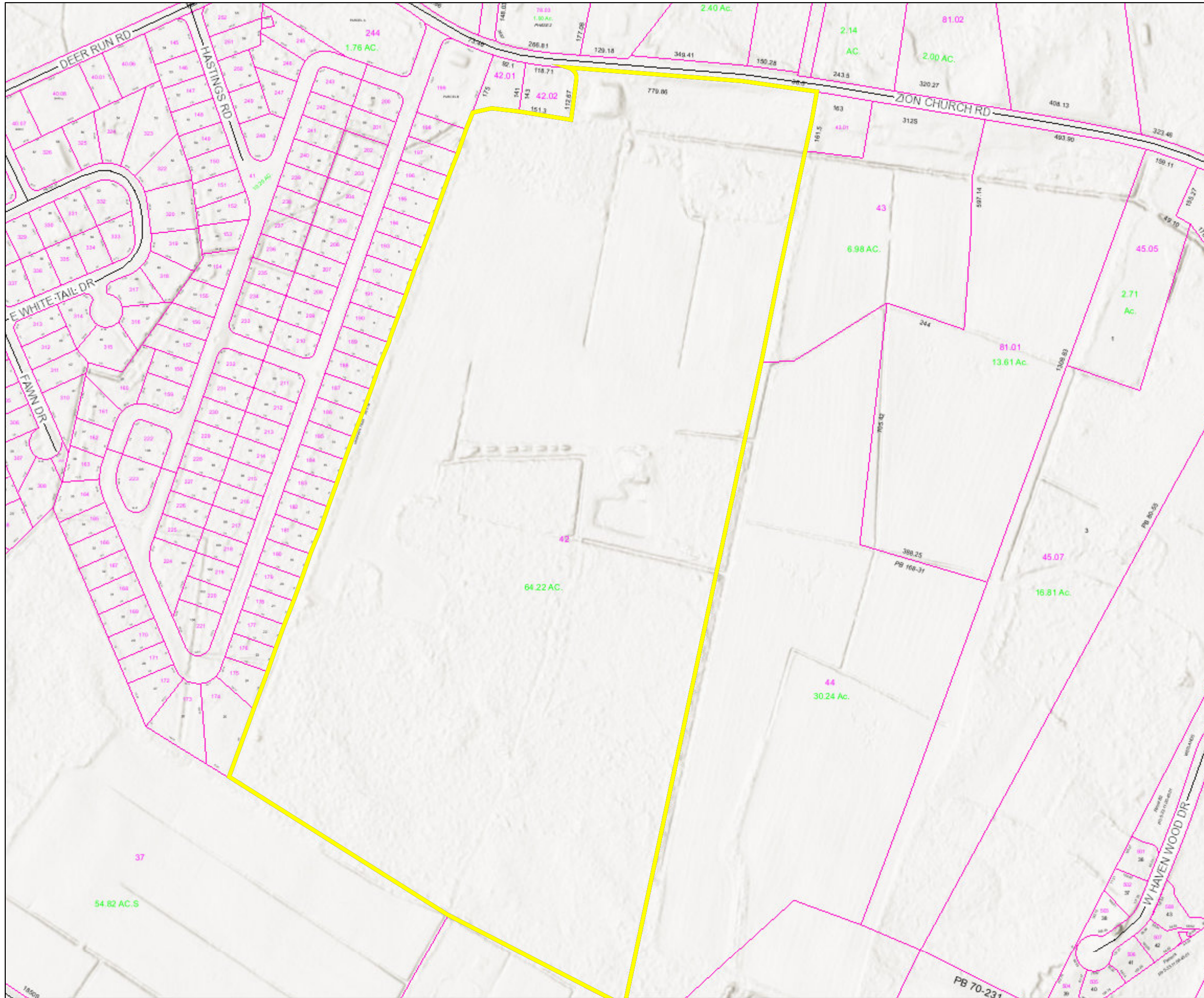
Streets

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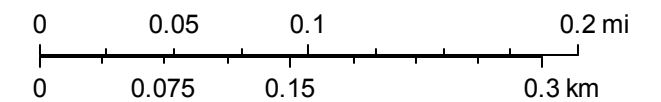
# Sussex County



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<b>Description</b>	S/RT 382
<b>Description 2</b>	750'E/RT 388
<b>Description 3</b>	N/A
<b>Land Code</b>	

- polygonLayer**  
Override 1
- polygonLayer**  
Override 1
- Tax Parcels
- Streets
- County Boundaries

1:4,514





JAMIE WHITEHOUSE, AICP MRTPI  
PLANNING & ZONING DIRECTOR  
(302) 855-7878 T  
(302) 854-5079 F  
jamie.whitehouse@sussexcountyde.gov



**Sussex County**

DELAWARE  
sussexcountyde.gov

## Memorandum

To: Sussex County Planning Commission Members  
From: Nick Torrance, Planner I  
CC: Vince Robertson, Assistant County Attorney and applicant  
Date: May 6<sup>th</sup>, 2021  
RE: Staff Analysis for CZ 1942 Bay Developers, LLC (Twin Cedars, LLC)

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This memo is to provide background and analysis for the Planning Commission to consider as a part of application CZ 1909 Bay Developers, LLC (Twin Cedars, LLC) to be reviewed during the May 13, 2021, Planning Commission Meeting. This analysis should be included in the record of this application and is subject to comments and information that may be presented during the public hearing.

The request is for a Change of Zone for Tax Parcel 533-11.00-42.00 to allow for a change of zone from a General Commercial (C-1) Zoning District, Commercial Residential (CR-1) Zoning District, and a General Residential (GR) Zoning District to a General Residential Zoning District, Residential Planned Community (GR-RPC). The parcel is located on the south side of Zion Church Road (Route 20), approximately 0.55-mile northwest of Bayard Road (S.C.R. 384). The parcel to be rezoned contains 64.22 acres +/-.

The 2018 Sussex County Comprehensive Plan Update (Comprehensive Plan) provides a framework of how land is to be developed. As part of the Comprehensive Plan, a Future Land Use Map is included to help determine how land should be zoned to ensure responsible development. The Future Land Use map in the plan indicates that the subject property has a land use designation of "Coastal Area." The properties to the north, south, east and west also have the land use designation of Coastal Area.

As outlined in the 2018 Sussex County Comprehensive Plan, the Coastal Areas are areas that can accommodate development provided that special environmental concerns are addressed. A range of housing types should be permitted in Coastal Areas, including single-family homes, townhouses, and multi-family units. Retail and office uses are appropriate, but larger shopping centers and office parks should be confined to selected locations with access along arterial roads. Appropriate mixed-use development should all be allowed.

The property is tri-zoned with the property being zoned General Commercial (C-1) Zoning District and Commercial Residential (CR-1) Zoning District along the road frontage of the parcel and with the remaining majority of the parcel being zoned General Residential (GR) Zoning District. The adjacent parcels to the east and west of the subject property are zoned General Residential (GR). The two properties to the north and west of the property located along Zion Church Road are zoned General Commercial (C-1). The properties to the north of the parcel on the opposite side of Zion Church Road are zoned Agricultural Residential (AR-1), Commercial Residential (CR-1) and General Commercial (C-1).



The 2018 Sussex County Comprehensive Plan outlines Zoning Districts by their applicability to each Future Land Use category. Under Table 4.5-2 “Zoning Districts Applicable to Future Land Use Categories,” the General Residential (GR) Zoning District is listed as an applicable zoning district in the “Coastal Area.” Although not featured within the Future Land Use Table as an applicable zoning district, the General Commercial (C-1) Zoning is a permitted zoning district within the Coastal Area as these zoning may be located within any of the land use designations.

Since 2011, there have been three (3) Change of Zone applications within a 2-mile radius of the application site. The first application is for Change of Zone No. 1715 for a change of zone from an Agricultural Residential (AR-1) Zoning District to a Commercial Residential (CR-1) Zoning District. The application was approved by the Sussex County Council on May 15, 2012 and the change was adopted through Ordinance No. 2257. The second application is for Change of Zone No. 1858 for a change of zone from an Agricultural Residential (AR-1) Zoning District to a High Density Residential, Residential Planned Community (HR-1-RPC). The application was approved by the Sussex County Council on December 11, 2018 and adopted through Ordinance No. 2621. The last application is for Change of Zone No. 1842 for a change of zone from an Agricultural Residential (AR-1) Zoning District to a Neighborhood Business (B-1) Zoning District. The application was approved by the Sussex County Council on January 30, 2018 and adopted through Ordinance No. 2545.

Based on the analysis of the land use, surrounding zoning and uses, a Change of Zone from a General Commercial (C-1) Zoning District, Commercial Residential (CR-1) Zoning District, and a General Residential (GR) Zoning District to a General Residential Zoning District, Residential Planned Community (GR-RPC) could be considered as being consistent with the land use, area zoning and surrounding uses.

# Planning & Zoning Commission Application

## Sussex County, Delaware

Sussex County Planning & Zoning Department  
2 The Circle (P.O. Box 417) Georgetown, DE 19947  
302-855-7878 ph. 302-854-5079 fax

**Type of Application: (please check applicable)**Conditional Use Zoning Map Amendment **Site Address of Conditional Use/Zoning Map Amendment**

South side of Zion Church Road (Route 20/Road 382), 750' E of Deer Run Rd (Rd 388)

**Type of Conditional Use Requested:**

RPC

Tax Map #: 533-11.00-42.00

Size of Parcel(s): 64.32 ACRES

Current Zoning: C-1, CR-1, &GR Proposed Zoning: <sup>GR W/ RPC</sup> OVERLAY Size of Building: N/A

Land Use Classification: AH

Water Provider: ARTESIAN WATER

Sewer Provider: SUSSEX COUNTY

**Applicant Information**

Applicant Name: BAY DEVELOPERS, LLC

Applicant Address: 200 WESTON DRIVE

City: DOVER

State: DE

Zip Code: 19904

Phone #: (302) 639-9707

E-mail: henry@hmastgroup.com

**Owner Information**

Owner Name: TWIN CEDARS, LLC (ATTN: MR. JAMES T. GORDON)

Owner Address: 5427 YORK LANE

City: BETHESDA

State: MD

Zip Code: 20814

Phone #: (252) 453-3650

E-mail: \_\_\_\_\_

**Agent/Attorney/Engineer Information**

Agent/Attorney/Engineer Name: Morris &amp; Ritchie Associates, Inc (c/o Mr. Phillip L. Tolliver, P.E.)

Agent/Attorney/Engineer Address: 18 Boulden Circle, Suite 36

City: New Castle

State: DE

Zip Code: 19720

Phone #: (302) 326-2200

E-mail: PTolliver@mragta.com



# Check List for Sussex County Planning & Zoning Applications

The following shall be submitted with the application

- ✓ **Completed Application**
- ✓ **Provide eight (8) copies of the Site Plan or Survey of the property**
  - Survey shall show the location of existing or proposed building(s), building setbacks, parking area, proposed entrance location, etc.
  - Provide a PDF of Plans (may be e-mailed to a staff member)
  - Deed or Legal description
- ✓ **Provide Fee \$500.00**
- ✓ **Optional - Additional Information for the Commission/Council to consider (ex. architectural elevations, photos, exhibit books, etc.)** If provided submit 8 copies and they shall be submitted a minimum of ten (10) days prior to the Planning Commission meeting.
- ✓ **Please be aware that Public Notice will be sent to property owners within 200 feet of the subject site and County staff will come out to the subject site, take photos and place a sign on the site stating the date and time of the Public Hearings for the application.**
- ✓ **DelDOT Service Level Evaluation Request Response**
- ✓ **PLUS Response Letter (if required)**

WILL BE PROVIDED  
UNDER SEPARATE COVER,  
PRIOR TO PLANNING  
COMMISSION MEETING

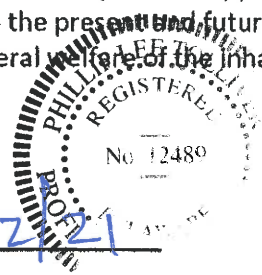
The undersigned hereby certifies that the forms, exhibits, and statements contained in any papers or plans submitted as a part of this application are true and correct.

I also certify that I or an agent on my behalf shall attend all public hearing before the Planning and Zoning Commission and the Sussex County Council and any other hearing necessary for this application and that I will answer any questions to the best of my ability to respond to the present and future needs, the health, safety, morals, convenience, order, prosperity, and general welfare of the inhabitants of Sussex County, Delaware.

Signature of Applicant/Agent/Attorney

  
\_\_\_\_\_

Date: 3/12/21



Signature of Owner

  
\_\_\_\_\_

Date: 3/12/2021

For office use only:

Date Submitted: \_\_\_\_\_ Fee: \$500.00 Check #: \_\_\_\_\_  
Staff accepting application: \_\_\_\_\_ Application & Case #: \_\_\_\_\_  
Location of property: \_\_\_\_\_

Subdivision: \_\_\_\_\_  
Date of PC Hearing: \_\_\_\_\_ Recommendation of PC Commission: \_\_\_\_\_  
Date of CC Hearing: \_\_\_\_\_ Decision of CC: \_\_\_\_\_



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

July 13, 2020

Mr. Joe Caloggero  
The Traffic Group, Inc.  
9900 Franklin Square Drive  
Suite H  
Baltimore, MD 21236

Dear Mr. Caloggero:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Twin Cedars** (Protocol Tax Parcel 533-11.00-42.00) development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

Troy Brestel  
Project Engineer

TEB:km

Enclosures

cc with enclosures: Ms. Constance C. Holland, Office of State Planning Coordination  
Mr. Jamie Whitehouse, Sussex County Planning and Zoning  
Mr. Andrew Parker, McCormick Taylor, Inc.  
Mr. Kevin Hickman, Johnson, Mirmiran & Thompson, Inc.  
DelDOT Distribution

## DelDOT Distribution

Brad Eaby, Deputy Attorney General  
J. Marc Coté, Director, Planning  
Shanté Hastings, Director, Transportation Solutions (DOTS)  
Mark Luszcz, Deputy Director, DOTS  
Michael Simmons, Assistant Director, Project Development South, DOTS  
Todd Sammons, Assistant Director, Development Coordination  
T. William Brockenbrough, Jr., County Coordinator, Development Coordination  
Peter Haag, Chief Traffic Engineer, Traffic, DOTS  
Chris Sylvester, Traffic Studies Manager, Traffic, DOTS  
Alistair Probert, South District Engineer, South District  
Gemez Norwood, South District Public Works Supervisor, South District  
Jared Kaufmann, Service Development Planner, Delaware Transit Corporation  
Tremica Cherry, Service Development Planner, Delaware Transit Corporation  
Susanne Laws, Sussex Review Coordinator, Development Coordination  
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning  
James Argo, Sussex Plan Reviewer, South District  
Mark Galipo, Traffic Engineer, Traffic, DOTS  
Claudy Joinville, Project Engineer, Development Coordination



July 10, 2020

Mr. Troy E. Brestel  
Project Engineer  
DelDOT Division of Planning  
P.O. Box 778  
Dover, DE 19903

RE: Agreement No. 1946F  
Traffic Impact Study Services  
**Task No. 1A Subtask 01A – Twin Cedars**

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Twin Cedars residential development prepared by The Traffic Group, Inc. dated March 9, 2020. The Traffic Group prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed Twin Cedars residential development, proposed to be located along Delaware Route 20 (Zion Church Road / Sussex Road 382) between Deer Run Road (Sussex Road 388) and Bayard Road (Sussex Road 384) / Johnson Road (Sussex Road 382A) in Sussex County, Delaware. The proposed development would consist of 44 single-family detached houses, 44 townhouses, and 168 apartments. One full-access driveway is proposed on Delaware Route 20. Construction is expected to be complete by 2026.

The subject land is located on an approximately 64.22-acre parcel. The land is currently split zoned as C-1 (General Commercial) and GR (General Residential), and the developer is seeking a residential planned community (RPC) overlay for the GR portion in Sussex County.

Currently, there is one active DelDOT project within the study area. The project involves planned improvements at the intersection of Delaware Route 20 and Bayard Road/Johnson Road. In late 2018 and early 2019, DelDOT's Traffic Studies Section conducted a traffic study and solicited public input to evaluate possible safety improvements at this unsignalized two-way stop-controlled intersection. Through this process, DelDOT determined that a traffic signal is recommended for this intersection. This recommendation and the associated documentation has been sent to DelDOT's Traffic Design Section to start programming the design work. The construction date is to be determined.

Based on our review, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Delaware 20 and Bayard Road / Johnson Road	Unsignalized	2019 Existing summer Saturday (Case 1); 2026 without Twin Cedars summer Saturday (Case 2); 2026 with Twin Cedars summer Saturday (Case 3)

Delaware Route 20 and Bayard Road / Johnson Road

This unsignalized intersection experiences LOS deficiencies in the Saturday midday peak hour for 2019 existing conditions, 2026 conditions without Twin Cedars, and 2026 conditions with Twin Cedars. DelDOT has evaluated various improvement options for this intersection and determined that a traffic signal is recommended; to this end, the developer should make an equitable share contribution toward the installation of a traffic signal, as described below in Item No. 2.

Should the County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should construct the full-movement site access on Delaware Route 20. The proposed configuration is shown in the table below. This proposed site driveway should be constructed directly across from the existing Bayside Mini Storage driveway.

<b>Approach</b>	<b>Existing Configuration</b>	<b>Proposed Configuration</b>
Eastbound Delaware Route 20	One shared left-turn/through lane	One left-turn lane, one through lane, and one right-turn lane
Westbound Delaware Route 20	One shared through/right-turn lane	One left-turn lane and one shared through/right-turn lane
Northbound Site Access	Approach does not exist	One shared left-turn/through lane and one right-turn lane
Southbound Bayside Mini Storage driveway	One shared left/right-turn lane	One shared left/through/right-turn lane



Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT’s Development Coordination Section to determine final turn-lane lengths during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Delaware Route 20	50 feet *	290 feet **
Westbound Delaware Route 20	210 feet **	N/A
Northbound Site Access	N/A	50 feet ***
Southbound Bayside Mini Storage driveway	N/A	N/A

- \* Turn lane is not warranted per DelDOT’s *Auxiliary Lane Worksheet*, but is recommended for safety to shadow the required westbound left-turn lane.
- \*\* Initial turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*.
- \*\*\* Initial turn-lane length based on storage length per queuing analysis, with 50-foot minimum

2. The developer should coordinate with DelDOT regarding an equitable share contribution toward a DelDOT project to install a traffic signal at the intersection of Delaware Route 20 and Bayard Road / Johnson Road. The amount of the contribution should be determined through coordination with DelDOT’s Development Coordination Section. At least one other developer is required to contribute to this improvement as well.
3. The following bicycle and pedestrian improvements should be included:
  - a. Adjacent to the proposed right-turn lane on eastbound Delaware Route 20 at the proposed site entrance, a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel
  - b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
  - c. Utility covers should be made flush with the pavement.
  - d. If clubhouses or other community facilities are constructed as shown on the site plan, bicycle parking should be provided near building entrances. Where building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.
  - e. A minimum 15-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontage along Delaware Route 20.

- f. Within the easement along the Delaware Route 20 site frontage, a minimum of a ten-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed. The shared-use path should meet AASHTO and ADA standards and should have a minimum of a five-foot buffer from the roadway. At the property boundaries, the shared-use path should connect to the adjacent property or to the shoulder in accordance with DelDOT's *Shared-Use Path and/or Sidewalk Termination Reference Guide* dated August 1, 2018. The developer should coordinate with DelDOT's Development Coordination Section to determine the details of the shared-use path connections at the property boundaries.
- g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- h. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. Internal sidewalks in the development should connect to the proposed shared-use path along Delaware Route 20.
- i. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.

Improvements in this TIS may be considered "significant" under DelDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT's website at [http://deldot.gov/Publications/manuals/de\\_mutcd/index.shtml](http://deldot.gov/Publications/manuals/de_mutcd/index.shtml).

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DelDOT's site plan review process.

Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at [ajparker@mccormicktaylor.com](mailto:ajparker@mccormicktaylor.com) if you have any questions concerning this review.

Sincerely,

**McCormick Taylor, Inc.**

A handwritten signature in black ink, appearing to read "Andrew J. Parker".

Andrew J. Parker, PE, PTOE  
Project Manager

Enclosure

## **General Information**

**Report date:** March 9, 2020

**Prepared by:** The Traffic Group, Inc.

**Prepared for:** Bay Developers, LLC

**Tax parcel:** 533-11.00-42.00

**Generally consistent with DelDOT's Development Coordination Manual:** Yes

## **Project Description and Background**

**Description:** The proposed Twin Cedars development consists of 44 single-family detached houses, 44 townhouses, and 168 apartments.

**Location:** The site is located along Delaware Route 20 (Zion Church Road / Sussex Road 382) between Deer Run Road (Sussex Road 388) and Bayard Road (Sussex Road 384) / Johnson Road (Sussex Road 382A) in unincorporated Sussex County. A site location map is included on page 6.

**Amount of land to be developed:** approximately 64.22 acre parcel

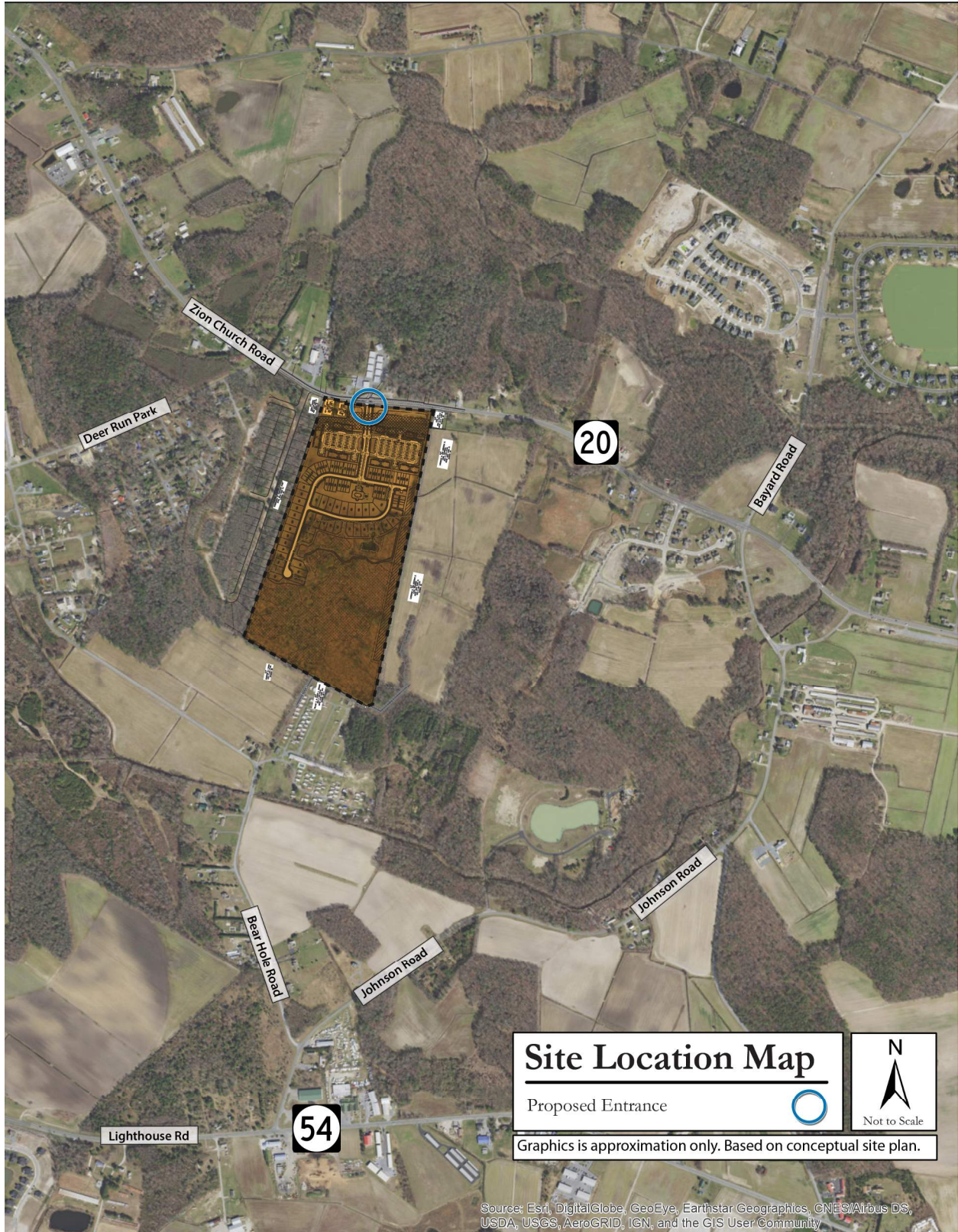
**Land use approval(s) needed:** Subdivision approval. The land is currently split zoned as C-1 (General Commercial) and GR (General Residential), and the developer is seeking a residential planned community (RPC) overlay for the GR portion in Sussex County.

**Proposed completion year:** 2026

**Proposed access locations:** One full-access driveway is proposed on Delaware Route 20.

**Daily Traffic Volumes (per DelDOT Traffic Summary 2019):**

- 2019 Average Annual Daily Traffic on Delaware Route 20: 6,635 vehicles/day



## **2015 Delaware Strategies for State Policies and Spending**

### **Location with respect to the Strategies for State Policies and Spending Map of Delaware:**

The proposed Twin Cedars residential development is located within Investment Level 3.

#### *Investment Level 3*

Investment Level 3 reflects areas where growth is anticipated by local, county, and state plans in the longer-term future. Investment Level 3 areas generally fall into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities, but where development is not necessary to accommodate expected short-term population growth. The second category includes lands that are adjacent to fast-growing Investment Level 1 and 2 areas but are often impacted by environmentally sensitive features, agricultural-preservation issues, or other infrastructure issues. In these instances, development and growth may be appropriate in the near term, but the resources on the site and in the surrounding area should be carefully considered and accommodated by state Agencies and local governments with land-use authority.

Generally, Investment Level 3 areas should not be developed until surrounding Investment Level 1 and 2 areas are substantially built out. From a housing perspective, Investment Level 3 areas are characterized by low density and rural homes. New housing developments in the short term would, in most cases, represent leap-frog development, which is undesirable. Higher density housing in Investment Level 3 areas is more appropriate once Level 2 areas are built out and utilities are available.

### **Proposed Development's Compatibility with Strategies for State Policies and Spending:**

The proposed Twin Cedars residential development includes 44 single-family detached houses, 44 townhouses, and 168 apartments located within an Investment Level 3 area. Investment Level 3 reflects areas where growth is anticipated by the county in the long-term. Given that the location is in a Growth Area as defined by Sussex County and that the anticipated opening date for this development is three years out, the proposed development generally appears to comply with the guidelines of Investment Level 3 areas as described in the 2015 "Strategies for State Policies and Spending."

## **Comprehensive Plan**

### **Sussex County Comprehensive Plan:**

*(Source: Sussex County Comprehensive Plan, March 2019)*

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed development parcel is within a Coastal Area (categorized as a Growth Area).

Growth Areas, including the Coastal Area, are designed to accommodate concentrated levels of development. Sussex County has designated the areas around Rehoboth Bay, Indian River Bay, and Little Assawoman Bay (the inland bays) as Coastal Areas. Coastal Areas generally encompass areas on the south-eastern side of Sussex County within what was previously referred to as the Environmentally Sensitive Developing Areas of prior Comprehensive Plans. The updated name more accurately reflects the function of this land use classification. While the Coastal Area is a

Growth Area, additional considerations should be taken into account in this Area that may not apply in other Growth Areas.

The Coastal Area designation is intended to recognize two characteristics. First, this region is among the most desirable locations in Sussex County for new housing, as is reflected in new construction data and real estate prices. Second, this region contains ecologically important and sensitive characteristics as well as other coastal lands which help to absorb floodwaters and provide extensive habitat for native flora and fauna. This area also has significant impact upon water quality within the adjacent bays and inlets as well as upon natural the region's various habitats. And, these factors are themselves part of the reason that this Area is so desirable-making the protection of them important to both the environment and the economy.

The County has significant initiatives to extend public sewer service to replace inadequate on-site systems. Careful control of stormwater runoff is also an important concern in keeping sediment and other pollutants out of the Inland Bays.

The challenge in this region is to safeguard genuine natural areas and mitigate roadway congestion without stifling the tourism and real estate markets which: a) provide many jobs; b) create business for local entrepreneurs; and c) help keep local tax rates low.

The following guidelines should apply to future growth in Coastal Areas:

*Permitted Uses* – Coastal Areas are areas that can accommodate development provided special environmental concerns are addressed. A range of housing types should be permitted in Coastal Areas, including single-family homes, townhouses, and multi-family units. Retail and office uses are appropriate but larger shopping centers and office parks should be confined to selected locations with access along arterial roads. Appropriate mixed-use development should also be allowed. In doing so, careful mixtures of homes with light commercial, office and institutional uses can be appropriate to provide for convenient services and to allow people to work close to home. Major new industrial uses are not proposed in these areas.

*Densities* – Sussex County's base density of 2 units per acre is appropriate throughout this classification; however, medium and higher density (4-12 units per acre) can be appropriate in certain locations. Medium and higher density could be supported in areas: where there is central water and sewer; near sufficient commercial uses and employment centers; where it is in keeping with the character of the area; where it is along a main road or at/or near a major intersection; where there is adequate Level of Service; or where other considerations exist that are relevant to the requested project and density. A clustering option permitting smaller lots and additional flexibility in dimensional standards is encouraged on tracts of a certain minimum size, provided significant permanent common open space is preserved and the development is connected to central water and sewer service. The preservation of natural resources or open space is strongly encouraged in this land use classification. The County should revisit environmental protection in the Coastal Areas.

Specific regulations governing cluster developments are designated by zoning district. There currently is an option where density can be increased with optional density bonuses for certain

zoning districts. Those optional bonuses may involve payment of fees that fund permanent land preservation elsewhere in the County, or other options. RPC's are encouraged to allow for a mix of housing types and to preserve open space and natural areas/resources. Cluster development that allows for smaller lots and flexibility in dimensional standards is encouraged if the developer uses a cluster option that results in permanent preservation of a substantial percentage of the tract and/or natural areas/resources. Master planning should be encouraged especially for large-scale developments on large parcels or groups of parcels, higher density and mixed-use developments to provide flexibility in site design.

All applicants for developments of a minimum size (as specified in zoning) should continue to be required to provide information that analyzes the development's potential environmental impacts, including effects on stormwater runoff, nitrogen and phosphorous loading, wetlands, woodlands, wastewater treatment, water systems, and other matters that affect the ecological sensitivity of the inland bays.

*Infrastructure* – Central water and sewer facilities are strongly encouraged. If central utilities are not possible, permitted densities should be limited to two units per acre provided a septic permit can be approved.

**Proposed Development's Compatibility with Comprehensive Plan:** The proposed Twin Cedars residential development includes 44 single-family detached houses, 44 townhouses, and 168 apartments on a 64.22-acre parcel (a gross density of just under 4 units per acre). The land is currently split zoned as C-1 (General Commercial) and GR (General Residential), and the developer is seeking a residential planned community (RPC) overlay for the GR portion in Sussex County. The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed development parcel is within the Coastal Area (categorized as a Growth Area). The proposed development appears to comply with the characteristics and *Permitted Uses* for the Coastal Area. However, due to the some small lot sizes and overall density greater than 2 units per acre, along with the potential RPC overlay, this development raises questions regarding consistency with Sussex County regulations; therefore additional discussion may be required.

### **Relevant Projects in the DelDOT Capital Transportation Program**

Currently, there is one active DelDOT project within the study area. The project involves planned improvements at the intersection of Delaware Route 20 and Bayard Road/Johnson Road. In late 2018 and early 2019, DelDOT's Traffic Studies Section conducted a traffic study and solicited public input to evaluate possible safety improvements at this unsignalized two-way stop-controlled intersection. Through this process, DelDOT determined that a traffic signal is recommended for this intersection. This recommendation and the associated documentation has been sent to DelDOT's Traffic Design Section to start programming the design work. The construction date is to be determined.

## **Trip Generation**

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Tenth Edition, published by the Institute of Transportation Engineers (ITE). The following land use was utilized to estimate the amount of new traffic generated for this development:

- 44 Single-Family Detached Homes (ITE Land Use Code 210)
- 44 Multi-Family Housing Units, Low-Rise (ITE Land Use Code 220)
- 168 Multi-Family Housing Units, Mid-Rise (ITE Land Use Code 221)

Table 1  
TWIN CEDARS PEAK HOUR TRIP GENERATION

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
44 Single-Family Detached	9	27	36	29	17	46	30	25	55
44 Multi-Family Housing, Low-Rise	5	17	22	18	10	28	8	6	14
168 Multi-Family Housing, Mid-Rise	15	42	57	45	28	73	38	39	77
<b>TOTAL TRIPS</b>	29	86	115	92	55	147	76	70	146

## **Overview of TIS**

### **Intersections examined:**

- 1) Delaware Route 20 & Site Access
- 2) Delaware Route 20 & Deer Run Road
- 3) Delaware Route 20 & Bayard Road / Johnson Road

### **Conditions examined:**

- 1) 2019 existing (Case 1)
- 2) 2026 without Twin Cedars (Case 2)
- 3) 2026 with Twin Cedars (Case 3)

**Peak hours evaluated:** Weekday morning and evening and Saturday mid-day peak hours

### **Committed developments considered:**

- 1) Orr Property (a.k.a. Miller Creek) (135 single-family detached houses)
- 2) Estuary (284 single-family detached houses)
- 3) Fox Haven I (76 single-family detached houses; 4 unbuilt)
- 4) Fox Haven II (99 single-family detached houses)



## **Intersection Descriptions**

### **1) Delaware Route 20 & Site Access**

**Type of Control:** proposed one-way stop (T-intersection)

**Eastbound Approach:** (Delaware Route 20) existing one through lane; proposed one through lane and one right-turn lane

**Westbound Approach:** (Delaware Route 20) existing one through lane; proposed one left-turn lane and one through lane

**Northbound Approach:** (Site Access) proposed one shared left-turn/right-turn lane, stop control

### **2) Delaware Route 20 & Deer Run Road**

**Type of Control:** unsignalized

**Eastbound Approach:** (Delaware Route 20) one shared through/right-turn lane

**Westbound Approach:** (Delaware Route 20) one left-turn/through lane

**Northbound Approach:** (Deer Run Road) one shared left-turn/right-turn lane, stop control

### **3) Delaware Route 20 & Bayard Road / Johnson Road**

**Type of Control:** existing two-way stop; DelDOT traffic study proposes a traffic signal

**Eastbound Approach:** (Delaware Route 20) one left-turn lane, one through lane, one bicycle lane, and one right-turn lane

**Westbound Approach:** (Delaware Route 20) one shared left-turn/through/right-turn lane

**Northbound Approach:** (Johnson Road) one shared left-turn/through/right-turn lane, stop control

**Southbound Approach:** (Bayard Road) one shared left-turn/through/right-turn lane, stop control

## **Safety Evaluation**

**Crash Data:** Per current DelDOT policy, review of crash data was not conducted at this time.

**Sight Distance:** The proposed site access on Delaware Route 20 is located between two horizontal curves, so sight distance is limited looking in either direction (especially to the left) from the proposed northbound driveway approach. As always adequacy of available sight distance should be confirmed during the site plan review process for all proposed movements at the site accesses.

## **Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** Based on the current DART Bus Stop Map, the Delaware Transit Corporation (DTC) does not currently operate any fixed-route transit bus service in the area of the proposed Twin Cedars residential development.

**Planned transit service:** The TIS provided documentation of correspondence with a DTC representative who stated that no transit amenities are needed at this time. DTC has no plans to provide transit service to the area in the near future.

**Existing bicycle and pedestrian facilities:** The following study area roadways are identified as “Bicycling Routes” on the *Sussex County Bicycle Map* published by DelDOT:

- Delaware Route 20:
  - Regional Bicycle Route with bikeway
  - Over 5,000 vehicles daily
- Bayard Road: Connector bicycle route without bikeway
- Johnson Road: Connector bicycle route without bikeway

There are no existing sidewalks or exclusive pedestrian facilities in the immediate area of the proposed site entrance on Delaware Route 20. There are however new pedestrian facilities and bike lanes at the Delaware Route 20 & Bayard / Johnson Road intersection in the eastbound direction.

**Planned bicycle and pedestrian facilities:** The TIS provided documentation of correspondence with a representative from DelDOT’s Local Systems Planning Section who was contacted to determine requested accommodations for bicycles and pedestrians. It is requested that a 10-foot-wide Multi-Use Pathway would be needed across the frontage.

### **Previous Comments**

In a review letter dated February 5, 2020, DelDOT indicated that the revised Preliminary TIS was acceptable as submitted.

It appears that all substantive comments from DelDOT’s TIS Scoping Memorandum, Traffic Count Review, Preliminary TIS Review, and other correspondence were addressed in the Final TIS submission.

### **General HCS Analysis Comments**

*(see table footnotes on the following pages for specific comments)*

- 1) Both The Traffic Group, Inc. and McCormick Taylor utilized Highway Capacity Software (HCS) version 7.8 to complete the traffic analyses.
- 2) As per HCM methodologies, The Traffic Group and McCormick Taylor applied percent heavy vehicles (HV) by lane at all-way stop control intersections. In general, existing HV were applied to future conditions as well. For new intersections, 3% was assumed as per the DelDOT Development Coordination Manual section 2.2.8.11.6.H.
- 3) For existing conditions, the TIS and McCormick Taylor determined overall intersection peak hour factors (PHF) for each intersection based on the turning movement counts. Future PHFs were determined as per the DelDOT Development Coordination Manual section 2.2.8.11.6.F.

Table 2  
Peak Hour Levels of Service (LOS)  
Based on Twin Cedars Traffic Impact Study – March 2020  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection <sup>1</sup> One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 20 &amp; Site Access</b>						
2026 with Twin Cedars (Case 3)						
Westbound DE 20 – Left	A (7.9)	A (8.3)	A (8.6)	A (7.9)	A (8.3)	A (8.6)
Northbound Site Access	B (12.9)	B (14.1)	C (19.8)	B (12.9)	B (14.1)	C (19.8)

<sup>1</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 3  
Peak Hour Levels of Service (LOS)  
Based on Twin Cedars Traffic Impact Study – March 2020  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection <sup>2</sup> One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 20 &amp; Deer Run Road</b>						
2019 Existing (Case 1)						
Westbound DE 20 – Left	A (7.8)	A (7.9)	A (8.2)	A (7.8)	A (7.9)	A (8.2)
Northbound Deer Run Road	B (10.8)	B (10.8)	B (12.5)	B (10.8)	B (10.8)	B (12.5)
2026 without Twin Cedars (Case 2)						
Westbound DE 20 – Left	A (7.9)	A (8.0)	A (8.3)	A (7.9)	A (8.0)	A (8.3)
Northbound Deer Run Road	B (11.3)	B (11.2)	B (13.0)	B (11.3)	B (11.2)	B (13.0)
2026 with Twin Cedars (Case 3)						
Westbound DE 20 – Left	A (7.9)	A (8.1)	A (8.4)	A (7.9)	A (8.1)	A (8.4)
Northbound Deer Run Road	B (11.6)	B (11.6)	B (13.4)	B (11.6)	B (11.6)	B (13.4)

<sup>2</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 4  
Peak Hour Levels of Service (LOS)  
Based on Twin Cedars Traffic Impact Study – March 2020  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection <sup>3</sup> Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 20 &amp; Bayard Road / Johnson Road</b>						
2019 Existing (Case 1)						
Eastbound DE 20 – Left	A (7.8)	A (8.0)	A (8.6)	A (7.8)	A (8.0)	A (8.6)
Westbound DE 20 – Left	A (7.7)	A (7.8)	A (8.1)	A (7.7)	A (7.8)	A (8.1)
Northbound Johnson Road	B (14.9)	C (16.6)	D (30.3)	B (14.9)	C (16.7)	D (30.6)
Southbound Bayard Road	C (17.1)	C (18.3)	F (70.9)	C (17.6)	C (18.9)	F (82.6)
2026 without Twin Cedars (Case 2)						
Eastbound DE 20 – Left	A (7.9)	A (8.1)	A (8.8)	A (7.9)	A (8.1)	A (8.8)
Westbound DE 20 – Left	A (7.7)	A (7.8)	A (8.2)	A (7.7)	A (7.8)	A (8.2)
Northbound Johnson Road	C (16.4)	C (19.8)	E (47.2)	C (16.5)	C (19.9)	E (49.1)
Southbound Bayard Road	C (21.2)	C (24.1)	F (206.3)	C (22.1)	D (25.4)	F (238.9)
2026 with Twin Cedars (Case 3)						
Eastbound DE 20 – Left	A (8.0)	A (8.2)	A (8.9)	A (8.0)	A (8.2)	A (8.9)
Westbound DE 20 – Left	A (7.8)	A (7.9)	A (8.2)	A (7.8)	A (7.9)	A (8.2)
Northbound Johnson Road	C (18.6)	C (23.5)	F (76.2)	C (18.6)	C (23.6)	F (86.1)
Southbound Bayard Road	D (25.5)	D (29.1)	F (310.7)	D (27.5)	D (31.1)	F (354.3)

<sup>3</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

**SUSSEX COUNTY ENGINEERING DEPARTMENT  
UTILITY PLANNING & DESIGN REVIEW DIVISION  
C/U & C/Z COMMENTS**

RECEIVED

TO: **Jamie Whitehouse**

REVIEWER: **Chris Calio**

DATE: **5/5/2021**

APPLICATION: **CZ 1942 Bay Developers, LLC (Twin Cedars, LLC)**

APPLICANT: **Bay Developers, LLC**

FILE NO: **JCS-5.06**

TAX MAP &  
PARCEL(S): **533-11.00-42.00**

LOCATION: **Located on the south side of Zion Church Road (Rt. 20),  
approximately 0.55 mile northwest of Bayard Rd. (SCR 384)**

NO. OF UNITS: **254 total**

GROSS  
ACREAGE: **64.22**

SYSTEM DESIGN ASSUMPTION, MAXIMUM NO. OF UNITS/ACRE: **4**

MAY 06 2021

SUSSEX COUNTY  
PLANNING & ZONING

**SEWER:**

- (1). Is the project in a County operated and maintained sanitary sewer and/or water district?  
Yes  No 
  - a. If yes, see question (2).
  - b. If no, see question (7).
- (2). Which County Tier Area is project in? **Tier 1**
- (3). Is wastewater capacity available for the project? **Yes** If not, what capacity is available? **N/A.**
- (4). Is a Construction Agreement required? **Yes** If yes, contact Utility Engineering at (302) 855-7717.
- (5). Are there any System Connection Charge (SCC) credits for the project? **No** If yes, how many? **N/A.** Is it likely that additional SCCs will be required? **Yes** If yes, the current System Connection Charge Rate is **Unified \$6,360.00** per EDU. Please contact **Noell Warren** at **302-855-7719** for additional information on charges.

(6). Is the project capable of being annexed into a Sussex County sanitary sewer district? **N/A**

Attached is a copy of the Policy for Extending District Boundaries in a Sussex County Water and/or Sanitary Sewer District.

(7). Is project adjacent to the Unified Sewer District? **N/A**

(8). Comments: **Click or tap here to enter text.**

(9). Is a Sewer System Concept Evaluation required? **Already Completed, See Attached**

(10). Is a Use of Existing Infrastructure Agreement Required? **Yes**

UTILITY PLANNING APPROVAL:



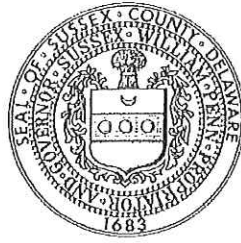
---

John J. Ashman  
Director of Utility Planning

Xc: Hans M. Medlarz, P.E.  
Lisa Walls  
Noell Warren

## ENGINEERING DEPARTMENT

ADMINISTRATION (302) 855-7718  
AIRPORT & INDUSTRIAL PARK (302) 855-7774  
ENVIRONMENTAL SERVICES (302) 855-7730  
PUBLIC WORKS (302) 855-7703  
RECORDS MANAGEMENT (302) 854-5033  
UTILITY ENGINEERING (302) 855-7717  
UTILITY PERMITS (302) 855-7719  
UTILITY PLANNING (302) 855-1299  
FAX (302) 855-7799



# Sussex County

DELAWARE  
sussexcountyde.gov

HANS M. MEDLARZ, P.E.  
COUNTY ENGINEER

JOHN J. ASHMAN  
DIRECTOR OF UTILITY PLANNING

## SEWER SERVICE CONCEPT EVALUATION (SSCE) UTILITY PLANNING DIVISION

Applicant: Morris & Ritchie Associates, Inc.

Date: 9/23/2019

Reviewed by: Chris Calio

Agreement #: 943-1

Project Name: Twin Cedars

Tax Map & Parcel(s): 533-11.00-42.00

Sewer Tier: Tier 1 - Sussex County Unified Sanitary Sewer District

Proposed EDUs: 258

Pump Station(s) Impacted: PS 305 & PS 30

List of parcels to be served, created from the base parcel: N/A.

List of additional parcels to be served (Parcels required for continuity must be served with infrastructure): 533-11.00-44.00

Connection Point(s): Manhole JC-111 or JC-110

Use of Existing Infrastructure Agreement required? Yes  or No

Annexation Required? Yes  or No

Easements Required? Yes  or No

Fee for annexation (based on acreage): N/A

Current Zoning: C-1 & GR Zoning Proposed: C-1 & GR w/ RPC overlay

Acreage: 64.22





Additional Information: Click or tap here to enter text.

\* No capacity is guaranteed until System Connection Fees are paid

All gravity sewers with three (3) or more minor branches shall be designed at minimum slope and maximum depth.

Once Construction Drawings are completed with all of the above information satisfied, please submit to:

Sussex County Public Works Department  
2 The Circle  
P.O. Box 589  
Georgetown DE 19947

CC: John Ashman  
Jayne Dickerson  
Michael Brady  
Noell Warren

## Nick Torrance

---

**From:** Karen Simpson <kslsimpson@gmail.com>  
**Sent:** Thursday, May 6, 2021 10:05 AM  
**To:** Planning and Zoning  
**Subject:** Fwd: Case #C/Z1909 Bay Developers, LLC (Twin Cedars, LLC)

**Categories:** Nick

**CAUTION:** This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe. Contact the IT Helpdesk if you need assistance.

Members of Sussex County Planning and Zoning & Council,

In Reference to Case #C/Z 1909 Bay Developers, LLC (Twin Cedars, LLC):

We request the developer/property owner notify any potential lot buyers at the time of sale, that the adjoining property, in part, is a campground. In addition, hunting and/or target shooting may take place in the off-season.

Thank you,

William D. and Karen L. Simpson  
37421 Bearhole Road  
Selbyville, DE 19975  
302-242-8912

# TWIN CEDARS

## SUSSEX COUNTY, DELAWARE

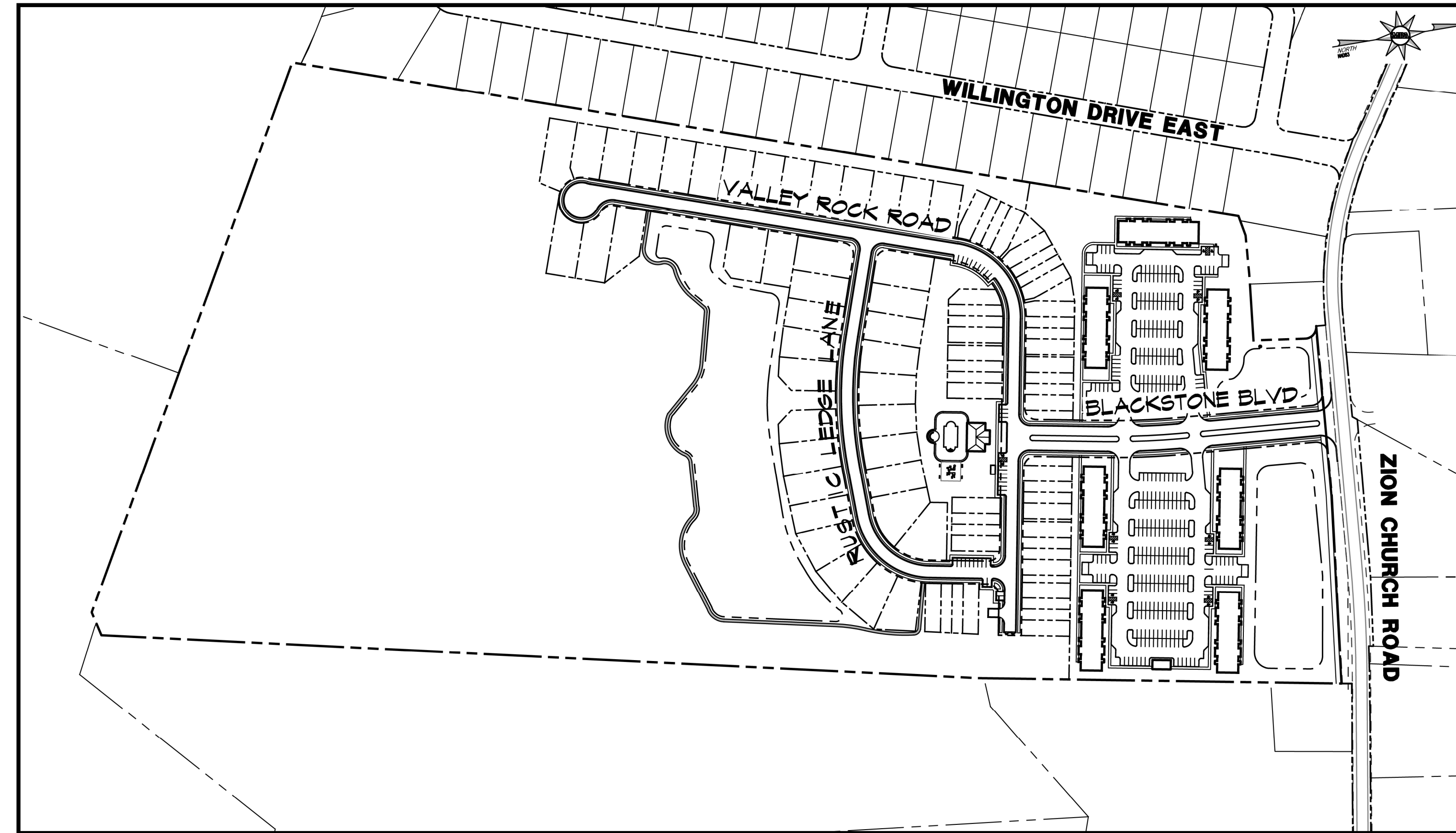
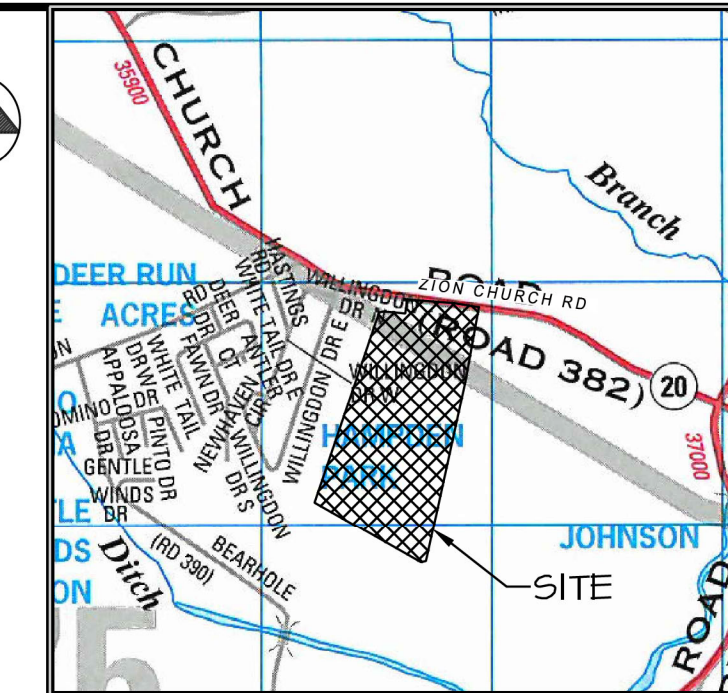
### PRELIMINARY PLANS

### SUSSEX COUNTY PLANNING # XXXX

### GR - RPC

**LEGEND**

	EXISTING PROPERTY LINE
	PROPOSED RM LINE
	PROPOSED LOT LINE
	PROPOSED BUILDING SETBACK LINE
	EXISTING CONTOURS
	PROPOSED CONTOURS
	PROPOSED LOT NUMBER
	EXISTING HOODLANDS LINE
	HOODLAND PRESERVATION LINE



**SITE OVERVIEW**  
SCALE: 1" = 200'

**PROJECT TEAM**

**DEVELOPER:** BAY DEVELOPERS, LLC  
220 WESTON DRIVE  
DOVER, DE 19904  
ATTN: MR. HENRY MAST

**LAND PLANNERS, CIVIL ENGINEER:** MORRIS & RITCHE ASSOCIATES, INC.  
18 BOULDEN CIRCLE, SUITE 36  
NEW CASTLE, DE 19720  
ATTN: MR. PHILLIP L. TOLLIVER, P.E.

**SURVEYOR:** MORRIS & RITCHE ASSOCIATES, INC.  
8 WEST MARKET STREET  
GEORGETOWN, DE 19341  
ATTN: MR. GARY POWERS

**ENVIRONMENTAL CONSULTANT:** GEO-TECHNOLOGY ASSOCIATES, INC.  
3445 BOX HILL CORPORATE CENTER DRIVE, SUITE A  
ASBINGDON, MD 21009  
ATTN: MR. ANDY STANSFIELD

**GEOTECHNICAL ENGINEER:** GEO-TECHNOLOGY ASSOCIATES, INC.  
2133 STERLING AVENUE, SUITE 7  
GEORGETOWN, DE 19341

**TRAFFIC CONSULTANT:** THE TRAFFIC GROUP  
9400 FRANKLIN SQUARE DR. - SUITE H  
BALTIMORE, MD 21236  
ATTN: MR. JOE CALOGGERO, P.E.

**ATTORNEY:** MORRIS JAMES WILSON HALBROOK & BAYARD LLP  
107 W. MARKET STREET  
P.O. BOX 640  
GEORGETOWN, DE 19341  
ATTN: MR. DAVID C. HUTT

**INDEX OF DRAWINGS**

- 1 - PRELIMINARY TITLE SHEET
- 2 - PRELIMINARY GENERAL NOTES & DETAILS
- 3 - MASTER C-1/GR-RPC PLAN
- 4 - OVERALL PRELIMINARY PLAN
- 5 - PRELIMINARY PLAN
- 6 - PRELIMINARY PLAN
- 7 - PRELIMINARY PLAN
- 8 - PRELIMINARY PLAN

**DEVELOPER'S CERTIFICATION**

I, UNDERSIGNED, AS DEVELOPER OF THE PROPERTY SHOWN, HEREBY APPROVE THESE PLANS FOR DEVELOPMENT AS SHOWN OR OTHERWISE NOTED.

BAY DEVELOPERS, LLC DATE  
220 WESTON DRIVE  
DOVER, DE 19904

**OWNER'S CERTIFICATION**

I, UNDERSIGNED, AS OWNER OF THE PROPERTY SHOWN, HEREBY APPROVE THESE PLANS FOR DEVELOPMENT AS SHOWN OR OTHERWISE NOTED.

BAY DEVELOPERS, LLC DATE  
220 WESTON DRIVE  
DOVER, DE 19904

**WETLANDS STATEMENT**

GEO-TECHNOLOGY ASSOCIATES, INC. (GTA) HAS CONDUCTED A FIELD REVIEW WITHIN THE BOUNDARIES OF THIS PLAN TO EVALUATE THE PRESENCE OR ABSENCE OF POTENTIAL STATE AND FEDERAL JURISDICTIONAL WETLANDS FOR THE PURPOSES OF DELAWARE WETLAND AND SUBAQUEOUS LAND REGULATIONS AND SECTION 404 OF THE CLEAN WATER ACT. GTA'S REVIEW WAS CONDUCTED IN GENERAL ACCORDANCE WITH THE TECHNIQUES AND CRITERIA PROVIDED IN THE 1981 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, ATLANTIC AND GULF COASTAL PLAN REGION (VERSION 2.0), DATED NOVEMBER 2010. THE LIMITS OF THE WETLANDS WERE EVALUATED IN THE FIELD BY GTA PERSONNEL USING BEST PROFESSIONAL JUDGEMENT. NO WETLANDS OR WATERWAYS WERE OBSERVED WITHIN THE BOUNDARIES OF THIS PLAN. NO STATE OR FEDERAL JURISDICTIONAL APPROVAL WAS OBTAINED FOR THIS PROPERTY.

ANDY STANSFIELD DATE  
GEO-TECHNOLOGY ASSOCIATES, INC.

**ENGINEER'S CERTIFICATION**

I, THE UNDERSIGNED, HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF DELAWARE AND THAT THE PLAN SHOWN AND DESCRIBED HEREON, IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY ACCEPTED STANDARDS AND PRACTICES AND BY THE SUSSEX COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS TO THE EXTENT THAT IT DESCRIBES THE PROPOSED MANNER AND LAYOUT OF THE SUBDIVISION.

PHILLIP L. TOLLIVER, P.E. DATE  
DE LICENSE NO. #12484

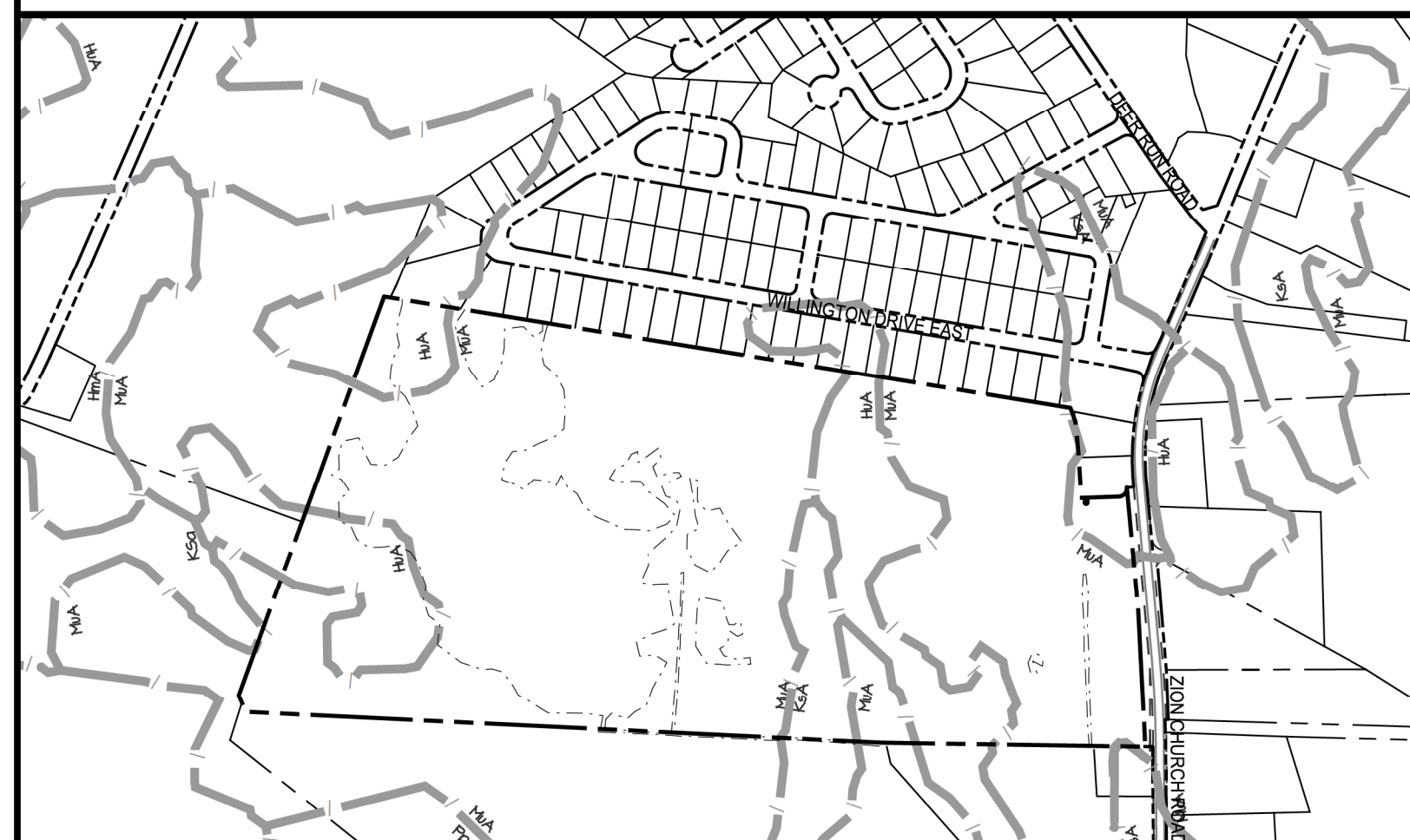
**PLAN APPROVALS**

SUSSEX COUNTY ENGINEERING DEPARTMENT  
2 THE CIRCLE  
GEORGETOWN, DE 19341

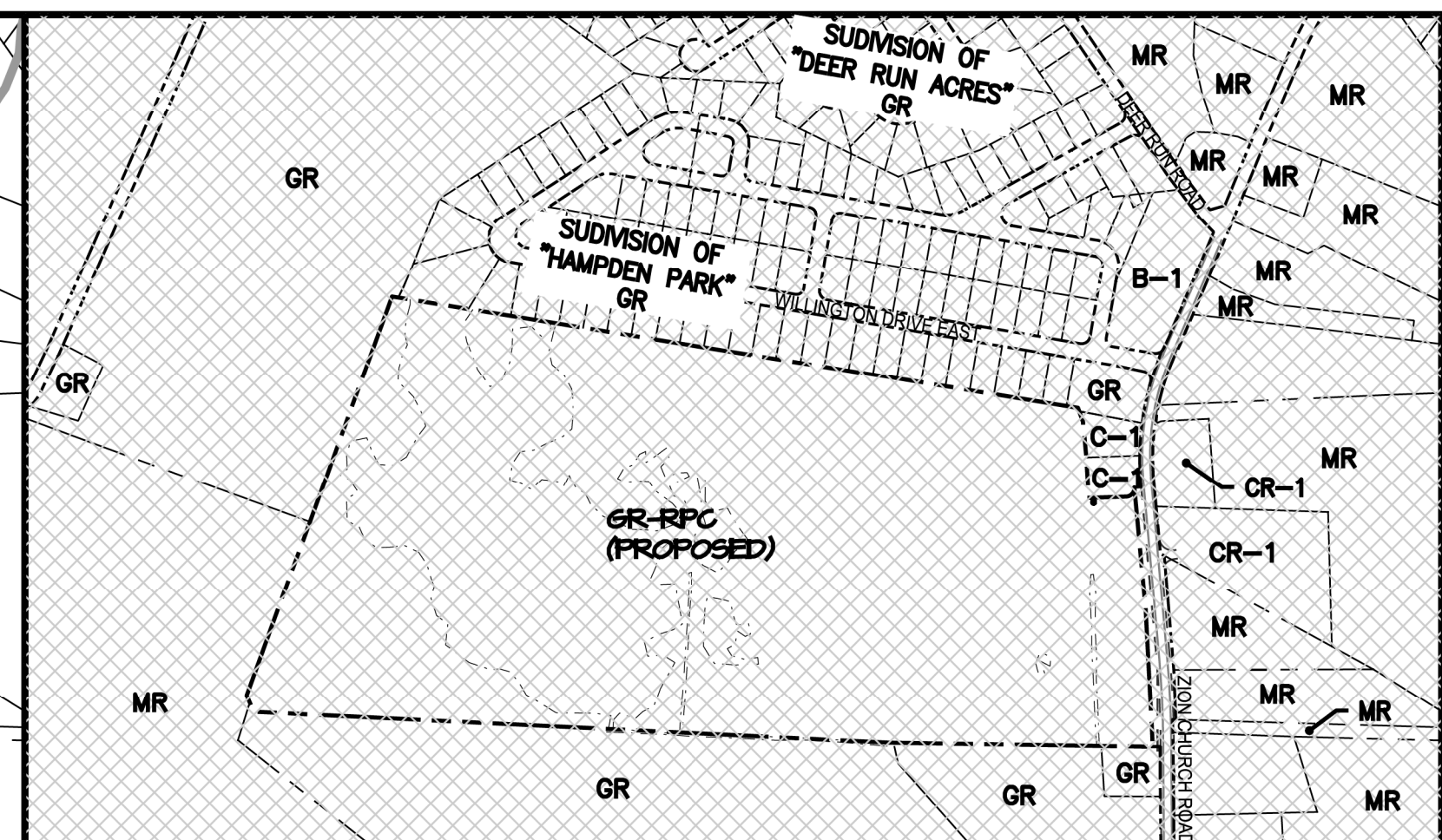
APPROVED DATE

APPROVED BY: CHAIRMAN OR SECRETARY DATE  
SUSSEX COUNTY PLANNING  
AND ZONING COMMISSION

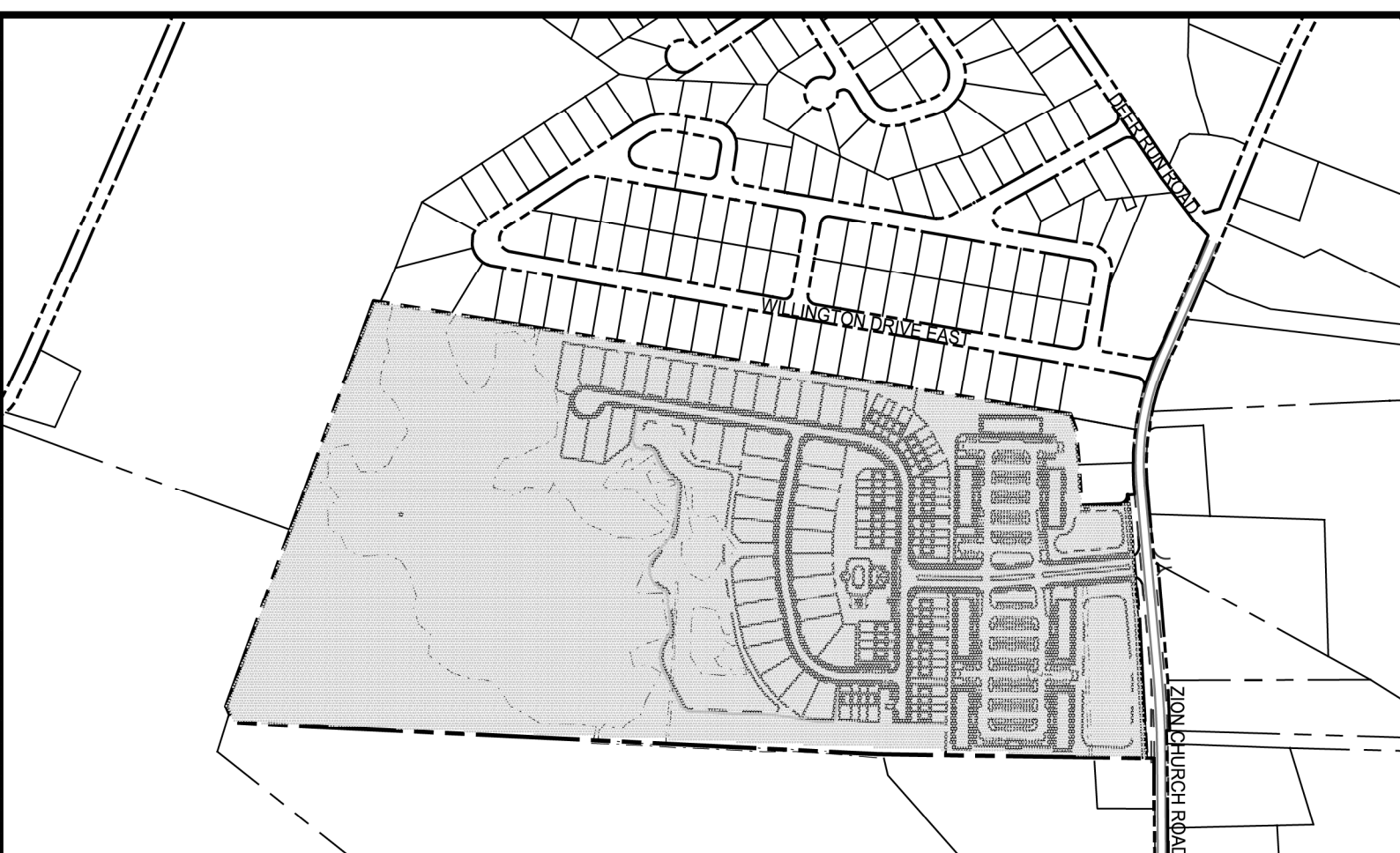
APPROVED BY: PRESIDENT DATE  
SUSSEX COUNTY PLANNING



**SOILS MAP**  
SCALE: 1" = 500'



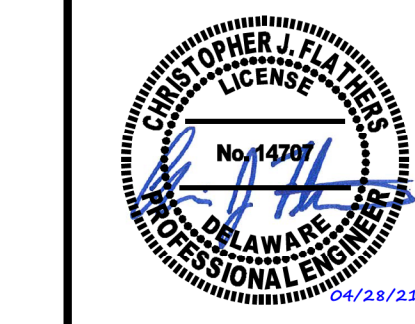
**ZONING MAP**  
SCALE: 1" = 500'



**PHASING MAP**  
SCALE: 1" = 500'



**MORRIS & RITCHE ASSOCIATES, INC.**  
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
18 BOULDEN CIRCLE, SUITE 36  
NEW CASTLE, DELAWARE 19720  
(302) 326-2200  
FAX: (302) 326-2399  
WWW.MRAGTA.COM  
© 2021 MORRIS & RITCHE ASSOCIATES, INC.



**TITLE SHEET**  
**PRELIMINARY PLAN**  
FOR  
**TWIN CEDARS**

DATE	REVISIONS	JOB NO.:
03/11/21	EX. PARCEL ZONING / PROP. GR-RPC	20426
04/27/21	UPDATED WETLANDS INFORMATION	SCALE: AS NOTED
		DATE: 10/21/2019
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 1 OF 8

G:\2026 - Twin Cedars\PLANNING\PRELIMINARY\PLAT\20426\_PRELIM\_TITL SHEET.dwg, 4/28/2021 10:48:13 AM, Copyright 2021 Morris & Ritchie Associates, Inc.

**CONSTRUCTION NOTES**

- CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT (1-800-282-8555 ) AT LEAST (3) WORKING DAYS PRIOR TO EXCAVATION, TO HAVE EXISTING UNDERGROUND UTILITIES LOCATED AND MARKED.
- ALL MATERIALS & WORKMANSHIP SHALL MEET THE STATE OF DELAWARE STANDARDS & SPECIFICATIONS.
- ALL MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND PROJECT SPECIFICATIONS.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING TWO WEEKS PRIOR TO THE START OF CONSTRUCTION AND SHALL APPRISE AND COORDINATE DURING ALL PHASES OF CONSTRUCTION:
  - A. BAY DEVELOPERS, LLC 302-736-0424
  - B. SUSSEX COUNTY ENGINEERING DEPARTMENT 302-855-7718
  - C. ARTESIAN WATER COMPANY 302-453-6471
  - D. SUSSEX CONSERVATION DISTRICT 302-856-2105
  - E. DELMARVA POWER 604-759-4700
  - F. VERIZON 302-422-1464
  - G. DELAWARE ELECTRIC COOP CO. 302-344-5091
  - H. DNREC 302-856-5488
- CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL RIGHT-OF-WAY LINES AND PROPERTY LINES TO HIS OWN SATISFACTION. ALL PROPOSED UTILITIES ARE TO BE CONSTRUCTED WITHIN THE ROADWAY OR EASEMENT RIGHT-OF-WAY. DISTURBED AREAS BEYOND THE EASEMENT LINES SHALL BE RESTORED IMMEDIATELY TO THEIR ORIGINAL CONDITION.
- INFORMATION SHOWN HEREON IS BASED UPON GIS DATA OBTAINED THROUGH THE STATE OF DELAWARE GIS WEBSITE (FIRSTMAP-DELAWARE.OPERDATA.ARCGIS.COM) AND DOES NOT REPRESENT FIELD RUN TOPOGRAPHIC OR BOUNDARY SURVEY. SITE LAYOUT IS SUBJECT TO REVISION FIELDING FIELD SURVEY.
- EXISTING UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE BASED UPON THE BEST AVAILABLE INFORMATION AND ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. NO GUARANTEE IS MADE OR IMPLIED REGARDING THE ACCURACY OR COMPLETENESS THEREOF. CONTRACTOR IS RESPONSIBLE FOR THE VERIFICATION OF DEPTH, SIZE AND MATERIAL OF ALL UNDERGROUND UTILITIES TO HIS OWN SATISFACTION BEFORE BEGINNING ANY EXCAVATION OR UTILITY INSTALLATION. THE OWNER AND ENGINEER DISCLAIM ANY RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF SAID INFORMATION. IF THE CONTRACTOR RELIES ON SAID INFORMATION, HE DOES SO AT HIS OWN RISK. THE GIVING OF THIS INFORMATION ON THE PLANS WILL NOT RELIEVE THE CONTRACTOR OF HIS OBLIGATIONS TO SUPPORT AND PROTECT ALL SHOWN OR NOT SHOWN EXISTING UTILITIES AND APPURTENANCES. SHOULD ANY EXISTING UTILITIES BE DAMAGED BY THE CONTRACTOR, THE CONTRACTOR SHALL REPAIR THE DAMAGE CAUSED TO THE UTILITY OWNER'S SATISFACTION, AT THE CONTRACTOR'S EXPENSE.
- DRAWINGS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE PERFORMED IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AS AMENDED AND ALL RULES AND REGULATIONS THERETO APPURTENANT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF TRAFFIC IN ALL WORK AREAS.
- ROUGH GRADING SHALL BE COMPLETE PRIOR TO THE CONSTRUCTION OF WATER & SEWER SYSTEMS.
- USE ONLY SUITABLE AND APPROVED GRANULAR MATERIAL IN ACCORDANCE WITH SECTION 204 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS AND REFERENCED BY SUSSEX COUNTY ORDINANCE 30 SECTION 5-05 EXCAVATION AND BACKFILL FOR PIPE TRENCHES SUBSECTION B MATERIALS
- CONTRACTOR SHALL ADJUST TO FINISH GRADE AS NECESSARY ANY VALVE BOXES, MANHOLES, CATCH BASINS ETC., PRIOR TO PLACING PAVING.
- CONTRACTOR SHALL PROVIDE STAKEOUT NECESSARY FOR THE INSTALLATION OF UTILITIES, STORMDRAINS, PAVING AND ALL OTHER SITE WORK INCLUDED IN THESE PLANS. ALL STAKEOUT WORK IS TO BE PERFORMED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF DELAWARE.
- CONTRACTOR TO MAINTAIN MINIMUM OF 3.0 FEET OF COVER OVER ALL NEW WATER LINES AS MEASURED FROM TOP OF PIPE TO FINISHED GRADE, UNLESS OTHERWISE NOTED.
- SEWER LINES SHALL HAVE MINIMUM VERTICAL CLEARANCE OF 10 INCHES FROM WATER MAINS AT CROSSINGS. MINIMUM HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAINS. SEWER LINES SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 12 INCHES FROM OTHER UTILITIES. IF THESE CLEARANCES CANNOT BE MAINTAINED, THEN PROVISIONS FOR PROPERLY ENCASE THE PIPE IN CONCRETE MUST BE PROVIDED.
- LATERALS SHALL BE 6 INCHES IN DIAMETER, WITH VERTICAL CLEANOUTS OF 6 INCHES IN DIAMETER, AND TO HAVE A MINIMUM OF 3" OF COVER FROM SUSSEX COUNTY CLEANOUT TO MAIN LINE.
- ALL GRAVITY SEWER PIPES SHALL BE PVC SDR 35, FOR PIPE SLOPES SEE FINAL CONSTRUCTION DRAWINGS FOR SANITARY SEWER PROFILES.
- MATERIAL OF CONSTRUCTION FOR SEWER FORCE MAINS SHALL BE AS NOTED ON THE FINAL CONSTRUCTION DRAWINGS, FORCE MAIN SHALL BE INSTALLED AS PROFILED TO PREVENT FORMATION OF UNANTICIPATED HIGH POINTS IN THE INSTALLATION.
- ALL SEWER LINES MUST BE SUCCESSFULLY TESTED ACCORDING TO SUSSEX COUNTY ORDINANCE 38, SECTION 507, E, 1-4, ON PAGE 518 THROUGH 519, ACCEPTANCE TESTING, PRIOR TO FINAL ACCEPTANCE.
- ALL SANITARY SEWER SYSTEM CONSTRUCTION PERFORMED SHALL BE IN ACCORDANCE WITH SUSSEX COUNTY ORDINANCE 38, THESE PLANS AND ALL APPLICABLE CONSTRUCTION PERMITS.
- ALL DROP MANHOLES TO BE 5'-0" IN DIAMETER.
- FITTINGS SHOWN ON THE PLANS ILLUSTRATE ANTICIPATED ANGLE OF DEFLECTION. THIS INFORMATION IS SHOWN FOR GENERAL INFORMATION AND IS NOT GUARANTEED, ACTUAL ANGLE MAY VARY DUE TO FIELD CONDITIONS. USE OF ADDITIONAL FITTINGS SHALL BE AUTHORIZED BY THE ENGINEER.
- THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY DEVIATION FROM THESE PLANS UNLESS WRITTEN APPROVAL HAS BEEN PROVIDED BY THE ENGINEER.
- ALL DISTURBED AREAS IN THE STATED RIGHT OF WAY, BUT NOT IN THE PAVEMENT SECTION MUST BE TOPSOILED (6" MINIMUM), FERTILIZED, MULCHED, AND SEEDED.
- ALL PAVEMENT MARKINGS AND SIGNAGE SHALL BE PLACED IN ACCORDANCE WITH THE MUTCD, MANUAL, MOST CURRENT EDITION.
- ALL PROPOSED STORM DRAIN DESIGNATED AS "RCCP" IS TO BE REINFORCED CONCRETE CIRCULAR PIPE, MEETING AASHTO M-110 SPECIFICATIONS. SEE FINAL CONSTRUCTION PLAN PROFILES FOR SPECIFIC PIPE CLASS.
- ALL LENGTHS OF SANITARY SEWER PIPE ARE MEASURED HORIZONTALLY FROM CENTER LINES OF INLETS, MANHOLES OR FITTINGS. ALL LENGTHS OF STORM DRAIN PIPE ARE MEASURED HORIZONTALLY FROM EDGE OF STRUCTURE TO EDGE OF STRUCTURE. ACTUAL TRUE LENGTHS OF PIPES ARE TO BE DETERMINED IN THE FIELD.
- WHERE SPECIFIED, HDPE STORM DRAIN PIPE SHALL BE ADS N-12 (SMOOTH INTERIOR) PIPE WITH ADS PRO-LINK KIT (BELL/BELL COUPLER) FOR WATER TIGHT CONNECTIONS. REFER TO PLAN AND PROFILES FOR MATERIALS USED.
- ALL EMBEDMENT MATERIALS USED FOR BEDDING, HAUNCHING, AND INITIAL BACKFILL FOR HDPE PIPE SHALL CONFIRM TO AASHTO SECTION 30 AND ASTM D-2321 AS PER MANUFACTURER INSTALLATION REQUIREMENTS. CONTRACTOR SHALL ENSURE THAT PROPER LINE AND GRADE IS ESTABLISHED WITHIN TRENCH BEDDING PRIOR TO PLACEMENT OF PIPE AND THAT PROPER MATERIALS ARE USED AND COMPACTION IS ACHIEVED DURING HAUNCHING AND INITIAL BACKFILL. A GEOTECHNICAL ENGINEER SHALL BE RETAINED TO VERIFY SUITABILITY OF MATERIALS USED AND PROPER COMPACTION. ANY DEVIATION IN LINE AND GRADE OR OBVIOUS JOINT SEPARATION SHALL BE CORRECTED PRIOR TO ESTABLISHMENT OF FINAL SUBGRADE AND PAVEMENT SURFACE. THE CONTRACTOR SHALL TAKE EVERY CARE TO ENSURE CORRECT PIPE INSTALLATION.
- UNLESS OTHERWISE SPECIFIED ALL ROADWAY INLETS SHALL HAVE A TYPE I INLET GRATE AND TYPE 5 TOP UNIT PER DELDOT STANDARDS, CURRENT REVISION.
- IT IS THE CONTRACTORS RESPONSIBILITY TO INSURE THAT PAVING IS INSTALLED TO THE ELEVATIONS SHOWN AND THAT NO PONDING OF WATER EXISTS AFTER PAVING IS COMPLETE.

**SUSSEX COUNTY CONSTRUCTION NOTES:**

- ROADWAY STAKEOUTS:
  - A. RIGHT-OF-WAY STAKES SHALL BE OFFSET A MINIMUM OF FIVE (5) FEET OUTSIDE THE RIGHT-OF-WAY.
  - B. STATION NUMBERS TO BE INDICATED ON EACH SIDE OF THE STAKE.
  - C. THE CENTERLINE ROADWAY CUT AND CUT-LINE SHALL BE LOCATED ON THE SIDE OF THE STAKE WHICH FACES THE CENTERLINE, ALSO A "CL" DESIGNATION SHALL BE INCLUDED.
  - D. THE SHALE CUT AND CUT-LINE SHALL BE INDICATED ON THE OUTSIDE OF THE STAKE, WHILE ALSO CONTAINING A "SM" DESIGNATION.
- THE CONTRACTOR SHALL PROVIDE TWO (2) WORKING DAYS NOTICE TO THE COUNTY INSPECTOR PRIOR TO PAVING. AT THIS TIME THE INSPECTOR MAY REQUIRE THE CONTRACTOR COMPLETE RELATED OR UNRELATED WORK ITEMS BEFORE PAVING MAY BEGIN.
- SURFACE TREATMENT SHALL NOT BE APPLIED. (SURFACE TREATMENT NOT USED)
  - A. AFTER NOVEMBER 1 OR PRIOR TO APRIL 1, OR
  - B. WHEN THE TEMPERATURE IS BELOW 50° F, OR
  - C. ON ANY WET OR FROZEN SURFACE.
- HOT MIX SHALL NOT BE APPLIED.
  - A. WHEN THE TEMPERATURE IS BELOW 40° F, OR
  - B. ON ANY WET OR FROZEN SURFACE.
- FOR ALL WOODED AREAS, A SUFFICIENT AREA BEYOND THE RIGHT-OF-WAY SHALL BE CLEARED AND GRUBBED TO ALLOW PROPER GRADING OF THE ROADWAY SHALE BACKSLOPES.
- ALL DISTURBED AREAS MUST BE STABILIZED WITH 4 INCHES OF TOPSOIL, SEED, AND MULCH.
  - A. WHEN THE TEMPERATURE IS BELOW 40° F, OR
  - B. ON ANY WET OR FROZEN SURFACE.

**DELDOT RECORD PLAN NOTES:**

- NO LANDSCAPING SHALL BE ALLOWED WITHIN DELDOT MAINTAINED R/W UNLESS THE PLANS ARE COMPLIANT WITH SECTION 3.7 OF THE DEVELOPMENT COORDINATION MANUAL (DCM).
- ALL ENTRANCES SHALL CONFORM TO THE DELAWARE DEPARTMENT OF TRANSPORTATION'S (DELDOT'S) CURRENT DEVELOPMENT COORDINATION MANUAL (DCM) AND SHALL BE SUBJECT TO ITS APPROVAL.
- SHRUBBERY, PLANTINGS, SIGNS AND/OR OTHER VISUAL BARRIERS THAT COULD OBSTRUCT THE SIGHT DISTANCE OF A DRIVER PREPARING TO ENTER THE ROADWAY ARE PROHIBITED WITHIN THE DEFINED DEPARTURE SIGHT TRIANGLE AREA ESTABLISHED ON THIS PLAN. IF THE ESTABLISHED DEPARTURE SIGHT TRIANGLE AREA IS OUTSIDE THE RIGHT-OF-WAY OR PROJECTS ONTO AN ADJACENT PROPERTY OWNER'S LAND, A SIGHT EASEMENT SHOULD BE ESTABLISHED AND RECORDED WITH ALL AFFECTED PROPERTY OWNERS TO MAINTAIN THE REQUIRED SIGHT DISTANCE.
- UPON COMPLETION OF THE CONSTRUCTION OF THE SIDEWALK OR SHARED-USE PATH ACROSS THIS PROJECT'S FRONTAGE AND PHYSICAL CONNECTION TO ADJACENT EXISTING FACILITIES, THE DEVELOPER, THE PROPERTY OWNERS OR BOTH ASSOCIATED WITH THIS PROJECT SHALL BE RESPONSIBLE TO REMOVE ANY EXISTING ROAD TIE-IN CONNECTIONS LOCATED ALONG ADJACENT PROPERTIES, AND RESTORE THE AREA TO GRASS. SUCH ACTIONS SHALL BE COMPLETED AT DELDOT'S DISCRETION, AND IN CONFORMANCE WITH DELDOT'S SHARED-USE PATH AND/OR SIDEWALK TERMINATION POLICY.
- SUBDIVISION STREETS CONSTRUCTED WITHIN THE LIMITS OF THE RIGHT-OF-WAY ARE PRIVATE AS SHOWN ON THIS PLAN AND ARE TO BE MAINTAINED BY THE DEVELOPER, HOMEOWNERS ASSOCIATION, OR BOTH. THE STATE OF DELAWARE ASSUMES NO MAINTENANCE RESPONSIBILITIES FOR THE FUTURE MAINTENANCE OF THESE STREETS.
- THE SIDEWALK AND SHARED-USE PATH SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, THE PROPERTY OWNERS OR BOTH WITHIN THIS SUBDIVISION. THE STATE OF DELAWARE ASSUMES NO RESPONSIBILITY FOR THE FUTURE MAINTENANCE OF THE SIDEWALK AND/OR SHARED-USE PATH.
- ALL LOTS SHALL HAVE ACCESS ONLY FROM THE INTERNAL SUBDIVISION STREETS.
- DRIVEWAYS WILL NOT BE PERMITTED TO BE PLACED AT CATCH BASIN LOCATIONS.
- THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MONUMENTS IN ACCORDANCE WITH DELDOT'S DEVELOPMENT COORDINATION MANUAL.
- THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MARKERS TO PROVIDE A PERMANENT REFERENCE FOR RE-ESTABLISHING THE RIGHT-OF-WAY AND PROPERTY CORNERS ON LOCAL AND HIGHER ORDER FRONTAGE ROADS, RIGHT-OF-WAY MARKERS SHALL BE SET AND/OR PLACED ALONG THE FRONTAGE ROAD RIGHT-OF-WAY AT PROPERTY CORNERS AND AT EACH CHANGE IN RIGHT-OF-WAY ALIGNMENT IN ACCORDANCE WITH SECTION 3.2.4.2 OF THE DEVELOPMENT COORDINATION MANUAL.

**PROJECT PHASING**

PHASE I - 4 YEARS  
 TOTAL PROJECT BUILDOUT - 4 YEARS  
 ESTIMATED PROJECT COMPLETION DATE - DECEMBER 2024

THE PROJECT IS BE APPROVED AS A SINGLE PHASE PROJECT, WITH THREE (3) OPERATIONAL BREAKS FOR PURPOSES OF BONDING, BENEFICIAL OCCUPANCY INSPECTION, RELEASE OF USE AND OCCUPANCY PERMITS.

**GENERAL NOTES:**

- SUBDIVISION STREETS ARE TO REMAIN PRIVATE AND ARE TO BE CONSTRUCTED IN ACCORDANCE WITH SUSSEX COUNTY REGULATIONS.
- MAINTENANCE OF THE STREET WITHIN THIS SUBDIVISION WILL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER AND/OR HOME OWNER'S ASSOCIATION. THE STATE AND SUSSEX COUNTY ASSUMES NO RESPONSIBILITY FOR FUTURE MAINTENANCE OF THE STREETS.
- ACCESS TO ALL LOTS IS TO BE FROM SUBDIVISION STREETS OR DRIVE ACCESS LOOPS.
- MAINTENANCE OF THE STORM WATER MANAGEMENT AREAS WILL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER AND/OR HOMEOWNER'S ASSOCIATION.
- THE PROPOSED ENTRANCES/EXITS ARE CONCEPTUAL ONLY AND ARE SUBJECT TO REVIEW AND APPROVAL BY THE DELAWARE DEPARTMENT OF TRANSPORTATION BEFORE A CONSTRUCTION PERMIT IS ISSUED.

**SITE DATA**

- PROJECT TITLE/NAME: TWIN CEDARS  
 I. TAX PARCEL: 533-11.00-42.00
- OWNER INFORMATION: TWIN CEDARS, LLC (ATTN: MR. JAMES T. GORDON)  
 542 YORK LANE  
 BETHESDA, MD 20814
- DEVELOPER: BAY DEVELOPERS, LLC  
 200 WESTON DRIVE  
 DOVER, DE 19904
- ZONING: EXISTING: C-1, CR-1, AND GR  
 PROPOSED: GR WITH RPC OVERLAY
- DEVELOPMENT TYPE: RESIDENTIAL PLANNED COMMUNITY (RPC)  
 SINGLE FAMILY DETACHED  
 MULTI-FAMILY - APARTMENTS  
 MULTI-FAMILY - TOWNHOMES
- BULK AREA STANDARDS (GR-RPC)

SINGLE FAMILY:	GR. ZONE:	PROPOSED BY RPC:
MIN. FRONT YARD	40'	25'
MIN. SIDE YARD	10'	10'
MIN. REAR YARD	10'	10'
MIN. LOT WIDTH	75'	60'
MIN. LOT AREA	10,000 SF	7,500 SF

TOWNHOMES:	GR. ZONE:	PROPOSED BY RPC:
MIN. FRONT YARD	40'	25'
MIN. SIDE YARD	10'	5'
MIN. REAR YARD	10'	10'
MIN. LOT AREA	1,600 SF	2,310 SF
AVG. LOT AREA	3,630 SF	2,940 SF
MIN. BLDG. SEPARATION	30'	26'

APARTMENTS:	GR. ZONE:	PROPOSED BY RPC:
MIN. FRONT YARD	40'	25'
MIN. SIDE YARD	10'	5'
MIN. REAR YARD	10'	10'
MIN. LOT AREA	3,630 SF	3,630 SF

- LAND USE: EXISTING USE: AGRICULTURAL  
 PROPOSED USE: RESIDENTIAL
- PROPOSED DWELLING UNITS:  
 MULTI-FAMILY - APARTMENTS: 168  
 MULTI-FAMILY - TOWNHOMES: 44  
 SINGLE FAMILY: 42  
 TOTAL: 254 DU.
- DEVELOPMENT DENSITY COMPUTATIONS:

NET SITE AREA:	
TOTAL SITE AREA:	64.32 AC. ±
PROPOSED ROAD ROW:	4.43 AC. ±
NET SITE AREA:	59.89 AC. ±

ALLOWABLE DWELLING UNITS:  
 NET SITE AREA \* ALLOWABLE DENSITY = ALLOWABLE DU.  
 GR: 59.89 AC. X 12.0 DU./AC. = 709 DU.

PROPOSED DENSITY:  
 254 DU. / 59.89 AC. ± = 4.31 DU./AC. (NET)  
 254 DU. / 64.32 AC. ± = 3.95 DU./AC. (GROSS)

OPEN SPACE AREAS:  
 REQUIRED [SECTION 41.2(D)]:  
 10% X 64.32 AC ± = 6.43 AC. ±

PROPOSED\*:  
 PASSIVE: (INCL. NATURAL FOREST & BUFFER AREAS, STORMWATER MANAGEMENT AREAS, ETC.) 40.29 AC. ±  
 ACTIVE: (INCL. COMMUNITY POOL, RECREATION AREA, & WALKING TRAIL) 1.07 AC. ±

TOTAL PROPOSED (42.51 AC. / 64.32 AC.)	41.36 AC. ±
*NOTE: OPEN SPACE CALCULATION INCLUDES 3.93 AC. ± LOCATED WITHIN APARTMENT LOT AREAS.	

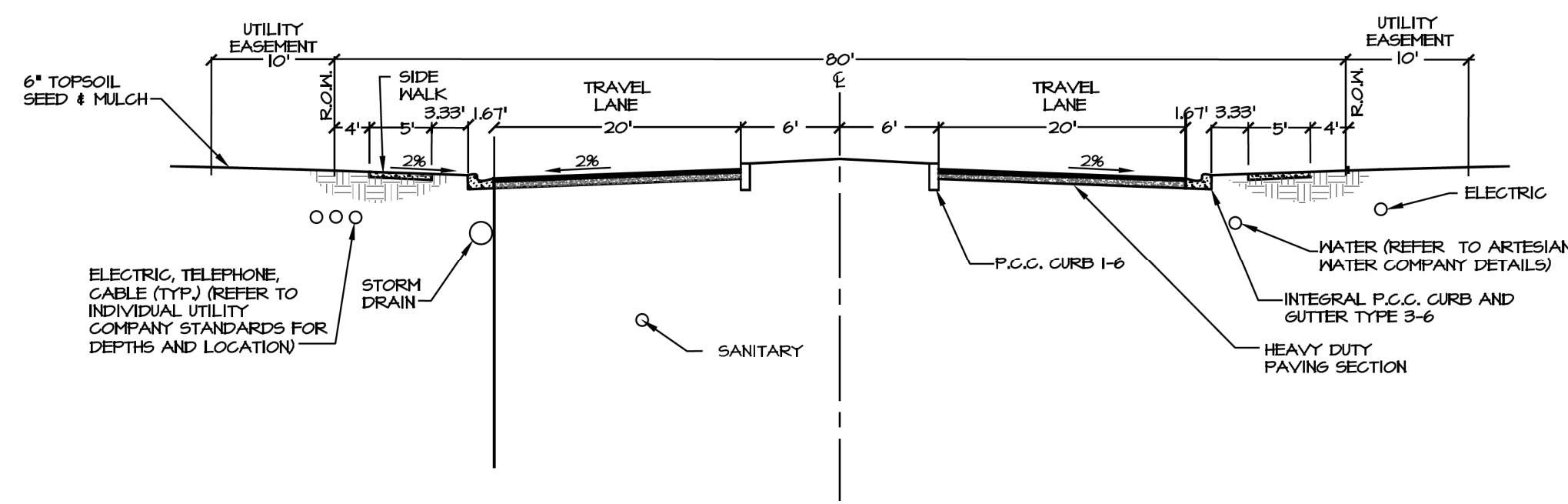
- FOREST COVER:  
 EXIST. FOREST: 38.78 AC. ±  
 FOREST CLEARED: 10.32 AC. ±  
 FOREST REMAINING: 28.46 AC. ±  
 REFORESTATION: 0.00 AC. ±  
 PROPOSED TOTAL: 28.46 AC. ±
- WATER SERVICE: PUBLIC (ARTESIAN WATER)
- SANITARY SEWER: PUBLIC (SUSSEX COUNTY)

PARKING ANALYSIS:  
 PARKING REQUIRED:  
 168 MF - APT X 2 SP/DU = 336 SP  
 44 MF - TH X 2 SP/DU = 88 SP  
 42 SFD X 2 SP/DU = 84 SP  
 TOTAL = 508 SP

PARKING PROVIDED:  
 168 MF - APT X 2 SP/DU = 336 SP  
 44 MF - TH X 2 SP/DU = 88 SP  
 42 SFD X 2 SP/DU = 84 SP  
 CLUBHOUSE AREA = 13 SP  
 TOWNHOUSE OVERFLOW = 21 SP  
 TOTAL = 562 SP

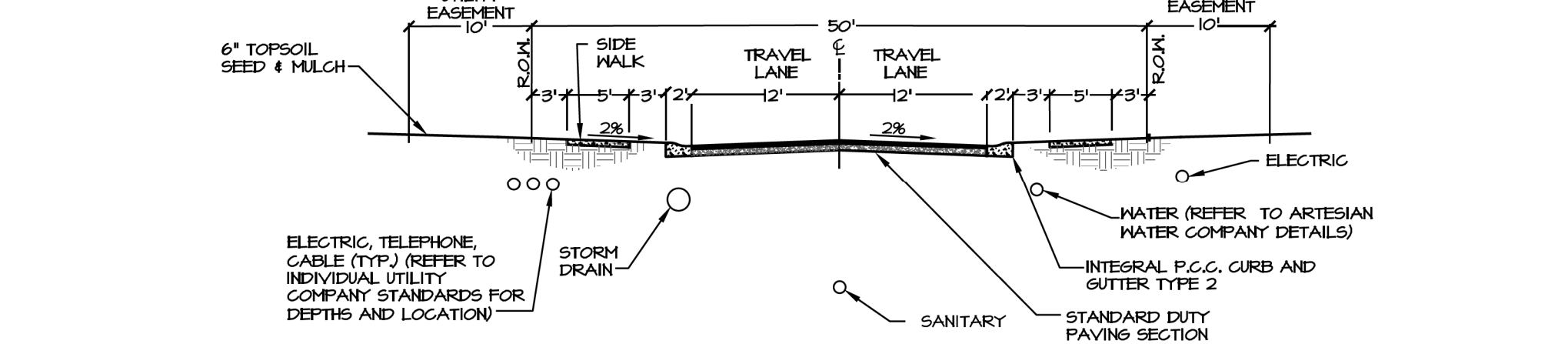
15. A WETLAND REPORT FOR THE SUBJECT PROJECT AREA WAS PREPARED BY GEO-TECHNOLOGY ASSOCIATES, INC. (GTA) IN MARCH 2021. BASED ON THIS REVIEW IT IS GTA'S PROFESSIONAL OPINION THAT THERE ARE NO TIDAL WETLANDS, OR JURISDICTIONAL NON-TIDAL WETLANDS, INCLUDING WATERS OF THE U.S., PRESENT WITHIN THE SUBJECT SITE. JURISDICTIONAL DETERMINATION APPLICATIONS HAVE BEEN FILED WITH DNREC AND ACOE.

16. ALL DROP MANHOLES TO BE 5' OR LARGER IN DIAMETER.  
 17. ALL FACILITIES TO MEET SUSSEX COUNTY ENGINEERING DEPARTMENT'S STANDARDS AND SPECIFICATIONS.  
 18. CLEANOUTS TO BE AT EDGE OF ROAD PAVEMENT OR EDGE OF RIGHT-OF-WAY, 6-INCH LATERAL FOR ALL SINGLE FAMILY HOUSES.  
 19. NO CHURCHES, SCHOOLS, OR COMMERCIAL USE AREAS PROPOSED ON THIS SITE.



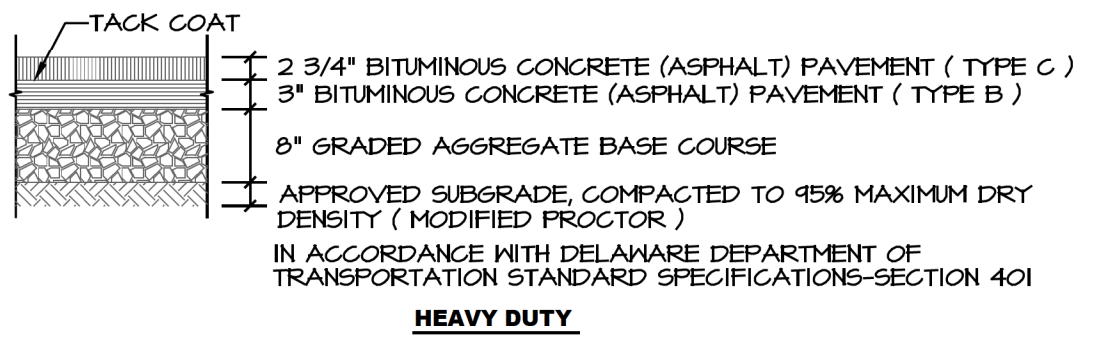
**TYPICAL SECTION - ENTRANCE ROAD (80' R.O.W.)**

NOT TO SCALE

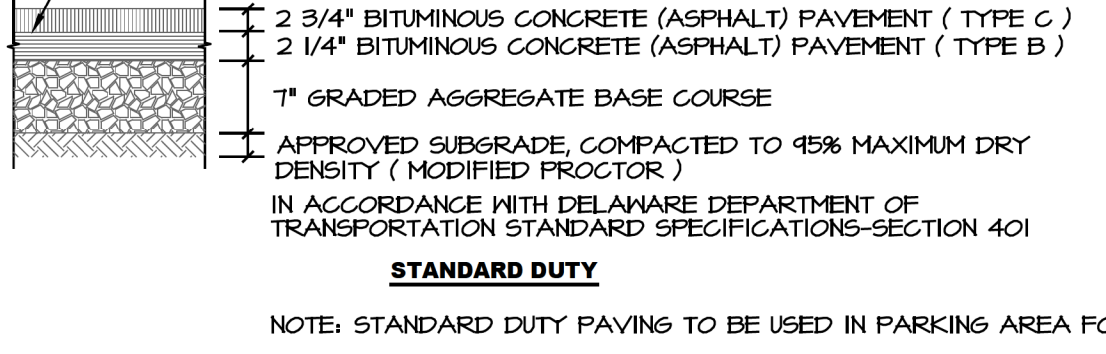


**TYPICAL CLOSED SECTION ROAD (50' R.O.W.)**

NOT TO SCALE



**HEAVY DUTY**

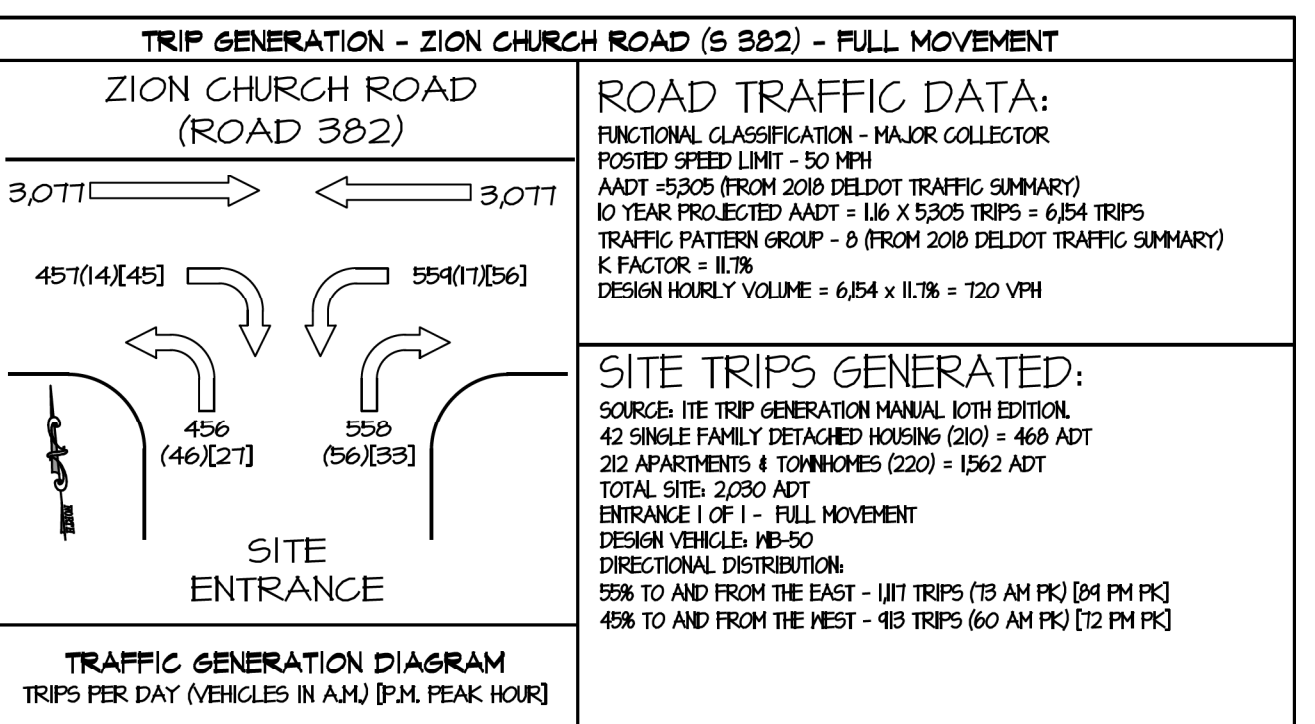


**STANDARD DUTY**

NOTE: STANDARD DUTY PAVING TO BE USED IN PARKING AREA FOR APARTMENTS

**PAVING SECTIONS**

NOT TO SCALE

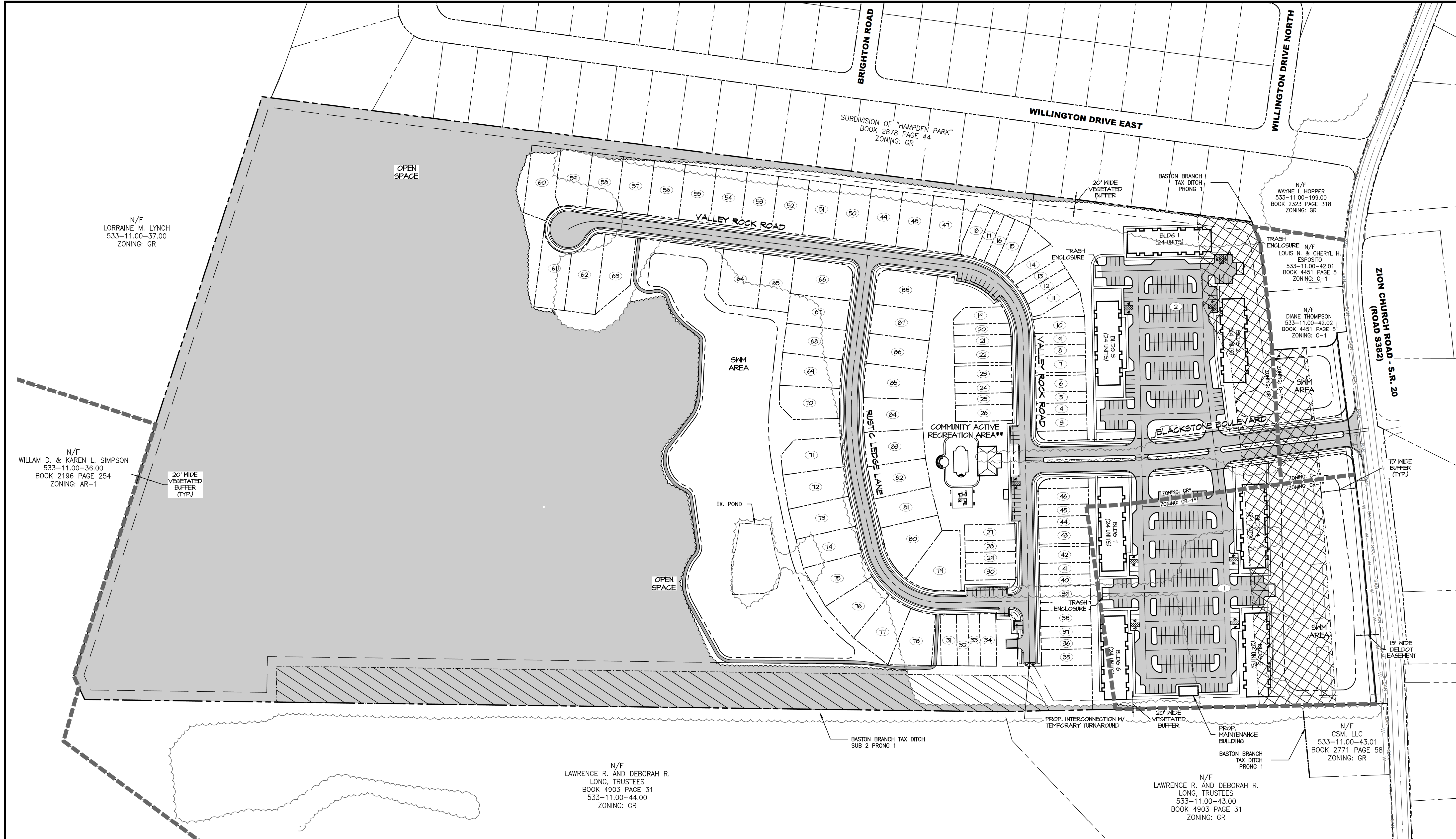
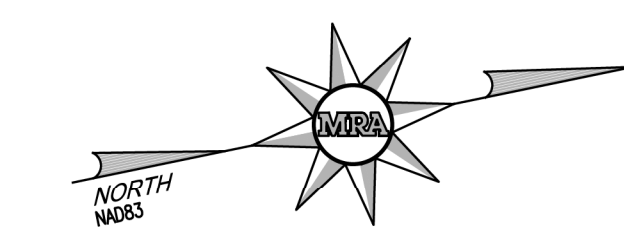


**MORRIS & RITCHIE ASSOCIATES, INC.**  
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
 18 BOULDER CIRCLE, SUITE 36  
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 (302) 326-2200  
 FAX: (302) 326-2399  
 WWW.MRAGTA.COM  
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**MR&R**  
 CURRICULUM VITAE  
 LICENSE  
 No. 1177  
 PROFESSIONAL ENGINEER  
 1/28/23

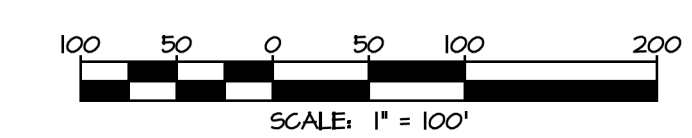
**GR-RPC GENERAL NOTES & DETAILS**  
 FOR  
**TWIN CEDARS**

DATE	REVISIONS	JOB NO.:
03/11/21	EX. PARCEL ZONING / PROP. GR-RPC	20426
04/27/21	UPDATED WETLANDS INFORMATION	SCALE: AS NOTED
		DATE: 10/21/2019
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 2 OF 8



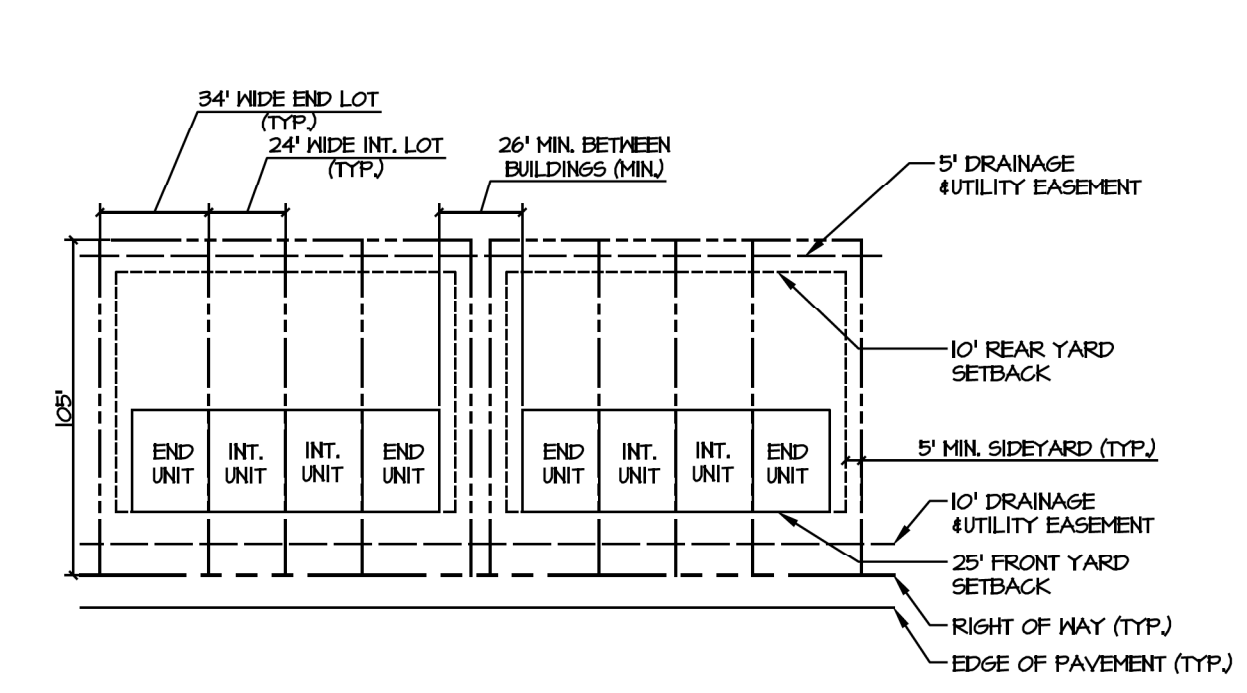
**LEGEND**

- EXIST. PARCEL BOUNDARY
- EXIST. RIGHT-OF-WAY
- EXIST. LOT LINE
- ZONING: AR-1
- EXIST. WOODS
- PROF. WOODS TO REMAIN
- PROF. CURB
- PROF. SIDEWALK
- PROF. LOT LINE
- PROF. RIGHT-OF-WAY
- PROF. ROAD CENTERLINE
- PROF. SWM AREA
- EXIST. JURISDICTIONAL NON-TIDAL WETLANDS
- EXIST. "WATERS OF U.S."
- EXIST. TAX DITCH R/W (TO REMAIN)
- EXIST. TAX DITCH R/W (TO BE REVISED)

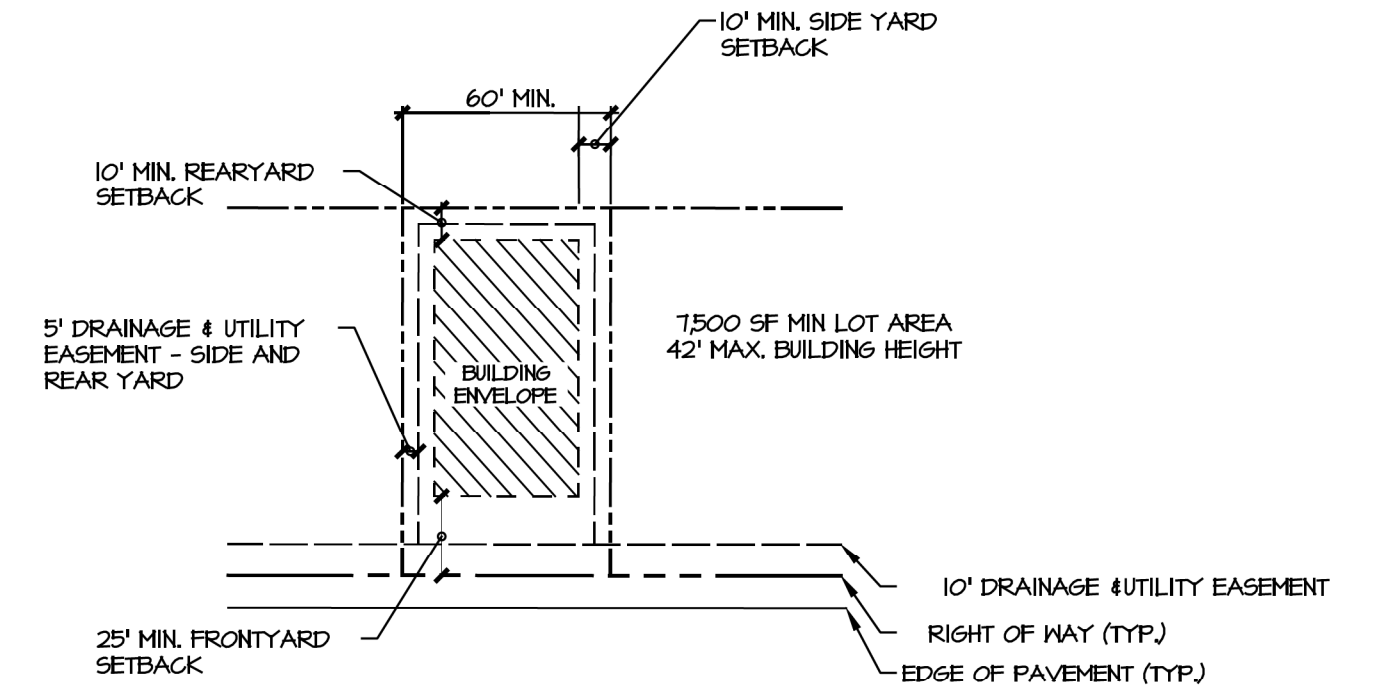


**\* NOTE:**  
ALL EXISTING PORTIONS OF THE SITE CURRENTLY ZONED C-1 OR CR-1 AREAS ON THE SUBJECT PARCEL ARE TO BE REZONED GR BY THIS PLAN.

**\*\* NOTE:**  
THE EXACT SIZE AND CONFIGURATION OF COMMUNITY ACTIVE RECREATION AREA, INCLUDING THE POOL HOUSE, POOL, AND DECKING, SHALL BE DETERMINED DURING THE FINAL ENGINEERING PROCESS AND SHALL BE SHOWN ON A SEPARATE SITE PLAN PREPARED FOR THE SAME.



**TYPICAL LAYOUT TOWNHOME  
24' WIDE DWELLING UNITS**  
NOT TO SCALE!



**TYPICAL LAYOUT SINGLE FAMILY LOT  
(VARIABLE WIDTHS)**  
NOT TO SCALE!

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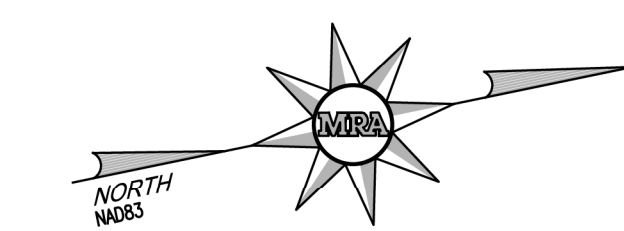
**PRELIMINARY PLAN  
MASTER GR-R.P.C. PLAN  
FOR  
TWIN CEDARS**

BALTIMORE HUNDRED  
SUSSEX COUNTY, DELAWARE

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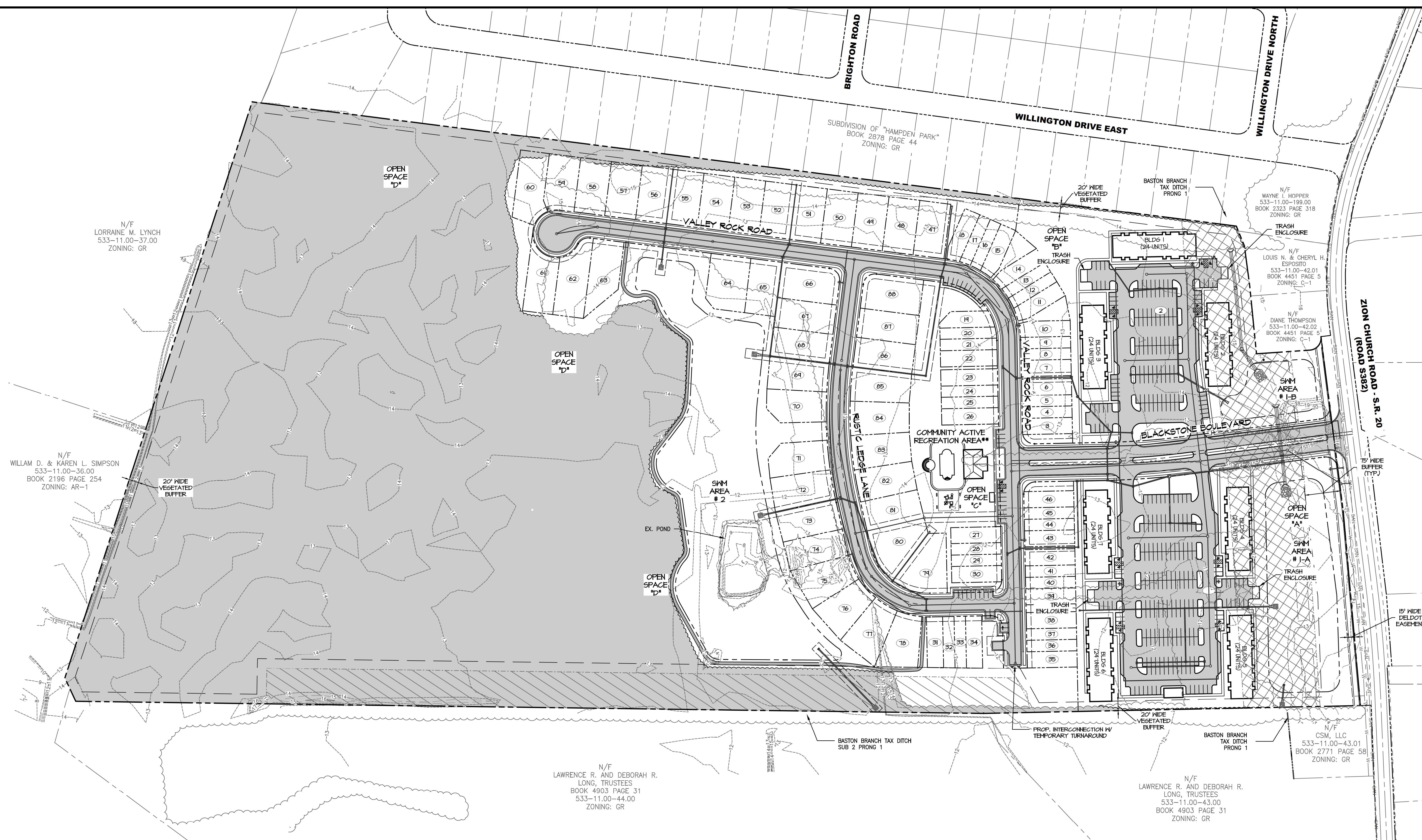
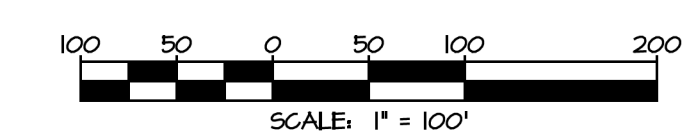
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03/11/21	EX. PARCEL ZONING / PROP. GR-RPC	20426
04/27/21	UPDATED WETLANDS INFORMATION	SCALE: 1"= 100'
		DATE: 10/21/19
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 3 OF 8

G:\20426 - Twin Cedars\PLANNING\PRELIMINARY\PLN\20426-PRCLM - RPC PLAN.dwg - 4/28/2021 10:48:35 AM Copyright 2021 Morris & Ritchie Associates, Inc.



**LEGEND**

- EXIST. PARCEL BOUNDARY
- - - EXIST. RIGHT-OF-WAY
- EXIST. LOT LINE
- ZONING: AR-1
- EXIST. ZONING
- EXIST. MOODS
- PROP. MOODS TO REMAIN
- PROP. CURB
- PROP. SIDEWALK
- PROP. LOT LINE
- PROP. RIGHT-OF-WAY
- PROP. ROAD CENTERLINE
- PROP. SWM AREA
- NW, SW, SE, NE EXIST. NON-TIDAL JURISDICTIONAL WETLANDS
- US, US EXIST. "WATERS OF U.S."
- EXIST. TAX DITCH R/W (TO REMAIN)
- EXIST. TAX DITCH R/W (TO BE REMOVED)
- 50' --- EXIST. CONTOUR
- 50' --- PROP. CONTOUR
- x50.00 SPOT ELEVATION
- EXIST. VEGETATION
- VEGETATION TO REMAIN
- EXIST. STORM DRAIN
- PROP. STORM DRAIN
- SAN EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- W, W EXIST. WATER LINE
- PROP. WATER LINE

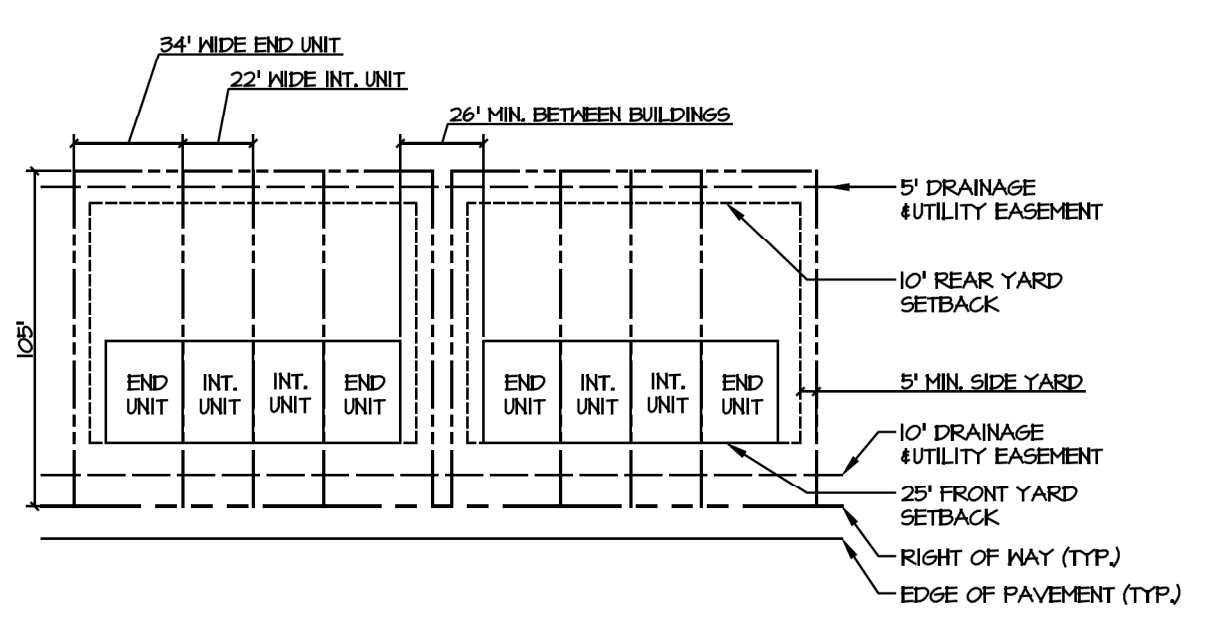


**PROPOSED OPEN SPACE SUMMARY**

AREA	SWM FACILITY	ACTIVE OPEN SPACE	PASSIVE OPEN SPACE*
A	1.41 AC. ±	-	2.15 AC. ±
B	0.43 AC. ±	-	1.78 AC. ±
C	3.47 AC. ±	1.07 AC. ±	31.57 AC. ±
TOTAL	5.31 AC. ±	1.07 AC. ±	41.50 AC. ±

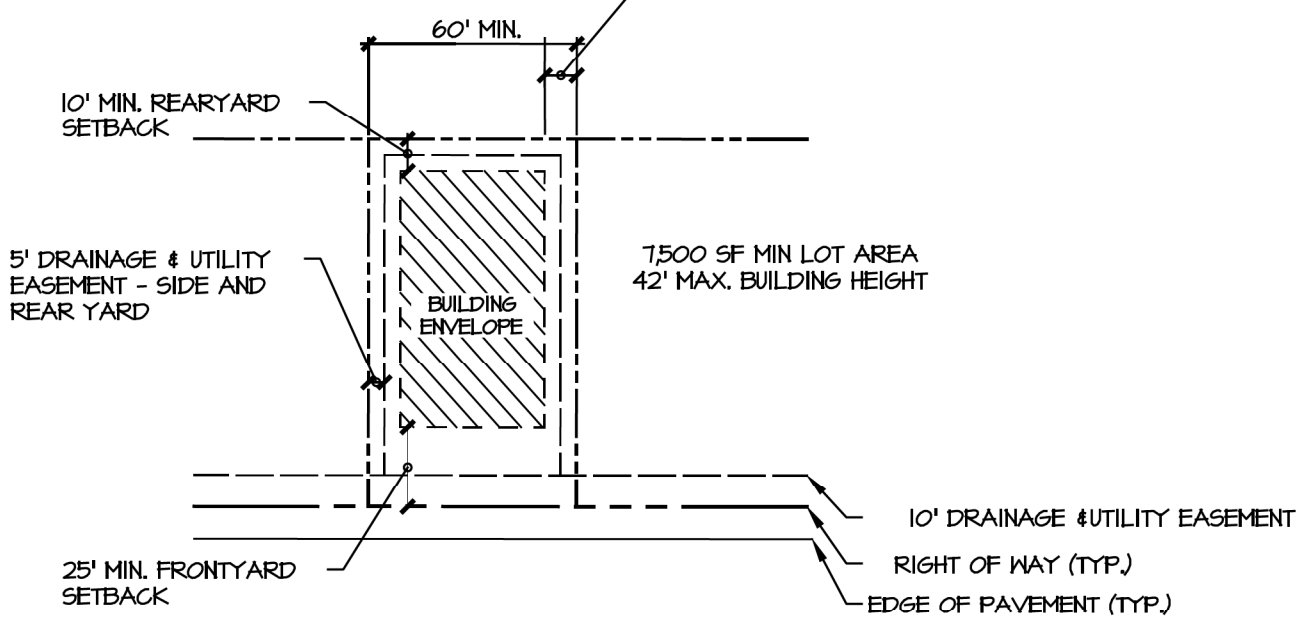
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**TYPICAL LAYOUT TOWNHOME 24' WIDE DWELLING UNITS**

NOT TO SCALE!



**TYPICAL LAYOUT SINGLE FAMILY LOT (VARIABLE WIDTHS)**

NOT TO SCALE!

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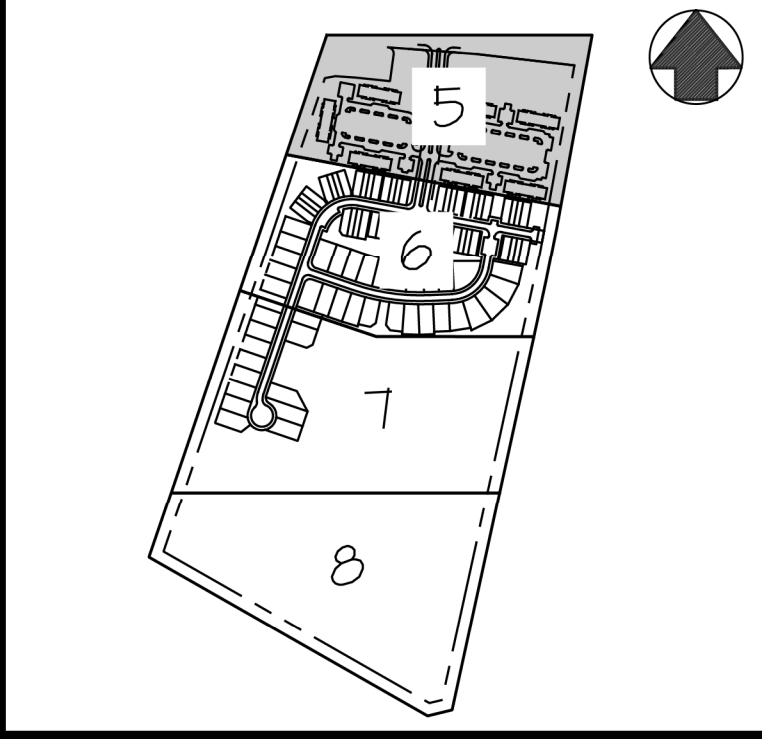
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**PRELIMINARY PLAN**  
**OVERALL PRELIMINARY PLAN**  
FOR  
**TWIN CEDARS**

ENGINEER'S SEAL  
BALTIMORE HUNDRED  
SUSSEX COUNTY, DELAWARE

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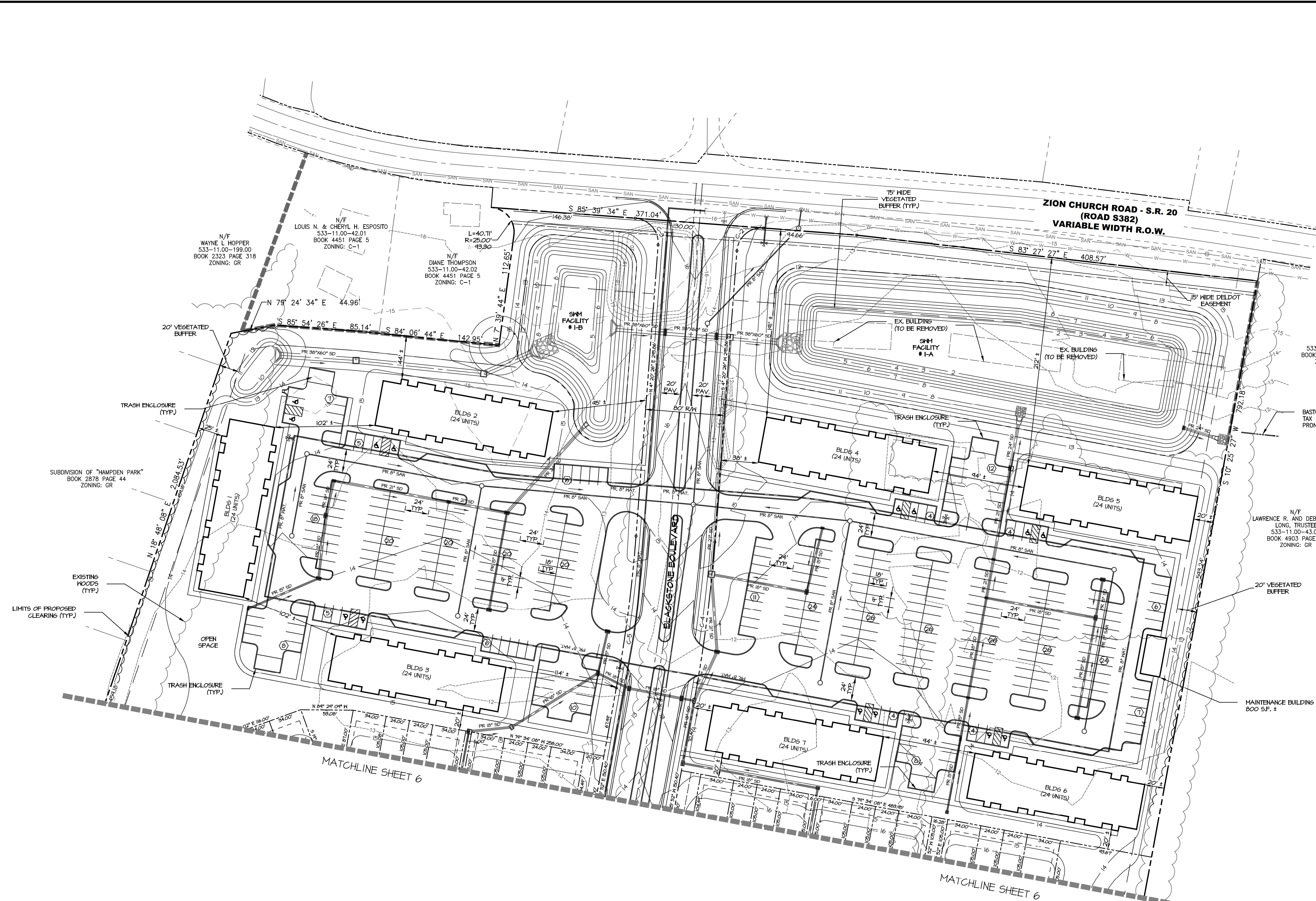
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03/11/21	EX. PARCEL ZONING / PROP. GR-RPC	20426
04/27/21	UPDATED WETLANDS INFORMATION	SCALE: 1"= 100'
		DATE: 10/21/19
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 4 OF 8



**KEY MAP**  
SCALE: 1"=600'

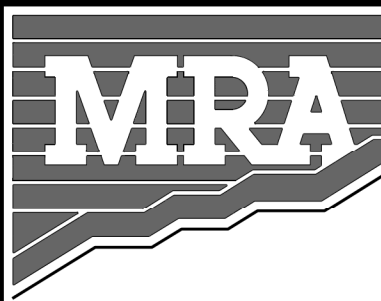
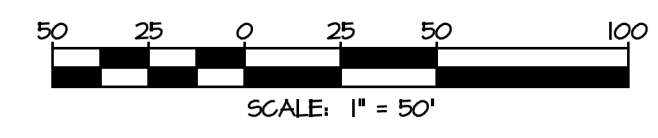
**LEGEND**

- EXIST. PARCEL BOUNDARY
- EXIST. RIGHT-OF-WAY
- EXIST. LOT LINE
- ZONING: AR-1 EXIST. ZONING
- EXIST. WOODS
- PROP. WOODS TO REMAIN
- PROP. CURB
- PROP. SIDEWALK
- PROP. LOT LINE
- PROP. RIGHT-OF-WAY
- PROP. ROAD CENTERLINE
- PROP. SHM AREA
- EXIST. WETLANDS
- US --- EXIST. WATERS OF U.S.
- EXIST. TAX DITCH R/W (TO REMAIN)
- EXIST. TAX DITCH R/W (TO BE REMOVED)
- 50 --- EXIST. CONTOUR
- 50 --- PROP. CONTOUR
- x50.00 SPOT ELEVATION
- EXIST. VEGETATION
- VEGETATION TO REMAIN
- EXIST. STORM DRAIN
- PROP. STORM DRAIN
- SAN --- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- W --- EXIST. WATER LINE
- PROP. WATER LINE

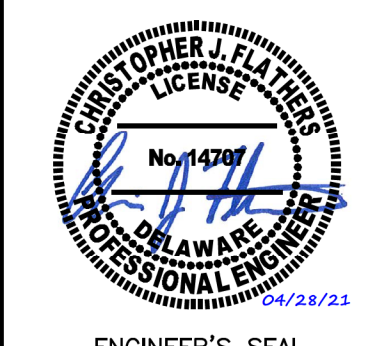


**RIGHT-OF-WAY CURVE TABLE**

CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C-2	25.00'	34.21'	S 44° 20' 26" W	35.36'
C-3	25.00'	34.21'	N 40° 34' 34" W	35.36'
C-4	1540.00'	163.10'	S 01° 23' 09" W	163.63'
C-5	1460.00'	155.20'	N 01° 23' 09" E	155.13'

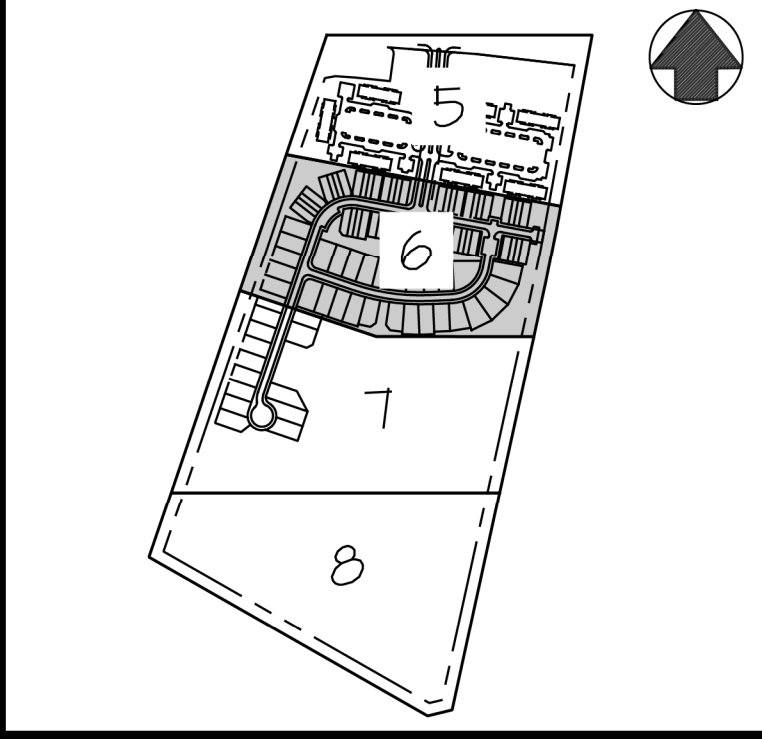
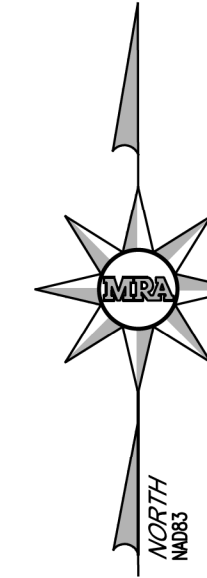


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**GR-RPC**  
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FOR  
**TWIN CEDARS**

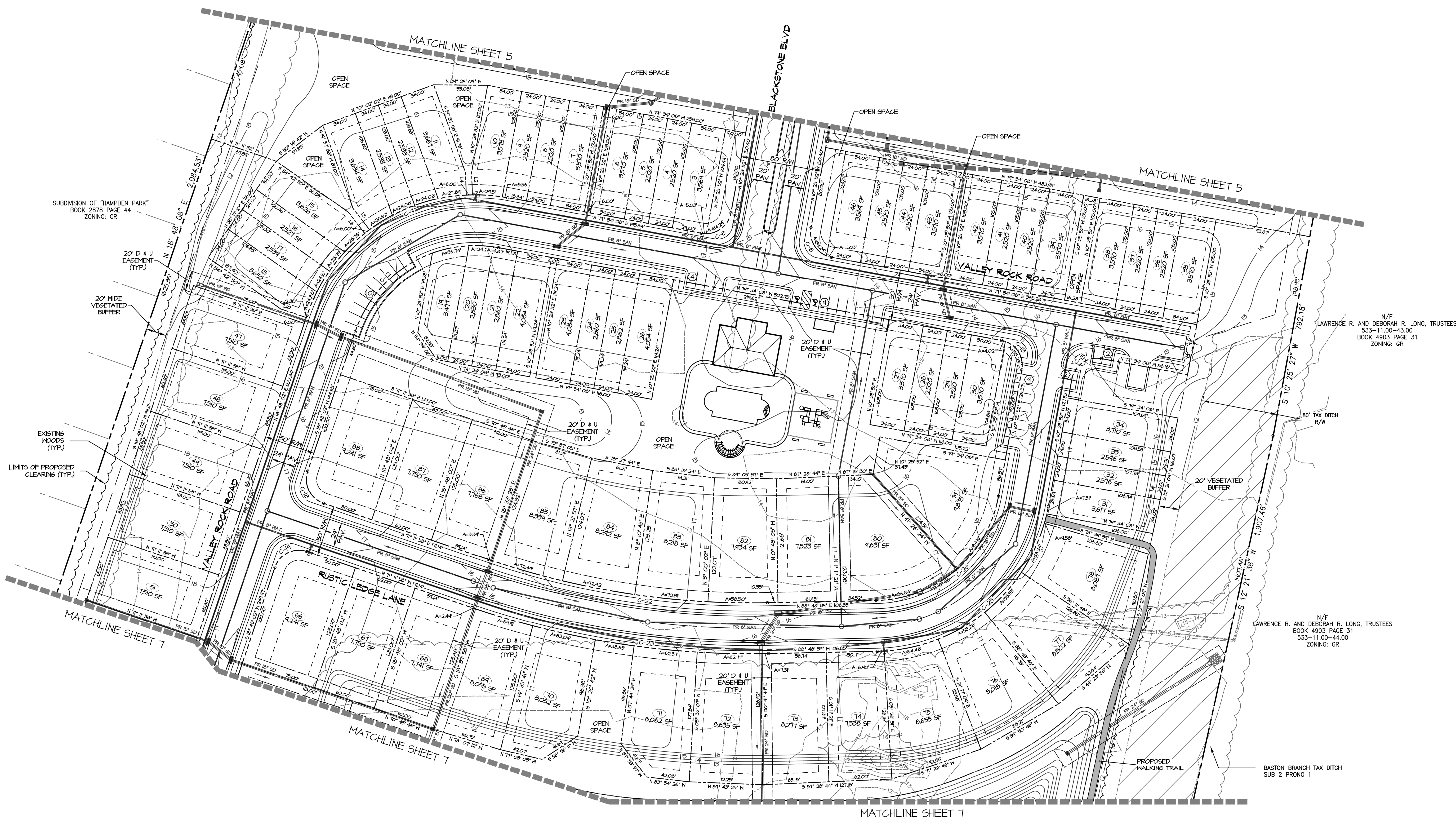
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		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 5 OF 8



**KEY MAP**  
SCALE: 1"=600'

**LEGEND**

- EXIST. PARCEL BOUNDARY
- - - EXIST. RIGHT-OF-WAY
- - - EXIST. LOT LINE
- ZONING: AR-1 --- EXIST. ZONING
- EXIST. WOODS
- PROP. WOODS TO REMAIN
- PROP. CURB
- PROP. SIDEWALK
- PROP. LOT LINE
- PROP. RIGHT-OF-WAY
- PROP. ROAD CENTERLINE
- PROP. SHM AREA
- EXIST. WETLANDS
- EXIST. WATERS OF U.S.
- EXIST. TAX DITCH R/W (TO REMAIN)
- EXIST. TAX DITCH R/W (TO BE REMOVED)
- 50 --- EXIST. CONTOUR
- 50 --- PROP. CONTOUR
- x50.00 SPOT ELEVATION
- EXIST. VEGETATION
- VEGETATION TO REMAIN
- EXIST. STORM DRAIN
- PROP. STORM DRAIN
- SAN --- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- W --- EXIST. WATER LINE
- PROP. WATER LINE



PROPERTY LINE TABLE		
LINE	BEARING	DISTANCE
L2	N 01° 50' 07" W	21.98'
L4	S 01° 50' 07" E	21.98'
L5	S 31° 32' 44" E	26.53'
L6	S 31° 32' 44" E	26.53'
L10	S 71° 11' 50" E	26.51'

RIGHT-OF-WAY CURVE TABLE				
CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C-6	25.00'	34.27'	S 34° 34' 08" E	35.36'
C-8	25.00'	34.27'	N 55° 25' 52" E	35.36'
C-4	175.00'	244.33'	N 54° 36' 57" E	228.71'
C-12	125.00'	178.04'	S 54° 36' 57" W	163.41'
C-13	25.00'	34.27'	N 34° 34' 04" W	35.36'
C-15	25.00'	34.27'	S 55° 25' 52" W	35.36'
C-18	25.00'	34.27'	S 26° 11' 58" E	35.36'
C-19	25.00'	34.27'	S 63° 48' 02" W	35.36'
C-22	800.00'	274.11'	S 81° 11' 34" E	271.64'
C-23	880.00'	296.55'	N 81° 11' 34" W	295.05'
C-25	175.00'	238.25'	S 44° 48' 36" W	220.27'
C-26	125.00'	171.00'	N 44° 37' 16" E	151.91'



**NOTE:**  
THE EXACT SIZE AND CONFIGURATION OF POOL HOUSE, POOL, AND DECKING SHALL BE DETERMINED DURING THE FINAL ENGINEERING PROCESS AND SHALL BE SHOWN ON A SEPARATE SITE PLAN PREPARED FOR THE SAME.

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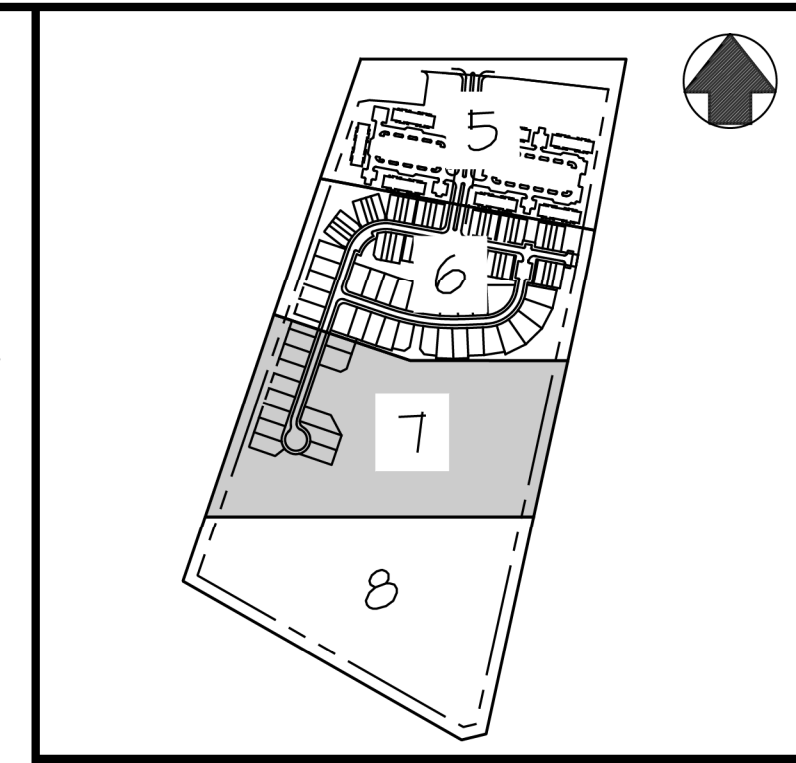
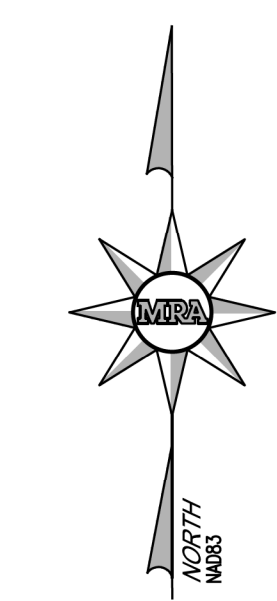
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**PRELIMINARY PLAN**  
FOR  
**TWIN CEDARS**

ENGINEER'S SEAL      BALTIMORE HUNDRED      SUSSEX COUNTY, DELAWARE

JOB NO.: 20426  
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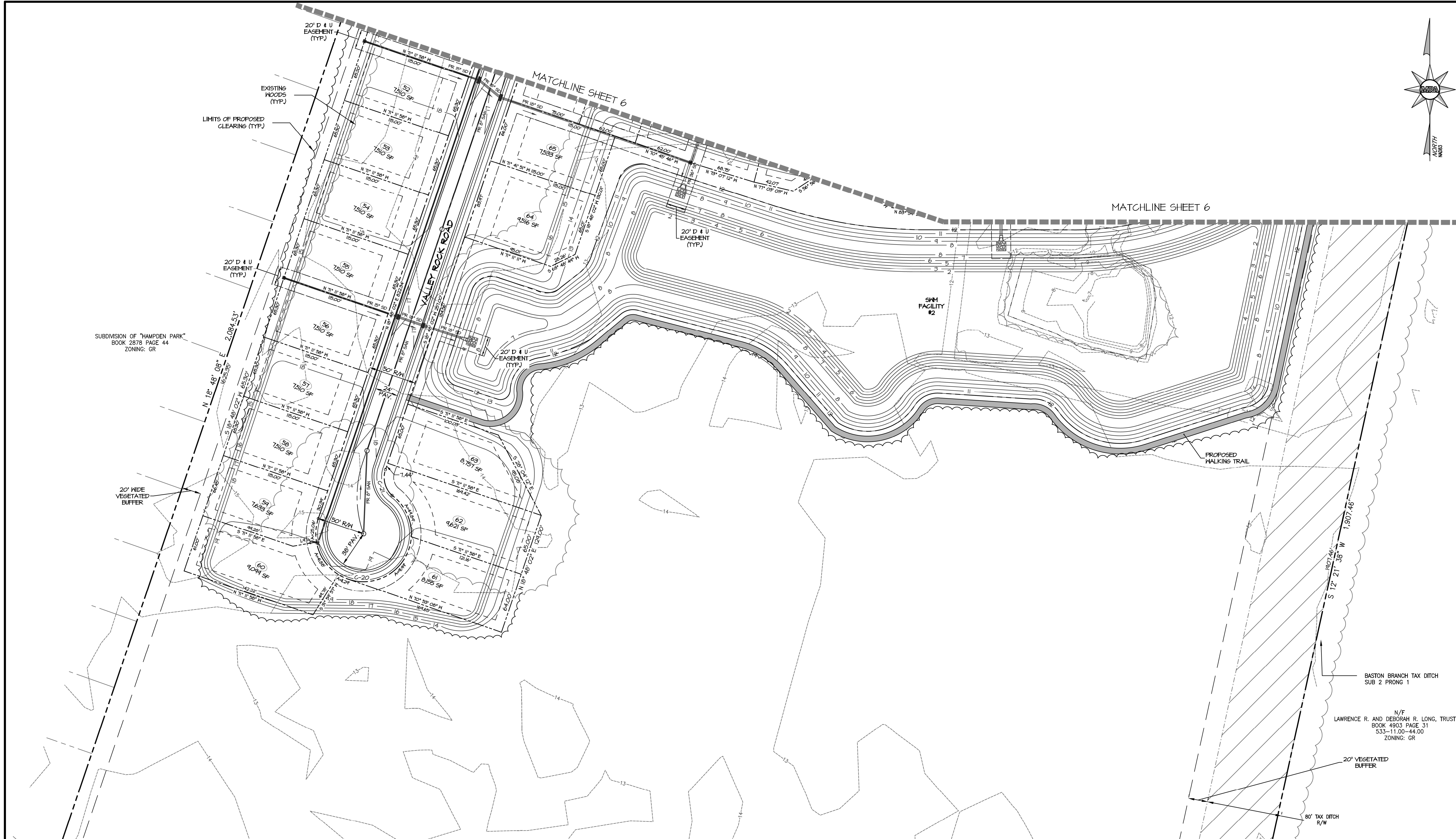




**KEY MAP**  
SCALE: 1"=600'

**LEGEND**

- EXIST. PARCEL BOUNDARY
- EXIST. RIGHT-OF-WAY
- EXIST. LOT LINE
- ZONING: AR-1 --- EXIST. ZONING
- EXIST. WOODS
- PROP. WOODS TO REMAIN
- PROP. CURB
- PROP. SIDEWALK
- PROP. LOT LINE
- PROP. RIGHT-OF-WAY
- PROP. ROAD CENTERLINE
- PROP. SHM AREA
- NW, SW, SE, NE --- EXIST. WETLANDS
- US --- EXIST. WATERS OF U.S.
- EXIST. TAX DITCH R/W (TO REMAIN)
- EXIST. TAX DITCH R/W (TO BE REMOVED)
- 50 --- EXIST. CONTOUR
- 50 --- PROP. CONTOUR
- x50.00 --- SPOT ELEVATION
- EXIST. VEGETATION
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- EXIST. STORM DRAIN
- PROP. STORM DRAIN
- SAN --- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- W --- EXIST. WATER LINE
- PROP. WATER LINE

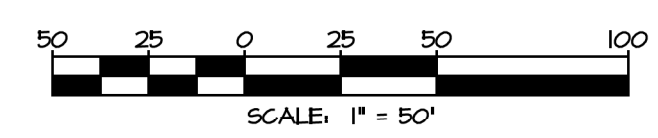


MATCHLINE SHEET 8

MATCHLINE SHEET 8

**RIGHT-OF-WAY CURVE TABLE**

CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C-20	50.00'	220.11'	S 12° 35' 33" W	80.78'
C-21	25.00'	24.18'	S 14° 38' 12" E	21.55'



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ENGINEER'S SEAL

BALTIMORE HUNDRED

SUSSEX COUNTY, DELAWARE

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MATCHLINE SHEET 7

MATCHLINE SHEET 7

SUBDIVISION OF "HAMPTON PARK"  
BOOK 2878 PAGE 44  
ZONING: GR

20' VEGETATED  
BUFFER

N/F  
LORRAINE M. LYNCH  
533-11.00-37.00  
ZONING: GR

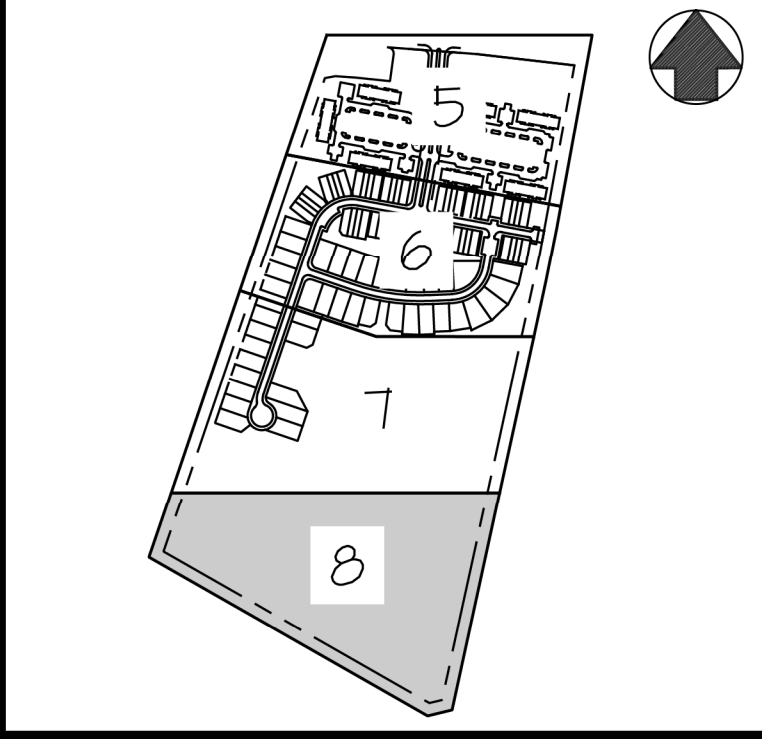
N/F  
WILLIAM D. & KAREN L. SIMPSON  
533-11.00-36.00  
BOOK 2196 PAGE 254  
ZONING: AR-1

N/F  
LAWRENCE R. AND DEBORAH R. LONG, TRUSTEES  
BOOK 4903 PAGE 31  
533-11.00-44.00  
ZONING: GR

S 76° 26' 25" W 54.01'

ZONING: GR

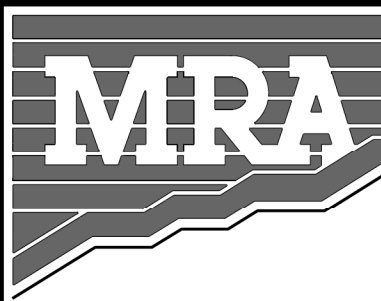
ZONING: AR-1



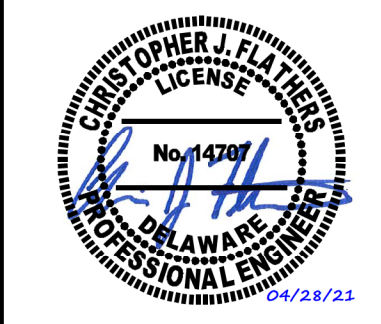
KEY MAP  
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		SHEET: 8 OF 8



ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS, AND  
LANDSCAPE ARCHITECTS

# TWIN CEDARS

**A Residential Planned Community**

Baltimore Hundred  
Sussex County, Delaware

Developed By:

**Bay Developers, LLC**



Prepared By:  
Morris & Ritchie Associates, Inc.  
18 Boulden Circle, Suite 36  
New Castle, DE 19720  
Phone: (302) 326-2200  
Attn: Christopher J. Flathers, P.E.

**April 2021**

20426



# T W I N C E D A R S

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# P R O J E C T T E A M

---

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## **ATTORNEY**

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107 W. MARKET STREET  
GEORGETOWN, DE 19947  
MR. DAVID C. HUTT, ESQ.





# LAND USE DATA

---

## **Site Data:**

Location: Southeasterly side of Zion Church Road (Route 20)  
Approx. 1,200' east of intersection with Deer Run Road (Rd 388)  
Frankford, DE

Owner: Twin Cedars, LLC

Tax Map Parcel Number: 533-11.00-42.00

Gross Acreage: 64.32 ± acres

Current Zoning: C-1, CR-1, & GR (Coastal Area Overlay)

Proposed Zoning: GR - RPC

Floodplain: Zone X – Outside of the 0.2% Annual Chance Floodplain

## **Land Use Breakdown**

Total Lot Areas:

Apartments:	11.62 ± Acres
Single Family:	7.82 ± Acres
Townhomes:	3.01 ± Acres

Right-of-Way:

Public R.O.W. (DelDOT Dedication)	0.00 Acres
Private R.O.W.	4.43 ± Acres

Open Space

Active:	1.07 ± Acres
Passive:	41.50 ± Acres
Incl. in Apartment Area	3.93 ± Acres
Incl. in Stormwater Facilities	5.31 ± Acres

## **Lot Compilation**

	<b>GR Zoning</b>	<b>Proposed RPC</b>
<u>Single Family</u>		
Min. Lot Area:	10,000 sf	7,500 sf
Lot Width:	75 ft.	60 ft.
Lot Depth:	100 ft.	100 ft.
Front Yard Setback:	40 ft.	25 ft.
Side Yard Setback:	10 ft.	10 ft.
Rear Yard Setback	10 ft.	20 ft.

	<b>GR Zoning</b>	<b>Proposed RPC</b>
<u>Multifamily - Townhomes</u>		
Area:		
Minimum:	1,600 sf	2,310 sf
Average:	3,630 sf	2,940 sf
Lot Width:		
Interior Units:	16 ft.	22 ft.
End Units:	16 ft.	34 ft.
Lot Depth:	N/A	100 ft.
Front Yard Setback:	N/A	25 ft.
Rear Yard Setback:	10 ft.	10 ft.
Front / Rear Yard Aggregate:	40 ft.	35 ft.
Side Yard Setback:	20 ft.	5 ft.
Max. Building Length:	170 ft.	92 ft.
Max. D.U. / Bldg.:	8	4
Min. Bldg. Separation:	30'	26'

	<b>GR Zoning</b>	<b>Proposed RPC</b>
<u>Multifamily Apartments</u>		
Min. Lot Area:	3,630 sf	3,630 sf
Front Yard Setback:	40 ft.	25 ft.
Side Yard Setback:	10 ft.	10 ft.
Rear Yard Setback:	10 ft.	10 ft.
Project Net Density		
GR Zoning	12.00 d.u./ac.	4.31 d.u./ac
Number of dwelling units:	771	254

# I N T R O D U C T I O N

---

This report has been prepared at the request of Mr. Henry Mast of Bay Developers, the applicant and equitable owner of the Twin Cedars property.

The following report, including all exhibits and appendices, shall serve as supporting documentation associated with the proposed Residential Planned Community (RPC) application submitted to the Office of Planning and Zoning for the subject property on November 18, 2019.

This report will address elements of the plan, the existing conditions, the overall design concept, environmental protection provisions, open space reservations, housing types, phasing and the professional management structure for the Home Owner's Association.

An overview has been provided for the key infrastructure elements like sanitary sewer, water service, stormwater management, gas, electric, cable television, and telephone service.

Traffic and transportation impacts, as well as social and economic issues, will be discussed. This report will discuss recreation amenities, as well as, how State and County comments have been incorporated into a balanced comprehensive concept.

## E X E C U T I V E   S U M M A R Y

---

Twin Cedars is proposed as a Residential Planned Community (RPC) located on the southerly side of Zion Church Road (Route 20), approximately 1,200 feet east of the intersection with Deer Run Road (Road 388) in an unincorporated portion of Sussex County, Delaware. The 64.32-acre site is located entirely within the Coastal Area, formerly referred to as the Environmentally Sensitive Development District Overlay Zone, as shown on the Sussex County Comprehensive Plan dated March 2019. Design and development concepts for Twin Cedars focused on creating a pedestrian friendly community of single-family, townhome, and apartment dwellings clustered around a centrally located community recreation area. The project site includes more than 42 acres of open space, with each of the residential lots connecting directly to open space. It is anticipated that the infrastructure for Twin Cedars will be constructed over a 2-year period, with residential construction taking approximately 4 years to complete.

The community recreation area is anticipated to include a community clubhouse building and outdoor pool and patio area. Sidewalks will be provided throughout the community along both sides of the vehicular thoroughfares to connect the residences to the community clubhouse area.

The majority of the development area was previously utilized for residential purposes (former apartment complex) and/or used for agricultural purposes. Due to high groundwater conditions anticipated on site, extended detention stormwater practices including wet ponds and/or created wetlands will be implemented to provide runoff management. Utilization of these facilities will provide a reduction in both runoff and nutrients (i.e. nitrogen, phosphorus) from the developed site.

The Twin Cedars site is currently located within Sussex County's Johnson Corner Sanitary Sewer District and will utilize extensions to the existing County infrastructure to provide public sewer to the site. The on-site gravity system is anticipated to connect directly to existing mains located along the Zion Church Road without the need for construction of an additional sanitary sewer pump station. The site is also located within an existing Certificate of Public Convenience and Necessity (CPCN) service area designated to Tidewater Utilities Inc. (TUI). Existing TUI distribution mains area located along the Zion Church Road and are anticipated to have adequate capacity to service the Twin Cedars site.

Forested and/or landscaped buffer areas will be provided around the perimeter of the community in accordance with Section 99-5 of the Sussex County Code. The internal subdivision street system will be designed and constructed in accordance with Sussex County standards and will be privately owned and maintained upon completion. Consideration for pedestrian safety and convenience through traffic calming design techniques, sidewalks; unified street signage and lighting standards will be incorporated into the final design of the project.

Twin Cedars is anticipated to provide a vibrant community, with social and recreational benefits to the residents, economic benefits to the County and surrounding areas, while minimizing environmental impacts to the existing on-site resources and the neighboring properties.

# PROJECT SUMMARY

## Existing Conditions

### Location

The Twin Cedars site is located in southeastern Sussex County, approximately 1,200 feet south of the intersection of Zion Church Road (Route 20) and Deer Run Road (Road 388). The project site is comprised of one existing parcel, referenced on District 533, Map 11, as Parcel 42.00. As shown on the current Sussex County Comprehensive plan, the entire project is located within the Coastal Area growth zone. Portions of the subject lands along Zion Church Road are currently zoned General Commercial (C-1) and Commercial Residential (CR-1) while the remaining portion of the site is zoned General Residential (GR).

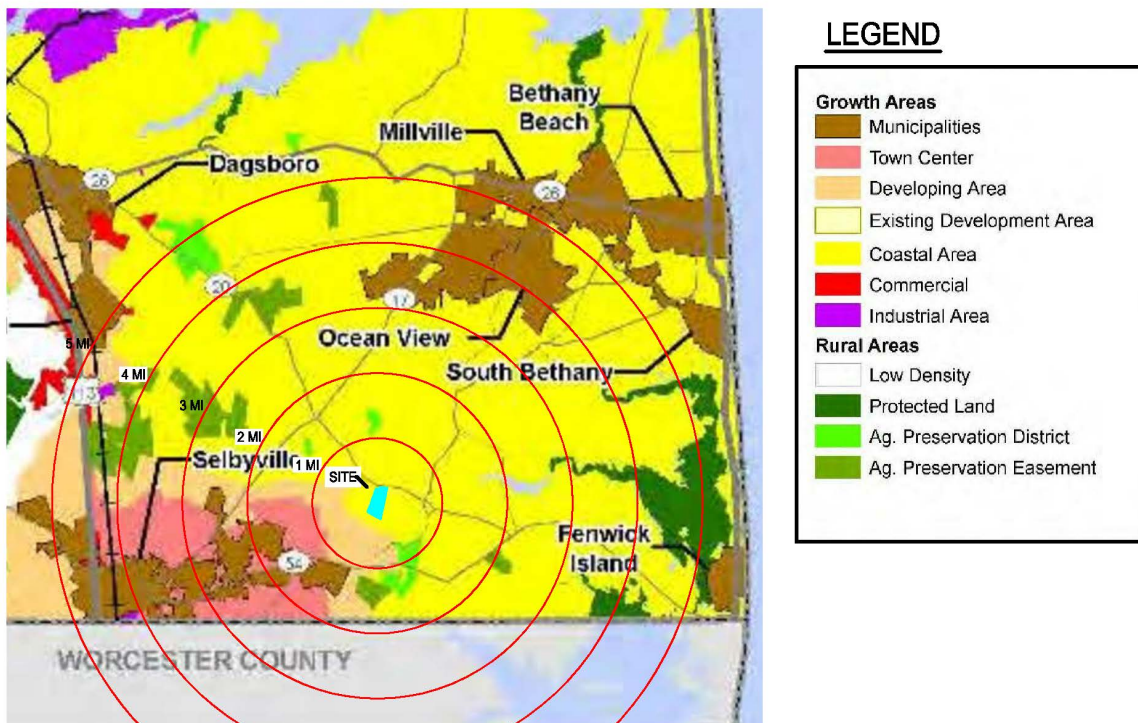


Figure 1 - Future Land Use Map

### Existing Land Use

The 64.32-acre parcel is currently owned by Twin Cedars, LLC. Although a portion of the site was previously utilized for apartments, the structures were previously demolished. A portion of the rear parcel area is currently utilized for agricultural purposes and a small support structure still remains within the parcel areas. There are however, no historic structures located within the project area. The subject site is bordered to the west by the Hampden Park residential subdivision, to the southeast by the "Lost Lands RV Park, and to the southwest and east by undeveloped parcels currently utilized for agricultural purposes.

The southerly portion of the site contains a large wooded area; limited clearing and disturbance is anticipated to this area of the site as a result of the proposed design. A wetlands evaluation was completed by Geo-Technology Associates, Inc. (GTA) in March 2021. Based upon this review and as shown in the applications submitted to DNREC and the Army Corps of Engineers (ACOE), no jurisdictional wetlands or Waters of the US were identified within the limits of the subject project area in the professional opinion of GTA. No disturbance to jurisdictional wetland areas are anticipated as a result of the proposed development. Review of the FEMA floodplain maps reveal the subject parcel to be located within Zone X, outside of the 0.2% annual chance floodplain.

The project area is gently sloping from west to east and from the frontage on Zion Church Road into the site area. Drainage is directed to existing on-site drainage ditches and tax ditches. A portion of the Batson Branch, Prong 1 tax ditch traverses the front portion of the site, and the upper end of Batson Branch, Sub 2, Prong 1 runs along the easterly property boundary. These features are anticipated to continue to convey the runoff from the developed property off-site. Any modifications to the tax ditches or associated rights-of-way will be performed with approval of the Tax Ditch managers and DNREC approval. No portions of the site are located within an excellent groundwater recharge area.

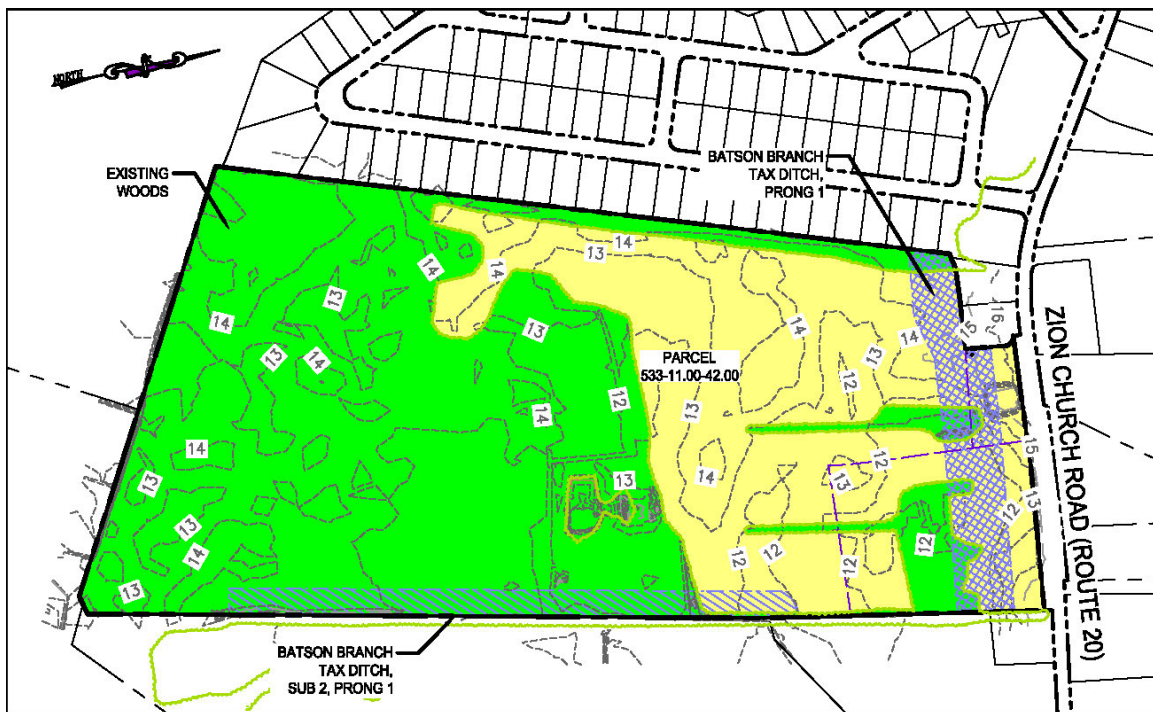


Figure 2- Existing Conditions Plan

According to the United States Department of Agriculture (USDA) Soil Survey for Sussex County, Delaware (September 14, 2018), the site is primarily underlain by the Hurlock loamy sand and Mullica-Berryland. Both of these series typically consist of poorly drained soils with loamy sand and sandy substrata.

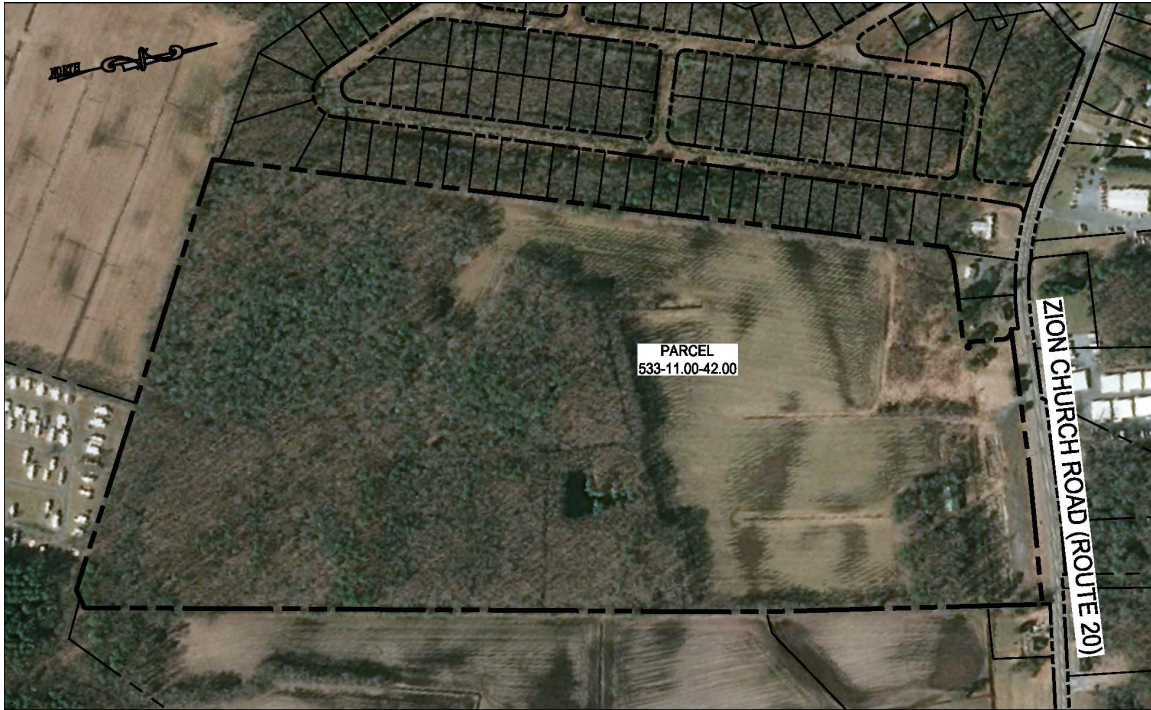


Figure 3 - Aerial Orthophoto

Figures 3 and 4, provide insight into the project and the surrounding area. As shown in the aerial image of the site, the Hampden Park subdivision can be seen immediately to the west of the project site and the RV-park is apparent along the southeasterly corner of the property boundary. A wider, regional examination of the area shows the Twin Cedars site in proximity to several other residential developments. Along the Route 20 corridor are the subdivisions of Deer Run Acres, Hampden Park, Fox Haven, Sweet Bay, Ashton Oaks, Batons Creek Estates, Swann Estates, and the Hamlet at Dirickson Pond. To the southwest, along the Route 54 are Lighthouse Lakes, Saltwater Landing, and Atlantic Lakes on the approach towards the Town of Selbyville.

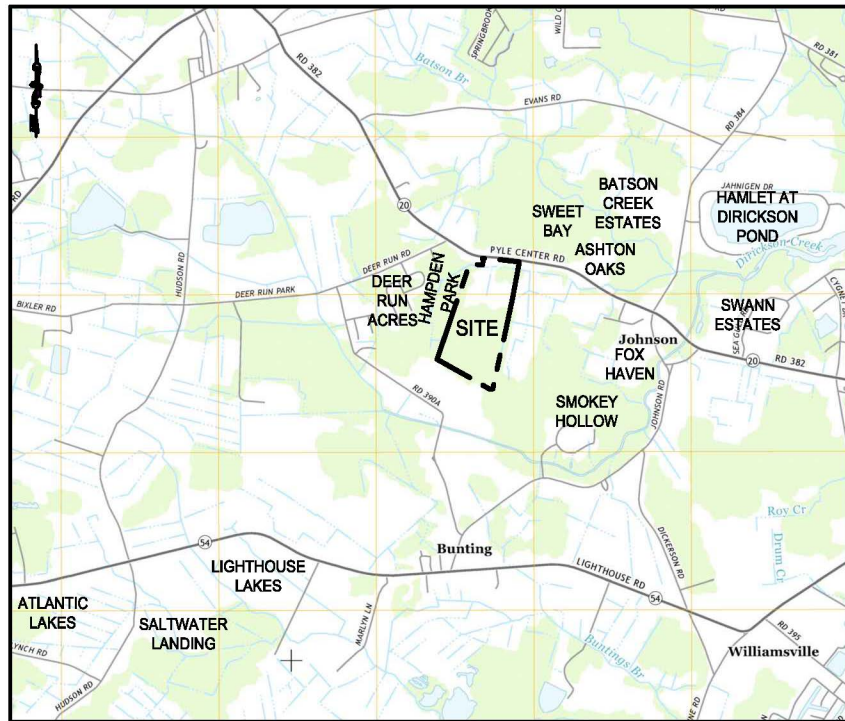


Figure 4- Adjacent Developments

In general, Twin Cedars is comparable to the surrounding uses as a mixed use residential project and has a gross density commensurate with a site within the Coastal Area growth zone. For this reason, this land should be utilized to the fullest extent, while not exceeding allowable density of the underlying C-1 and GR zonings for sites serviced by public sewer.

### ***Residential Planned Community Concept***

The primary purpose of the Residential Planned Community (RPC) development concept is to “encourage large-scale development as a means of creating a superior living environment through unified developments, and to provide for the application of design ingenuity while protecting existing and future developments and achieving the goals of the Comprehensive Plan.

The design vision and development concept for Twin Cedars was intended to create a sense of community with a focus on the centrally located amenities, while maintaining a connection to the open space. The design process used to achieve this vision is listed below and was the basis for the layout and various elements used in the plan.

- **Create** a “sense of place” around an open space concept on a site with limited natural features.
- **Define** a perimeter buffer.
- **Connect** lots to open space area and central amenity.
- **Centralize** development around open space areas and central amenity feature

The Twin Cedars site is being developed by Bay Developers, LLC as a proposed Residential Planned Community with an underlying GR zoning district. The plan proposes to rezone the existing CR-1 and C-1 portions of the site to GR to eliminate the split zoning of the subject parcel. Located entirely within the Coastal Area growth zone, and with public water and sewer readily available at the site, the implementation of the RPC development option will allow for smaller lot sizes and clustering of the development area for an efficient land plan to maximize preservation of existing natural areas and passive open space.

By implementing the mixed-use approach and smaller lot sizes afforded by the creation of the RPC, a development like Twin Cedars is able to provide an enhanced sense of community within the subdivision by reducing distance between neighbors and providing meaningful active open space and gathering areas. Roads and utilities can be designed in a more efficient manner that lower infrastructure construction requirements for both initial installation and long-term maintenance.

The Site Data summary and illustrative site plan, figure 5, depicts the overall design concept and the major features of the RPC. It should be noted, that utilization of the smaller lot sizes, and clustering effect, has resulted in an ability to retain a large area of natural wooded area on the rear portion of the site. Perimeter buffer areas, and interior open space pockets have been provided so that more than 90% of the single-family and townhome lots have a direct connection to open space.





**TWIN CEDARS**  
 SUSSEX COUNTY DELAWARE

**MRA** 302.326.2200  
 18 BOULDEN CIRCLE, SUITE 36  
 WILMINGTON, DELAWARE  
 WWW.MRAGTA.COM

Figure 5 - Illustrative Site Plan

**Site Data:**

Total Lot Area:		64.32 Acres
Current Zoning District	C-1, CR-1, & GR (Coastal Area Overlay)	
Proposed Zoning District		GR - RPC
GR District minimum Lot Area		
	Single Family - 10,000 SF	
	Multifamily Townhouse – 1,600 SF	
	Multifamily Apartment – 3,630 SF	
RPC District Minimum Lot Area		
	Single Family - 7,500 SF	
	Multifamily Townhouse – 2,310 SF	
	Multifamily Apartment – 3,630 SF	
Allowable Density		718 Dwelling Units
GR Zoning: (64.32 ac. – 4.43 Ac) x (12.00 d.u./ac.)		
Proposed Number of Units		254 Dwelling Units
Area of Proposed Streets		4.43 Acres
Public R.O.W. (DeIDOT Dedication)		0.0 Acres
Private R.O.W.		4.43 Acres
Proposed Gross Density		4.31 D.U. / Acre
Open Space Required (10%)		6.43 Acres
Open Space Proposed (65%)		42.12 Acres
Active Open Space / Clubhouse Area		1.07 Acres
Passive Open Space		41.05 Acres
Incl. Stormwater Facilities		5.31 Acres
Off Street Parking		
	Required	Proposed
Single-Family Detached (2 Spaces / Unit)	84 spaces	84 spaces
Multifamily Attached – Townhomes (2 Spaces / Unit)	88 spaces	88 spaces
Multifamily Apartments (2 Spaces / Unit)	336 spaces	337 spaces
Community Center / Overflow	N/A	33 spaces
Infrastructure		
Sewer		Sussex County
Water		Tidewater Utilities

## Clustering to Create a Sense of Place

The design concept for Twin Cedars was to look initially at a way of utilizing the RPC ordinance and clustering concept to provide a meaningful use of open space, provide community buffering, and create a network of roads and pedestrian pathways to link the residential areas and community amenities together. The focus was on creating a sense of community where residents and visitors could interact as they drive, walk, sit and relax. This goal will be achieved by creating a centralized amenity where the residents can gather.

The primary structuring element of this design is the road network and associated pedestrian sidewalks. The amenity area has been centrally located, with all of the internal streets linking back to this central area.

The site, in its current condition, has considerable environmental areas at the rear of the property as noted above. A majority of the existing natural areas will be preserved in an undisturbed state; while others will be enhanced and expanded to provide additional backdrop for the community. Providing a centralized amenity provides a welcoming element to the community while also providing a point of destination for the residents. The amenity area combines with the axial open space element of the community to provide a visual and physical connection along the longitudinal axis of the site as shown by the Design Concept sketch below.

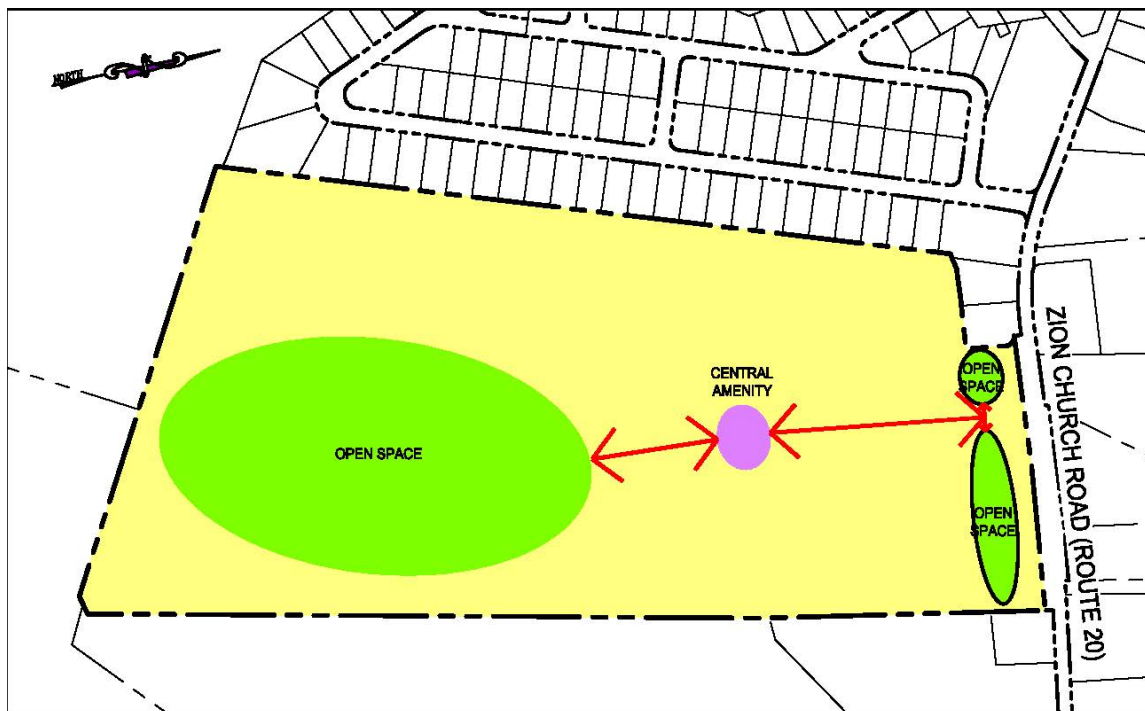


Figure 6 - Design Concept

## Perimeter Buffer

The design concept for Twin Cedars Glen begins to take form by defining a perimeter buffer around the project area, with a single point of access from Zion Church Road. The expanded front buffer area provided for the apartment area will incorporate

landscape screening as well as provide an area for stormwater management for the developed site. Placing these facilities within a buffer area will further allow for the efficient use of the developed site.

All residential lots and apartment areas will have access from the interior subdivision streets; no proposed lots will have direct access to the adjacent state road (Zion Church Road). A perimeter buffer has been provided that will vary in width from 20' to more than 1260' around the site. These buffer areas will be comprised of a mixture of forested buffers, which will retain the existing natural vegetation, and vegetated buffers that will be planted with a mixture of deciduous and evergreen planting materials in accordance with the County Code. The perimeter vegetated buffers will include undulating landscape berms where feasible to provide enhanced screening between the project site and the adjacent areas. Proposed planting materials will include native and improved plant varieties to provide for visual interest and minimize landscaping maintenance requirements.



Figure 7 - Perimeter Buffer

In addition to providing enhanced screening, the landscaping will help to direct residential interaction toward the internal portions of the sites and the centrally located amenities. The landscape buffers and berms, as shown in the figure below, will reduce the visual impact of the change in use from agricultural to residential use, promoting the concept of open space preservation.



Figure 8 - Landscape Berms

### Open Space & Unifying Element

The key elements for the site design are the direct connections of the lots to the surrounding open space areas and the direct pedestrian linkage to the centrally located amenities. The axial formation of the site reinforces these connections. The primary central amenity and anchor for the development is the community center that is anticipated to include a multipurpose building with outdoor pool, patio areas, playground, and centralized mail kiosk.



Figure 9 - Unifying Elements

## Central Amenity Feature

The core open space and recreation system for Twin Cedars is designed as an integral part of the road system and lot configuration. Located at the terminus of the main entrance road, this amenity is a focal point of the community. Careful attention was given to balance the active open space areas with the passive areas provided for perimeter buffering, lot configuration, and preservation of natural areas.



*Figure 10 - Community Clubhouse Concept*

The central amenity feature for Twin Cedars is the 1.5 acre community center complex. The community center is anticipated to include a community building, outdoor pool and patio area, as well as a playground. The building will likely include gathering spaces, game or fitness rooms, restroom / locker facilities, and a kitchen. This will allow the facility to accommodate a wide range of activities, from fitness and aerobics, card games, art classes, and gathering with neighbors. Administrative rooms and a large meeting space may be provided to accommodate meetings of the homeowner's association and other community events.

More than 96% of the dwelling units are located within a 700' radius of community clubhouse. Thirteen off street parking spaces are to be provided in parking bays immediately adjacent to the community center facilities. It is anticipated that most residents will walk to this central location reducing vehicular trips and the need for additional off street parking. Bicycle racks will also be provided for residents utilizing an alternative method of transportation.

The community center will be linked to all other portions of the community through the interior subdivision streets. Sidewalks will be provided on both sides of all streets to and within the apartment parking areas to accommodate and encourage pedestrian movement throughout the community.

**Construction Phasing**

The 254 new dwelling units are anticipated to be constructed over a multi-year period. Given the mixture of multiple dwelling types, it is anticipated that the full buildout of the community may be completed within three years.



Figure 11 - Conceptual Construction Phasing

For purposes of construction, the development will likely be broken down into four phases. The initial phase will include the site entrance, the construction of entrance road, the apartment area located on the easterly portion of the site, and associated stormwater management areas. Phase 2 will include approximately 41 single family and townhome dwelling units, the community amenities, and the associated road and stormwater management areas. Phase 3 will include the remaining 45 single family and townhome dwelling units and remaining private road areas. The final area of construction will include the remaining apartment area located on the westerly portion of the site. Final phasing limits and limits of construction are subject to final engineering, cost effective construction sequencing, and market demand. Amenities will be constructed as each related phase is completed.

**Homeowner’s Association Organization and Management Structure**

**Governing Documents**

Twin Cedars will be formally created and governed by a series of governing documents. There will be Articles of Incorporation to establish the master community as a corporate entity. There will be a Declaration of Covenants, Conditions and Restrictions which outline the restrictive covenants governing the community, and Bylaws which

address the community operation, and the Architectural Guidelines which address architectural control. The Twin Cedars Homeowner's Association (TCHOA) will operate and maintain the common facilities in the subdivision, including open spaces, stormwater management facilities, private roadways, and recreation facilities. The ownership entity of the apartment area will be responsible for the parking lots, building, and areas located within the two apartment lot areas.

### **Articles of Incorporation**

The Articles of Incorporation will establish the master community as a corporate entity. The association that will oversee the management, operation and maintenance of the community will be a non-stock corporation.

### **Declaration**

The Declaration will outline the restrictive covenants governing the community and shall be recorded among the Land Records as permanent covenants which run with the land. The Declaration creates the Residential Planned Community. It will outline in detail the role and responsibility of the Declarant. It will establish the obligation of the owners of the various lots and units to pay assessments for the maintenance, repair and replacement of the common area, amenities, and facilities and will provide the authority of record liens, after providing reasonable notice, for the non-payment of such assessments. The Declaration will also establish use restrictions for the residential units, establish use restrictions regarding the common areas and amenities, and generally outline the architectural control requirements and the enforcement authorities of the Community regarding the covenants.

### **Bylaws**

The Bylaws will outline the governance of the Community. The Community will be governed by an Executive Board, which will be controlled by the Declarant during construction, until turnover to the Community. At such time, the Executive Board will be elected by the residents and owners within the community. The Bylaws will address the powers and duties of the Executive Board and will further address the day-to-day management, operation, and maintenance of the Community and the mechanisms by which the same are accomplished. The Bylaws will require the Community to retain a professional property management company to ensure that the Community and its common areas, amenities and facilities are properly managed and maintained.

### **Architectural Guidelines**

Architectural Guidelines will also be part of the governing documents of the Community. These guidelines will set specific architectural styles, colors, and materials for the construction of the residential units as well as the common elements of construction. The guidelines will specifically address house placement requirement as well as the placement of any accessory structures including, but not limited to garages, sheds, and outdoor shower areas. These guidelines will establish setback requirements for construction. The Architectural Guidelines will create a review committee to review and determine compliance, or lack thereof of new construction, as well as modification of existing construction. It is the intent that construction, including new construction and



construction of modifications, will not be authorized unless and until the review committee has issued a permit for construction within Twin Cedars. This permit procedure is intended to ensure compliance with the governing documents, and in particular the Architectural Guidelines. The Declarant intends to maintain control of the review committee until new construction is completed within the Community. Upon completion of new construction, control shall be relinquished to the Executive Board's appointees or elected representatives for review of proposed modifications.

## ***Development Infrastructure***

### **Sanitary Sewer Service**

The Twin Cedars site is located within the existing boundary of the Sussex County Johnson Corner Sanitary Sewer District (JCSSD). Sanitary sewer service will be provided by the Sussex County Department of Public Works.

A public sewer system will be proposed to service the Twin Cedars community. This system will be comprised of an internal gravity sewer collection system with a direct connection to the County interceptor located along Zion Church Road.

A Sanitary Sewer Concept Evaluation (SSCE) was performed by the Sussex County Engineering Department on September 23, 2019. The conclusions of this report confirmed that the project site is located within a Tier 1 Sewer District Area. As noted by the SSCE, the proposed sewer system will be connected to the existing County facilities in the vicinity of JC-110 or JC-111. A Use of Existing Infrastructure Agreement will be required for the project and executed prior to recordation of the project.

### **Domestic Water Service**

The Twin Cedars subdivision will have a potable water system supplied by Artesian Water Company, Inc. (AWC), a franchised water purveyor in the State of Delaware. All water service infrastructure design will be in accordance with the water provider's standards and adhere to the requirements of Department of Natural Resources and Environmental Control for public water supply. Easements will be provided for the benefit of AWC throughout the project area for the operation and maintenance of the water system.

The average daily domestic water demand for Twin Cedars is estimated to be 46,000 gallons per day for the proposed 42 single-family, 44 townhomes, 168 apartments, and community center amenities. The maximum day demand is estimated to be 96,000 gallons per day. Water supply will be provided from the existing AWC supply sources. The on-site water distribution system will connect to the existing AWC water distribution main located along the property frontage on Zion Church Road.

### **Fire Protection**

The water system will be designed in accordance with the Delaware State Fire Prevention Regulations. Fire flow will meet, or exceed, the minimum flow required for fire protection of single-family detached residential homes, townhomes, and apartments. Fire

hydrants will be provided throughout the community along the road rights-of-way, with hydrant spacing of 800 feet or less on center in accordance with the State Fire Code.

### **Sediment and Stormwater Control**

The overall Twin Cedars site is located on approximately 64 acres, located within the watershed of the Inland Bays. The purpose of this stormwater management narrative is to describe how the qualitative and quantitative stormwater management requirements will be met at this site.

The Twin Cedars site has been designed to utilize “low impact development” techniques, including clustering and use both structural and non-structural SWM practices. By reducing the footprint of the development area, the area disturbed by construction of the proposed subdivision will be approximately 35 acres of the development site. These measures will help to increase open space, reduce impervious area, and reduce runoff from the developed site.

Temporary construction stormwater / erosion and sediment controls will be implemented to mitigate discharge of sediment laden waters offsite during the construction phase of the project. Permanent post-construction stormwater management will be utilized to ensure that peak runoff rates of the developed conditions do not exceed the pre-developed levels. Stormwater infiltration and slow-release practices will be designed in accordance with current DNREC regulations to address the increase in runoff volume associated with the Resource Protection Event Volume (RPv). Erosion and sediment control / stormwater management plans will be submitted to Sussex Conservation District (SCD) for review and approval.

A pre-submittal meeting will be held with SCD staff to discuss general drainage issues within the watershed and overall stormwater approach for the developed site. Due to high groundwater conditions on the site, it is anticipated that extended detention wet ponds facilities will be provided as the primary SWM practice. Additional infiltration based facilities may be implemented where feasible.

### **Other Utilities**

Twin Cedars will be served by the following utility companies:

Natural Gas	Chesapeake Utilities
Electric	Delmarva Power
Telephone	Verizon
Cable / Internet /	Comcast

### ***Traffic & Transportation***

#### **Traffic Impact Study**

The proposed Twin Cedars community will generate an estimated 2,030 daily vehicle trips on the surrounding roadways as a result of the proposed 42 single-family and 212 multi-family (townhome and apartment) dwelling units. As part of the RPC application, a Service Level Evaluation was performed by DelDOT. Per the results of the DelDOT analysis, the developer was recommended to conduct a Traffic Impact Study

(TIS). A TIS was prepared by The Traffic Group (TTG) and submitted to DeIDOT for review. DeIDOT subsequently issued a letter of approval for the TIS on July 13, 2020.

### **Roadway Improvements**

Based upon findings of the TIS, it was recommended that the developer will construct one site entrance to access the project from Zion Church Road; this entrance will be designed and constructed in accordance with current DeIDOT standards. Additionally, the developer is anticipated to will participate in a signal agreement for the future construction of a traffic signal at the intersection of Zion Church Road (Route 20) and Bayard Road / Johnson Road, through an equitable share contribution. Requirements for all off-site transportation improvements will be noted on the Record Plans for the project prior to recordation.

### **Subdivision Streets**

All streets within the Twin Cedars development will be privately owned and maintained. The private streets will be designed and constructed in accordance with the requirements of the Sussex County Code. A single point of access will be provided from Zion Church Road, and a future interconnection point has been provided to the adjacent undeveloped parcel located to the southeast of the project site.

A closed section roadway will be utilized throughout the development to ensure pedestrian and vehicular safety and provide an enjoyable driving experience. Street lighting and street trees will be provided in accordance with the Sussex County Code to reinforce the streetscape and pedestrian pathways. All internal streets will be owned and maintained by the developer during construction and conveyed to the Twin Cedars Homeowner's Association upon completion of the project.

### **Multimodal Transportation**

Twin Cedars was designed to promote non-vehicular trips within the residential community. By placing the community amenity space in a centralized location, the residents of the community are able to easily access the site. These facilities will only be provided for the benefit of the residents of the community and will not be utilized by the outside public.

Each of the internal subdivision streets will have sidewalks on both sides to encourage pedestrian movement throughout the subdivision. A shared use path will be incorporated into the project frontage on Zion Church Road to provide linkage to the surrounding area.

### **Emergency Evacuation**

In the event of emergency evacuation the residents will have been informed through Community documents of the procedures for preparing for evacuation. Part of that documentation shall include the Sussex County Storm Readiness Plan and Delaware Emergency Management Association (DEMA) Disaster Preparedness Plan. The anticipated evacuation routes, shown below, are based on the DeIDOT established evacuation routes. Signage will be posted at the site entrance in accordance with DeIDOT requirements for evacuation routes.

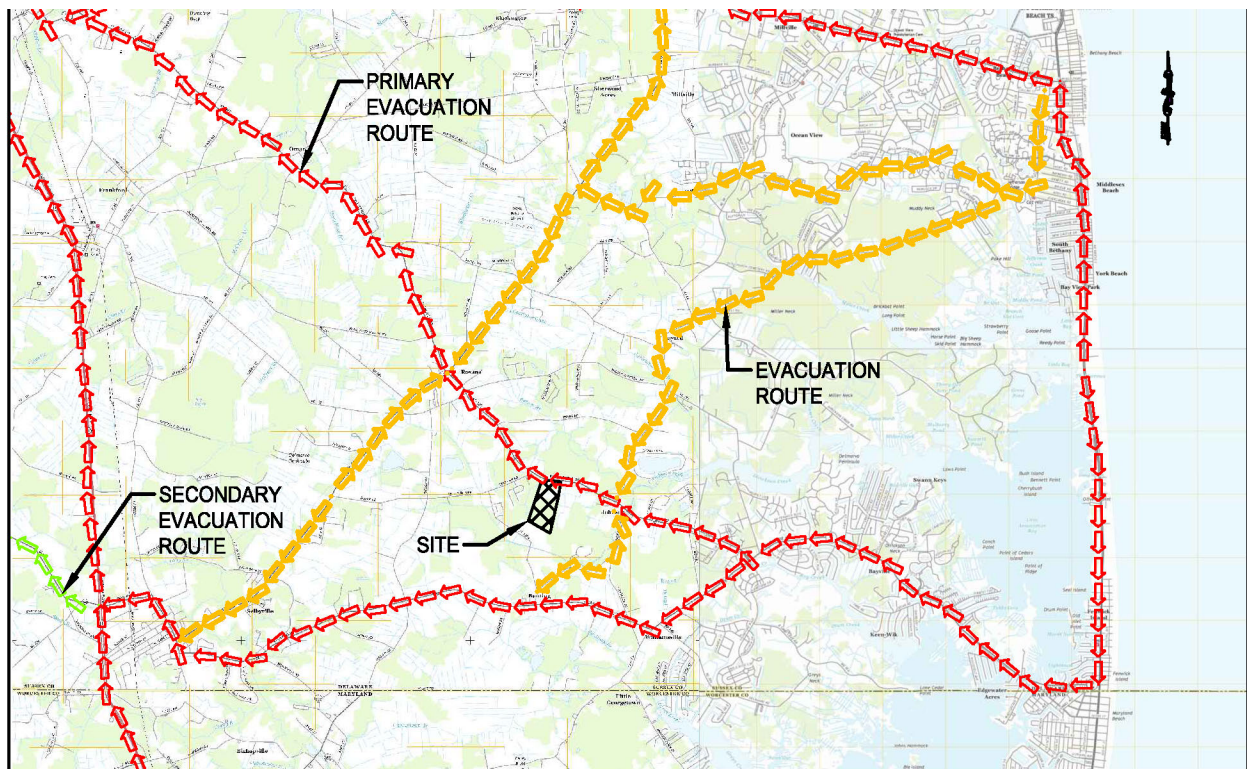


Figure 12 - Evacuation Routes

## Social Influences

The Twin Cedars community will have an effect on local services including Fire Company, Police Department and School system.

## Fire and Rescue

The Roxana Volunteer Fire Company (RVFC) 90, Station 1, has the primary responsibility for providing fire and emergency medical services within the proposed Twin Cedars area. Other nearby fire and rescue companies include the RVFC Station 2, the Frankford Volunteer Fire Company at Station 76, and the Millsboro Volunteer Fire Company at Station 83.

These companies provide:

- Firefighting
- Hazardous Material Response
- ALS Emergency Medical Service
- Vehicle Rescue (Extrication)
- Search & Rescue

The Sussex County Para-Medics provide additional service in this area for advanced life support. The Twin Cedars subdivision would be covered by Station 105 in

the Frankford area. These facilities are open and operating twenty-four hours a day, seven days a week, and are support and back-up to the Fire Company in the event of emergencies.

### **Police and Security**

The Delaware State Police Troop 4 out of Georgetown has the primary jurisdiction for servicing the proposed Twin Cedars community. The Troop is responsible for enforcement of traffic laws, parking regulations, and state laws.

### **Schools**

The Twin Cedars site is located within the Indian River School District (IRSD). Based on similar projects within the area, an estimate of one student per 6 dwelling units may be anticipated as a result of this project. The proposed 254 units would therefore result in an increase of approximately 43 students being introduced to the IRSD. It is anticipated that the children of Twin Cedars would attend Showell Elementary School, Selbyville Middle School, and Indian River High School based on current distribution patterns within the district.

During the approval process the Developer will coordinate with the school district to confirm assigned schools, and determine appropriate bus stop locations.

A majority of the annual property taxes received from each lot, as well as a significant state contribution from income tax receipts will go to support the school system. The annual taxes generated from this development should support and surpass the few resident children who will utilize the educational resources of the area.

## ***Economic Impacts***

### **Anticipated Revenue Enhancements to Sussex County**

#### One time fees:

1. Transfer Taxes (1.5% Sussex County & 2.5% State)	
a. Sale of property to developer (estimated)	\$ 120,000
b. Sale of lots to builders (estimated)	
i. Single-family	\$ 126,000
ii. Townhomes	\$ 99,000
iii. Apartments	\$ 252,000
c. Sale of finished homes (estimated)	
i. Single-family	\$ 472,500
ii. Townhomes	\$ 369,600
	<hr/>
Total transfer tax revenue	\$ 1,106,460
2. Sewer Impact Fees	
254 units @ \$6,360 per unit	\$ 1,615,440
3. Building Permit Fees (estimated)	
a. Single Family – 42 units @ \$750 per unit	\$ 31,500
b. Townhomes – 44 units @\$750 per unit	\$ 33,000
c. Apartments – 7 buildings @ \$7,500 building	\$ 52,500
	<hr/>
Total Building Permit Fee Revenue	\$ 117,000
Total one-time fee & taxes	\$ 2,838,900

#### Annual Property taxes (estimated)

1. Single Family - 42 @ \$1,500 per unit	\$ 63,000
2. Townhomes – 44 @ \$1,125 per unit	\$ 49,500
3. Apartments – 7 @ \$18,000 per building	\$ 1,260,000
	<hr/>
Total Annual Property Tax Revenue	\$ 1,372,500

# A P P E N D I C E S

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## ***Appendix 1 – 99-9C Compliance***





ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS, AND LANDSCAPE ARCHITECTS

# **Sussex County Code Chapter 99-9C Compliance**

for

## **Twin Cedars**

Baltimore Hundred  
Sussex County, Delaware

Prepared By:  
Morris & Ritchie Associates, Inc.  
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Attn: Christopher J. Flathers, P.E.

**April 2021**



S U S S E X   C O U N T Y   C O D E  
C H A P T E R   9 9 - 9 C   C O M P L I A N C E

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It is the intent of this submittal to demonstrate how the proposed Twin Cedars project meets, or exceeds, the regulatory requirements and follows the County growth objectives with regard to the Sussex County Code and Ordinances.

Located within the C-1, CR-1, and GR Zoning Districts, the proposed Residential Planned Community of Twin Cedars will include mixture of single family detached and multifamily apartments and townhomes. Based upon an overall site area of 64+/- acres, the resulting gross density of the proposed project will be 4.31 dwelling units per acre. The project proposes to rezone the C-1 and CR-1 portions of the site to GR to eliminate the existing split zoning of the subject parcel. The Residential Planned Community ordinance will be applied to the overall GR zoned site area in an effort to efficiently utilize the available land areas, and promote a greater amount of preserved and usable open space areas within the project site.

All infrastructure for the development (both on-site and off-site), will be designed and constructed at the developer's expense. The infrastructure will include roads, sidewalks, lighting within the project, off-site road improvements along road frontage, stormwater management, on-site sewer collection and transmission, on-site water distribution, and on-site community recreation facilities.

Water and sewer will both be centralized public systems. Water service for the community will be provided by Artesian Water Company, Inc. (AWC). All water distribution will be designed to requirements of the State Fire Marshal's Office and DNREC and constructed in accordance with AWC standards. Sanitary sewer service for the community will be provided by Sussex County. All sanitary sewer systems will be designed in accordance with State and County requirements and constructed in accordance with Sussex County standards.

The Twin Cedars community is proposed to be developed as combination of market rate single-family and multifamily dwelling units. The multifamily apartments will be market rate rental units owned and operated under one ownership.

The information below is provided to address the requirements of Chapter 99-9C of the Sussex County Code:

- 1. Integration of the proposed subdivision into the existing terrain and surrounding landscape.*

The proposed development area is planned primarily within the previously cleared limits of the parcel previously utilized for agricultural and residential areas. The proposed development is anticipated to result in minimal clearing of existing wooded areas on the site. Landscape buffers have been proposed around the entire perimeter of the site to provide buffering to the adjacent residential land uses. Proposed site grading is anticipated to maintain overall drainage patterns of the existing condition.

2. *Minimal use of wetlands and floodplains.*

A Wetlands Report was prepared by Geo-Technology Associates, Inc. (GTA) for the project site in March 2021. Based upon this investigation, it was determined that no jurisdictional wetlands or “Waters of the U.S” were identified within the limits of the subject project area in the professional opinion of GTA. Additionally, no tidal-wetlands are located within the project area. Requests for Jurisdictional Determination have been submitted to DNREC and ACOE for confirmation of these findings. Based upon the GTA delineation, no impact to regulated wetlands are anticipated as a result of this project.

Review of the FEMA floodplain maps indicate that the entirety of the parcel is located within the limits of Zone X, identified as “areas determined to be outside the 0.2% annual chance floodplain.” Therefore, no impacts to the floodplain are anticipated as a result of the proposed Twin Cedars project.

3. *Preservation of natural and historical features.*

The project area has been concentrated within the areas previously developed and/or utilized for agricultural purposes so that minimal tree clearing will occur on the project site. The presence of rare and endangered plants, animals, and natural communities will be investigated during the course of design to better assist the preservation process in accordance with regulatory requirements.

As noted in the comments from the State Historic Preservation Office (SHPO) received during the PLUS review, “there are no known archaeological sites or known National register listed or eligible properties on the parcel.” Therefore, no impacts to historical features are anticipated as a result of the proposed Twin Cedars project.

4. *Preservation of open space and scenic views.*

The implementation of RPC design option in the creation of the proposed Twin Cedars layout is anticipated to result in more than 42 acres (66% of project area) to be utilized for passive and active open space purposes. Throughout much of the community, open space areas have been provided adjacent to almost all of the proposed residential lots, in addition to the perimeter buffers required by the Sussex County Zoning Code. The open space areas will be enhanced with new landscape plantings and perimeter landscape berms will be implemented where practical. A centralized community amenity area will be provided for the enjoyment and active recreation of the community residents.

Much of land located to the southwest of the development area on-site is currently wooded. Almost the entirety of this area will remain in an undisturbed state and provide scenic natural views for much of the community.

5. *Minimization of tree, vegetation and soil removal and grade changes.*

As noted above, much of the existing development site has been previously cleared and has been previously developed as apartments and/or utilized for agricultural purposes. Of the existing 38 +/- acres of wooded areas on site, 28 +/- acres are anticipated to remain undisturbed. It is anticipated that the new plantings proposed for the buffer areas and throughout the community open space areas will offset a portion of the trees loss due to clearing as a result of the proposed development.

The design will follow the natural grade of the existing site to the greatest extent possible while maintaining proper drainage and stormwater flow within the project. Only those areas that are proposed for development are planned to be disturbed. Erosion and Sediment control BMPs will be employed in accordance with Sussex Conservation District (SCD) and Delaware Department of Natural Resources and Environmental Control (DNREC) guidelines in order to minimize erosion and loss of soil throughout the construction process.

6. *Screening of objectionable features from neighboring properties and roadways.*

A 20'-wide landscaped buffer strip will be provided around the perimeter of the site adjacent to the neighboring residential parcels in accordance with Section 99-6 of the County Subdivision Code. Additionally, a 75' buffer area has been provided between the apartment area and the Zion Church Road frontage in accordance with the County Zoning Code. As noted above, these areas will be enhance with landscape berms where feasible. A site landscape plan will be incorporated into the design documents with consideration given to the utilization of native Delaware plants and trees where practicable.

No on-site sewer or water facilities are anticipated to be require for this project. In the event these facilities are required (i.e. sanitary sewer pumping station), they will be screened with landscaping so that they are congruent with the surrounding areas.

7. *Provision for water supply.*

Artesian Water Company, Inc. (a certified PUC utility company) will provide central water service for the project. Plans will be submitted concurrently to both Sussex County and the State Department of Health and Human Services in order to obtain an Approval to Construct and an Approval to Operate with regard to all of the proposed water facilities. Artesian Water Company, Inc. has issued a "Willing & Able" letter indicating ability to provide service to the subject project in accordance with State standards.

As part of the water supply design, Fire Marshal requirements will be adhered to with regard to the water distribution system.

Based on preliminary discussions with Artesian Water, a large water main is located directly in front of the subject parcels along Zion Church Road that is anticipated to have available capacity to service the proposed Twin Cedars project. It is anticipated a direct connection will be made to this main.

8. *Provision for sewage disposal.*

Sussex County will provide central sewer service for the project. Plans will be submitted concurrently to both Sussex County Engineering and DNREC for ultimate approval of the plans and construction, in addition to the operation of the proposed wastewater collection, transmission, treatment, and disposal facilities.

The Twin Cedars site is currently located within a Sussex County Johnson Corner Sanitary Sewer District. A Sewer Service Concept Evaluation (SSCE) was issued by Sussex County Engineering Department on September 23, 2019. It is anticipated that on site gravity sewer system will connect directly to the existing County facilities located along Zion Church Road at County Manhole JC-110 or JC-111 in accordance with the recommendations of the SCCE. No on-site sanitary sewer pump stations are anticipated to be required at this time.

9. *Prevention of pollution of surface and groundwater.*

Stormwater facilities will be designed according to DNREC and SCD standards and regulations; as such, they will be designed to reduce impacts to surrounding natural water resources. Designs are anticipated to include the use of natural looking and functioning features like bio-swales, bio-retention, infiltration facilities, created wetlands, and/or extended detention wet pond facilities to allow the stormwater to receive pollutant removal prior to infiltration and/or discharge from the developed site.

10. *Minimization of erosion and sedimentation, minimization of changes in groundwater levels, minimization of increased rates of runoff, minimization of potential for flooding and design of drainage so that the groundwater is maximized.*

Erosion and sediment control plans will be developed in accordance with regulatory requirements. Careful planning and construction phasing will allow the contractor to minimize the area of disturbance at any given time in order to limit the potential for sediment issues on-site.

On-site stormwater facilities will be designed to filter and infiltrate or slowly release stormwater runoff to mimic existing conditions in order to not exacerbate downstream flooding issues. Infiltration and/or slow release facilities will be employed in accordance with DNREC guidelines will help mimic recharge/discharge from the developed site for the Resource Protection Event



Volume (RPv). On site management for the Conveyance (Cv) and Flood (Fv) events will be provided in to meet State and SCD requirements.

*11. Provision for safe vehicular and pedestrian movement within the site and to adjacent roadways.*

Construction plans for the proposed site entrance and any off-site road improvements will be designed in accordance with DeIDOT regulatory requirements. Easement areas have been provided along the Zion Church Road frontage for the installation of a shared use path in accordance with DeIDOT's typical requirements. Final plans will be submitted to DeIDOT for review and approval prior to construction.

Construction plans for the interior private roads will be developed in accordance with the requirements of the Sussex County Code and Sussex County Engineering. In addition to the sidewalks to be provided on both sides of all internal streets. Street lighting will also be provided along all private roads to promote safety within the development.

Additionally, all private roads and community parking lot areas will be designed in accordance with Fire Marshal requirements to ensure adequate lane widths, emergency access, and any additional safety features for fire / rescue vehicular movement.

*12. Effect on area property values.*

The Twin Cedars project proposes a community comprised of market-rate single-family detached and multifamily townhomes; additionally, a portion of the project will be comprised of market rate rental multifamily apartment units. This development configuration is consistent with the development options permitted within the underlying GR zoning and the Sussex County Codes.

The single-family component of the project is anticipated to be consistent with the recently constructed nearby communities of Batson Creek Estates and Fox Haven. The townhome and apartment components will provide a similar design aesthetic at an alternate price point that will not negatively impact neighboring property values. Perimeter buffering areas will be utilized to reduce direct visual impact on neighboring parcels.

The project is proposed to modify the configuration / alignment of the Batson Branch, Prong 1 Tax Ditch. These modifications will improved drainage for the upstream properties, and provide SWM in a currently unregulated area. As a result, these improvements should have a positive impact on both the upstream, and downstream properties.

*13. Preservation and conservation of farmland.*

The subject parcel is located entirely within the Coastal Area designated growth zone as shown in the Sussex County Zoning Map and Comprehensive Development Plan. Utilization of a Residential Planned Community configuration at the Twin Cedars site will allow for the efficient utilization of land within the targeted growth areas, and reduce the development of agricultural areas outside of the growth areas.

*14. Effect on schools, public buildings and community facilities.*

The Twin Cedars site is located within the Indian River School District (IRSD). Based on similar projects within the area, an estimate of one student per 6 dwelling units may be anticipated as a result of this project. The proposed 254 units would therefore result in an increase of approximately 43 students being introduced to the IRSD. It is anticipated that the children of Twin Cedars would attend Showell Elementary School, Selbyville Middle School, and Indian River High School based on current distribution patterns within the district. Coordination with the school district will occur throughout the plan approval process to determine necessary school bus stop location(s) to serve the residents of Twin Cedars.

It is anticipated that additional local property taxes and the state contribution from income tax receipts will continue to support the school system to offset the impacts created by the additional student demand associated with this project.

*15. Effect on area roadways and public transportation.*

Based on the proposed combination of single-family and multi-family homes, an estimated 2,030 average daily trips will be added to the existing road network surrounding the Twin Cedars site. To evaluate the impacts of these additional vehicle trips, a Traffic Impact Study (TIS) was prepared by The Traffic Group and approved by DeIDOT in July 2020. Based upon recommendations of the TIS review, it is anticipated that the developer will construct one site entrance to the project from Zion Church Road in accordance with current DeIDOT standards. Additionally, it is anticipated that the developer will participate in a signal agreement for the future construction of a traffic signal at the intersection of Zion Church Road (Route 20) and Bayard Road / Johnson Road, through an equitable share contribution.

Through the DeIDOT review and approval process related to the Site Entrance Plans and the Record Plats, the needs for contributions to existing projects and/or construction of off-site road improvements to the existing infrastructure (roadways, intersections, etc.) and public transportation (i.e. bus stops) will be finalized.

*16. Compatibility with other area land uses.*

The Twin Cedars residential project has been designed as a Residential Planned Community under the provisions allocated by the Sussex County Zoning Code. The proposed single-family lots should blend in well with the surrounding land uses surrounding the project site as the area is generally dominated by residential uses. The surrounding properties comprised of a mixture of GR, C-1, C-2, CR-1, AR-1, AR-2, and MR Zoning classifications. The cluster configuration and proposed lot sizes within the single-family portion of the site are similar in nature to the recently constructed Batson Creek Estates and Fax Haven communities. The overall project density proposed under the RPC will result in similar overall project density.

*17. Effect on area waterways.*

Erosion and sediment control measures will be implemented during construction in accordance with DNREC requirements to minimize impact to surrounding waterways during the construction process. It is anticipated that permanent stormwater management facilities utilizing created wetland and extended detention will be implemented where infiltration based practices are determined to not be practicable. These facilities will be provide slow release of the runoff to mimic pre-development hydrology in accordance with the State and Local requirements. Runoff from agricultural uses is often heavily loaded with sediment, nitrogen, and phosphorus. By developing the subject parcel, there is a potential improvement in water quality by converting the existing agricultural land with no stormwater practices into a residential community with stormwater facilities designed in accordance with current DNREC regulatory requirements.



***Appendix 2 – Environmental Assessment and Public Utility Evaluation***

**115-194.3 Compliance**





ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS, AND LANDSCAPE ARCHITECTS

# **Environmental Assessment & Public Facilities Evaluation**

Sussex County Code Chapter 115-194.3 Compliance

for

## **Twin Cedars**

Baltimore Hundred  
Sussex County, Delaware

Prepared By:  
Morris & Ritchie Associates, Inc.  
18 Boulden Circle, Suite 36  
New Castle, DE 19720  
Phone: (302) 326-2200  
Attn: Christopher J. Flathers, P.E.

**April 2021**





E N V I R O N M E N T A L  
A S S E S S M E N T & P U B L I C  
F A C I L I T I E S E V A L U A T I O N

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It is the intent of this submittal to demonstrate how the proposed Twin Cedars project meets, or exceeds, the regulatory requirements and follows the County growth objectives with regard to the Sussex County Code and Ordinances.

Located within the C-1, CR-1, and GR Zoning Districts, the proposed Residential Planned Community of Twin Cedars will include mixture of single family detached and multifamily apartments and townhomes. Based upon an overall site area of 64+/- acres, the resulting gross density of the proposed project will be 4.31 dwelling units per acre. The project proposes to rezone the C-1 and CR-1 portions of the site to GR to eliminate the existing split zoning of the subject parcel. The Residential Planned Community ordinance will be applied to the overall GR zoned site area in an effort to efficiently utilize the available land areas, and promote a greater amount of preserved and usable open space areas within the project site.

All infrastructure for the development (both on-site and off-site), will be designed and constructed at the developer's expense. The infrastructure will include roads, sidewalks, lighting within the project, off-site road improvements along road frontage, stormwater management, on-site sewer collection and transmission, on-site water distribution, and on-site community recreation facilities.

Water and sewer will both be centralized public systems. Water service for the community will be provided by Artesian Water Company, Inc. (AWC). All water distribution will be designed to requirements of the State Fire Marshal's Office and DNREC and constructed in accordance with AWC standards. Sanitary sewer service for the community will be provided by Sussex County. All sanitary sewer systems will be designed in accordance with State and County requirements and constructed in accordance with Sussex County standards.

The Twin Cedars community is proposed to be developed as combination of market rate single-family and townhome dwelling units. The multifamily apartments will be market rate rental units owned and operated under one ownership entity.

The information below is provided to address the requirements of Chapter 115-194.3.B(2) of the Sussex County Code:

- a) *Proposed drainage design and the effect on stormwater quality and quantity leaving the site, including methods for reducing the amount of phosphorous and nitrogen in the stormwater runoff and the control of any other pollutants such as petroleum hydrocarbons or metals.*

The grading of the developed site will attempt to maintain the drainage patterns of the pre-developed condition. Runoff from the developed site will be conveyed to on-site stormwater management (SWM) facilities through a combination of surficial sheet flow, open channel, and closed pipes.

The permanent on-site SWM facilities will be designed in accordance with Delaware Department of Natural Resources and Environmental Control (DNREC) and Sussex Conservation District (SCD) standards to minimize potential impacts to the receiving watershed. Designs are anticipated to include the use of infiltration based SWM practices including bio-swales, bio-retention, infiltration basins where practicable, in addition to created wetlands and/or extended detention wet pond facilities. These facilities will achieve pollutant loading to the receiving watershed through a combination of sedimentation, nutrient uptake, and runoff reduction. All SWM facilities will be designed in accordance with DNREC standards to achieve pollutant reduction requirements.

Erosion and sediment control measures will be implemented during the construction phase in accordance with DNREC requirements to minimize impact of sediment laden runoff discharging to the watershed. Runoff from agricultural uses is often heavily loaded with sediment, nitrogen, and phosphorus. By developing the subject parcel, there is a potential improvement in water quality by converting the existing agricultural land with no stormwater practices into a residential community with stormwater facilities designed in accordance with current DNREC regulatory requirements.

- b) *Proposed method of providing potable and, where appropriate, irrigation water and the effect on public or private water systems and groundwater, including an estimate of average and peak demands.*

The Twin Cedars project is located within the CPCN service area assigned to Artesian Water Company, Inc. (AWC). The project will utilize public water supply to provide potable water and fire protection throughout the community. It is anticipated that the on-site distribution system will connect to the existing AWC water main located along the property frontage on Zion Church Road. No large scale irrigation is anticipated as a result of this project. AWC has issued a "Willing & Able" letter indicating ability to serve the proposed project in accordance with State standards.

Plans will be developed in accordance with AWC and Sussex County standards. These plans will be submitted concurrently to both Sussex County and the State Department of Health and Human Services in order to obtain an Approval to Construct and an Approval to Operate with regard to all of the proposed water facilities.

The 42 single-family, 44 townhomes, 168 apartments, and community center proposed by this project are anticipated to result in an average daily water demand of 64,000 gallons, with a corresponding peak demand of 96,000 gallons per day. With no on-site wells proposed by this project, there is no anticipated direct impact to the groundwater at the site location due to the proposed water use.

- c) *Proposed means of wastewater treatment and disposal with an analysis of the effect on the quality of groundwater and surface waters, including alternative locations for on-site septic systems.*

The Twin Cedars project is currently located within Sussex County's Johnson Corner Sanitary Sewer District (SSD). A Sewer Service Concept Evaluation (SSCE) was prepared by the Sussex County Utility Planning Division in September 2019; it is anticipated that the proposed on-site gravity sewer system will connect directly to the existing County gravity sewer system located along the property frontage on Zion Church Road in accordance with the SSCE recommendations. No sanitary sewer pump station is anticipated to be required to serve the Twin Cedars project. No on-site septic systems are proposed by the project; there are no anticipated impacts to the quality of groundwater or surface waters at the Twin Cedars site as a result of the proposed sanitary sewer systems to serve this community.

Plans will be developed in accordance with Sussex County standards and submitted concurrently to both Sussex County Engineering and the Delaware Department of Natural Resources for ultimate approval of the plans and construction.

d) *Analysis of the increase in traffic and the effect on the surrounding roadway system.*

As part of the application process for this project, a Service Level Evaluation was performed by DeIDOT in November 2019. In accordance with the recommendations of this evaluation, a Traffic Impact Study (TIS) was prepared by The Traffic Group and submitted to DeIDOT for review. DeIDOT issued a letter of approval for the TIS on July 13, 2020.

Based on the proposed combination of single-family and multi-family homes, an estimated 2,030 average daily trips will be added to the existing road network surrounding the Twin Cedars site. In order to address the impacts of these additional trips on the surrounding road network, it is anticipated that the developer will make the following improvements in accordance with the TIS approval:

- Construct a full-movement access for the site onto Zion Church Road (Route 20)
- Complete roadway improvements to Zion Church Road to bring the roadway up to current DeIDOT standards for the length of the project frontage.
- Contribute equitable share for installation of traffic signal at Route 20 and Bayard Road / Johnson Road.
- Construct bike lanes as part of Route 20 / site entrance improvements.
- Provide shared use path along site frontage.

e) *The presence of any endangered or threatened species listed on federal or state registers and proposed habitat protection areas.*

No endangered or threatened species are known to exist on site. No protected critical habitat areas are known to exist on the site for federally threatened or

endangered species based upon review of the US Fish & Wildlife Services Critical Habitat mapping tool.

(<https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77>)

During the PLUS review process, DNREC did not identify the site as containing any potential habitats for State protected species. The development area has been primarily limited to the previously cleared portions of the site; as shown by the Preliminary Plan, tree clearing will be limited, preserving approximately 70% of the existing wooded areas on-site.

- f) *The preservation and protection from loss of any tidal or non-tidal wetlands on the site.*

A Wetlands Report was prepared by Geo-Technology Associates, Inc. (GTA) for the project site in March 2021. Based upon this investigation, it was determined that no jurisdictional wetlands or “Waters of the U.S” were identified within the limits of the subject project area in the professional opinion of GTA. Additionally, no tidal-wetlands are located within the project area. Requests for Jurisdictional Determination have been submitted to DNREC and ACOE for confirmation of these findings. Based upon the GTA delineation, no impact to regulated wetlands are anticipated as a result of this project.

Disturbances to portions of the Batson Branch, Prong 1 Tax Ditch that crosses the front portion of the site are anticipated as the alignment of this feature is modified by the proposed site development. These impacts will be performed under DNREC requirements and coordinated through the Tax Ditch managers.

- g) *Provisions for open space as defined in § 115-4.*

*The implementation of the RPC design option in the creation of the proposed Twin Cedars layout is anticipated to result in more than 42 acres (66% of total site area) to be utilized for passive and active open space purposes. Throughout much of the community, open space areas have been provided adjacent to all of the proposed residential lots. In addition, buffer areas will be provided around the perimeter of the parcel boundary in accordance with requirements of the Sussex County Zoning Code. The open space areas will be enhanced with new landscape plantings and perimeter landscape berms will be implemented where practical. A centralized community amenity area will be provided for the enjoyment and active recreation all of the community residents.*

- h) *A description of provisions for public and private infrastructure.*

Public infrastructure will be utilized to provide sanitary sewer and water service for the proposed community, as noted above. The site entrance at Zion Church Road and associated improvements along the project frontage will be constructed in accordance with current DelDOT standards; the associated right-of-way frontage will be dedicated to public use for future maintenance by DelDOT. The internal community streets and associated storm drainage will be private infrastructure

designed in accordance with current Sussex County standards, and will be owned and maintained by the Twin Cedars Homeowners Association (TCHOA).

Public water will be provided by AWC; all water mains will be designed and constructed in accordance with AWC and Sussex County standards as applicable. AWC will operate and maintain the water facilities throughout the community.

Public sanitary sewer will be provided by Sussex County; all sewers will be designed and constructed in accordance with Sussex County standards. Sussex County will operate and maintain the sewer facilities throughout the community.

The on-site stormwater management facilities will be designed and constructed in accordance with DRNEC and SCD standards as applicable. The TCHOA will be responsible for the long term maintenance and operation of all on-site SWM facilities.

*i) Economic, recreational or other benefits.*

The architecture, housing styles, and proposed construction practices that are anticipated to be used for the single-family component of the proposed Twin Cedars community will likely mirror those practices employed at the nearby communities like Batson Creek Estates and Fox Haven. It is anticipated that similar architectural style would be extended to the multifamily townhome units as well. Perimeter buffer areas will be employed to minimize impact to surrounding parcels.

The Twin Cedars community will incorporate a central amenity feature that will provide an active recreation component for use by the community residents.

The subject parcel is located entirely within the Coastal Area growth zone (formerly ESDDOZ) as shown in the Sussex County Zoning Map and Comprehensive Development Plan. Utilization of a cluster type development developed as an RPC under the County Zoning Code will allow for the efficient utilization of land within the targeted growth areas, and reduce the development of agricultural areas outside of the growth area.

As noted in the PLUS comments provided by the State Housing Authority, the unit mixture proposed by the Twin Cedars project will “facilitate a more affordable housing product in the southern Coastal Area.”

*j) The presence of any historic or cultural resources that are listed on the National Register of Historic Places.*

The Twin Cedars site contains no known historic or cultural resources that are listed on the National Register of Historic Places. In addition, no evidence of burial sites have been observed within the project area.

*k) An affirmation that the proposed application and proposed mitigation measures are in conformance with the current Sussex County Comprehensive Plan.*

The entirety of the Twin Cedars site is located within the Coastal Area (formerly known as the Environmentally Sensitive Development District Overlay Zone) as

shown on the current Sussex County Comprehensive Plan. The site has ready access to public utilities as noted above. Utilizing the RPC design approach afforded by the County Code will allow for efficient use of the project site.

- l) Actions to be taken by the applicant to mitigate the detrimental impacts identified relevant to Subsection B(2)(a) through (k) above and the manner by which they are consistent with the Comprehensive Plan.*

The Twin Cedars project, from site selection to site layout, has resulted in a proposed project that will have minimal detrimental impact on the natural resources of the County, and the area surrounding the project site. The Twin Cedars site design aligns with the goals of the Sussex County Comprehensive Plan:

The Twin Cedars site is located within the Coastal Area growth zone; this is consistent with the County's strategy to "prioritize new development in designated Growth Areas to better preserve other areas".

The Twin Cedars project is located within Johnson Corner Sanitary Sewer District (SSD) and within the Artesian Water Company, Inc. CPCN area. With direct access to existing public sewer and water mains located along the Zion Church Road frontage, the site is anticipated to have adequate access to public utilities. This is consistent with the County's objective for "planning that considers the efficient location of public services and infrastructure."

The project has been reviewed by DeIDOT for impacts to the surrounding Road network. Based on the proposed combination of single-family and multi-family homes, an estimated 2,030 average daily trips will be added to the existing road network surrounding the Twin Cedars site. To evaluate the impacts of these additional vehicle trips, a Traffic Impact Study (TIS) was prepared by The Traffic Group and approved by DeIDOT in July 2020. Based upon recommendations of the TIS review, it is anticipated that the developer will construct one site entrance to the project from Zion Church Road in accordance with current DeIDOT standards. Additionally, it is anticipated that the developer will participate in a signal agreement for the future construction of a traffic signal at the intersection of Zion Church Road (Route 20) and Bayard Road / Johnson Road, through an equitable share contribution. Through these proposed improvements, and commitments to financial contributions to the offsite intersection upgrades, the developer has demonstrated efforts to mitigate the traffic impacts as a result of the propose Twin Cedars project. This approach is consistent with the County's strategy for the coordination with "DeIDOT on road improvements and other transportation projects."

The Twin Cedars site does not contain any regulated wetland areas, as noted above. On-site stormwater management facilities will be provided to mitigate the runoff from the developed site on the adjacent properties and downstream areas. The entirety of the site is located outside of a delineated FEMA floodplain; therefore, no direct impact to the floodplain is anticipated as a result of the proposed development on site.

A portion of the project site area was previously occupied by a small apartment complex known as Twin Cedars. Re-use of the site for residential use will be a continuation of this prior residential use. The project area is bordered to the northwest by the previously approved Hampden Park subdivision; with several other residential subdivisions, including Deer Run Acres and Fox Haven, in close proximity. The Twin Cedars residential project has been designed as a Residential Planned Community under the provisions allocated by the Sussex County Zoning Code. The proposed single-family lots should blend in well with the surrounding land uses surrounding the project site as the area is generally dominated by residential uses. The surrounding properties are comprised of a mixture of GR, C-1, C-2, CR-1, AR-1, AR-2, and MR Zoning classifications. The cluster configuration and proposed lot sizes within the single family portion of the site are similar in nature to the recently constructed Batson Creek Estates and Fax Haven communities.

The Twin Cedars project is proposing the implementation of a 20'-wide forested / vegetated buffer surrounding the outer boundary of the project area bordering the neighboring residential properties in accordance with the County Code requirements. Where feasible, these buffer areas will be enhanced with berms in order to "minimize the adverse impacts of development on existing development."

The implementation of RPC development option under the County Code ordinance will allow for the efficient use of the Twin Cedars site, while also providing for increased open space areas within the community. The project area is currently zoned for residential use and has been identified by the County for development under the Coastal Area designation. The efficient utilization of this site will allow for the concentration of development within one of the growth areas, and allow for the preservation of the rural areas of the County to support the "importance of the agricultural land base of the County".

Although the Twin Cedars site does not front directly upon the inlays, the project is located within the Dirickson-Little / Inland Bays watershed. Throughout the construction phase of the project, temporary erosion control measures will be utilized to minimize the discharge of sediment laden water off-site. In the final configuration of the site structural and no-structural SWM BMPs will be utilized to reduce the direct discharge of polluted runoff to the watershed. The Twin Cedars project will utilize the connection to the County public sewer system, eliminating the potential need for on-site septic systems. These practices will support the County's goal to "recognize the importance of the Inland Bays."





***Appendix 3 – Project Site Exhibits***

**Tax Parcel**

**Zoning**

**Future Land Use**

**FEMA Floodplain**

**State Spending Strategies**

**Source Water Protection Areas**

**USDA Soil Mapping**





PARCEL  
533-11.00-42.00

DEER RUN RD.

ZION CHURCH RD. (ROUTE 20)



**MORRIS & RITCHIE ASSOCIATES, INC.**  
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**PARCEL  
EXHIBIT  
FOR  
TWIN CEDARS**

SUSSEX COUNTY, DE

SCALE: 1"=500'

DATE: 5/21/20

DRAWN BY: CJF

DESIGN BY: CJF

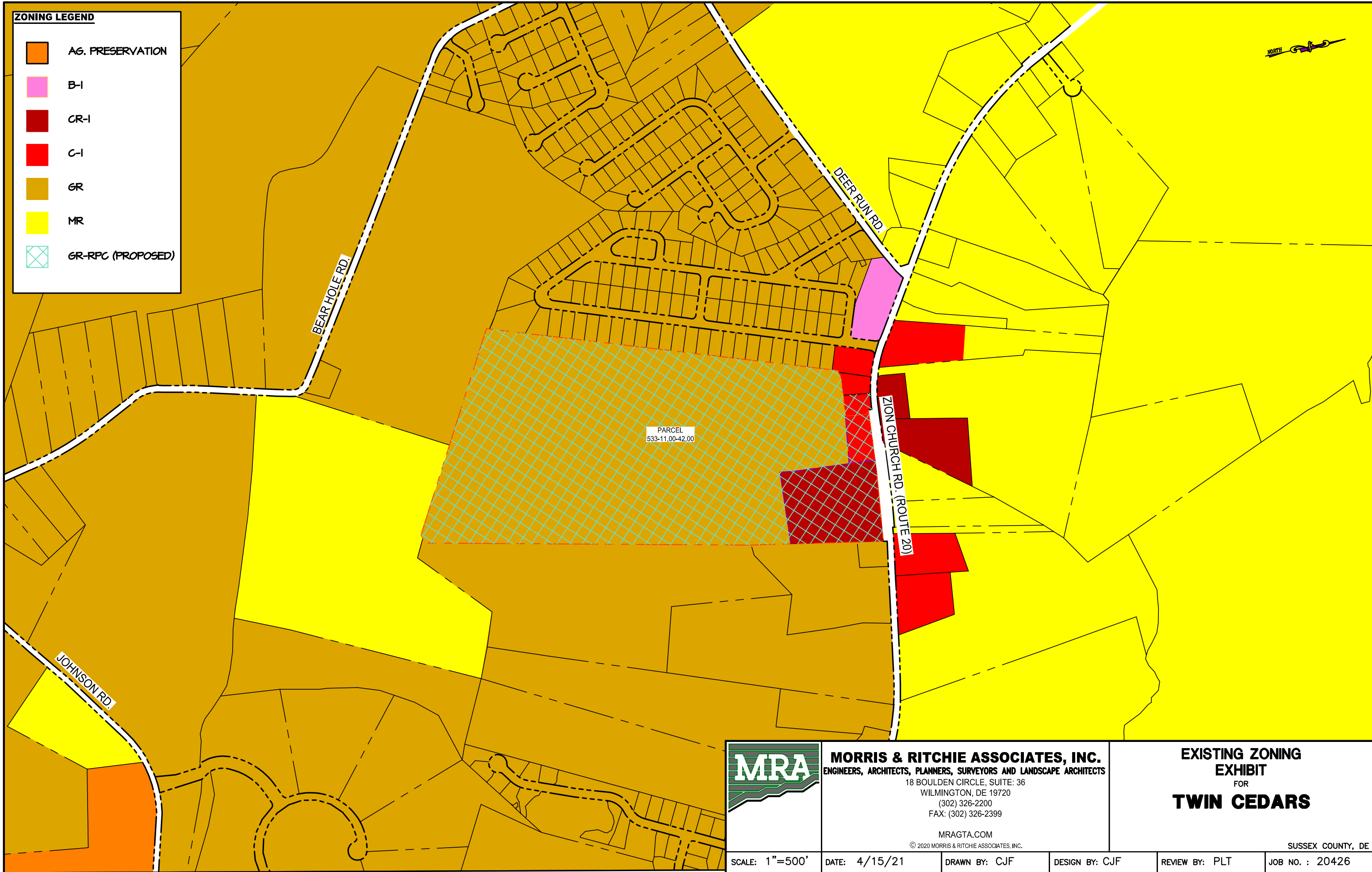
REVIEW BY: PLT

JOB NO. : 20426



**ZONING LEGEND**

-  AG. PRESERVATION
-  B-1
-  CR-1
-  C-1
-  GR
-  MR
-  GR-RPC (PROPOSED)



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**EXISTING ZONING  
EXHIBIT  
FOR  
TWIN CEDARS**

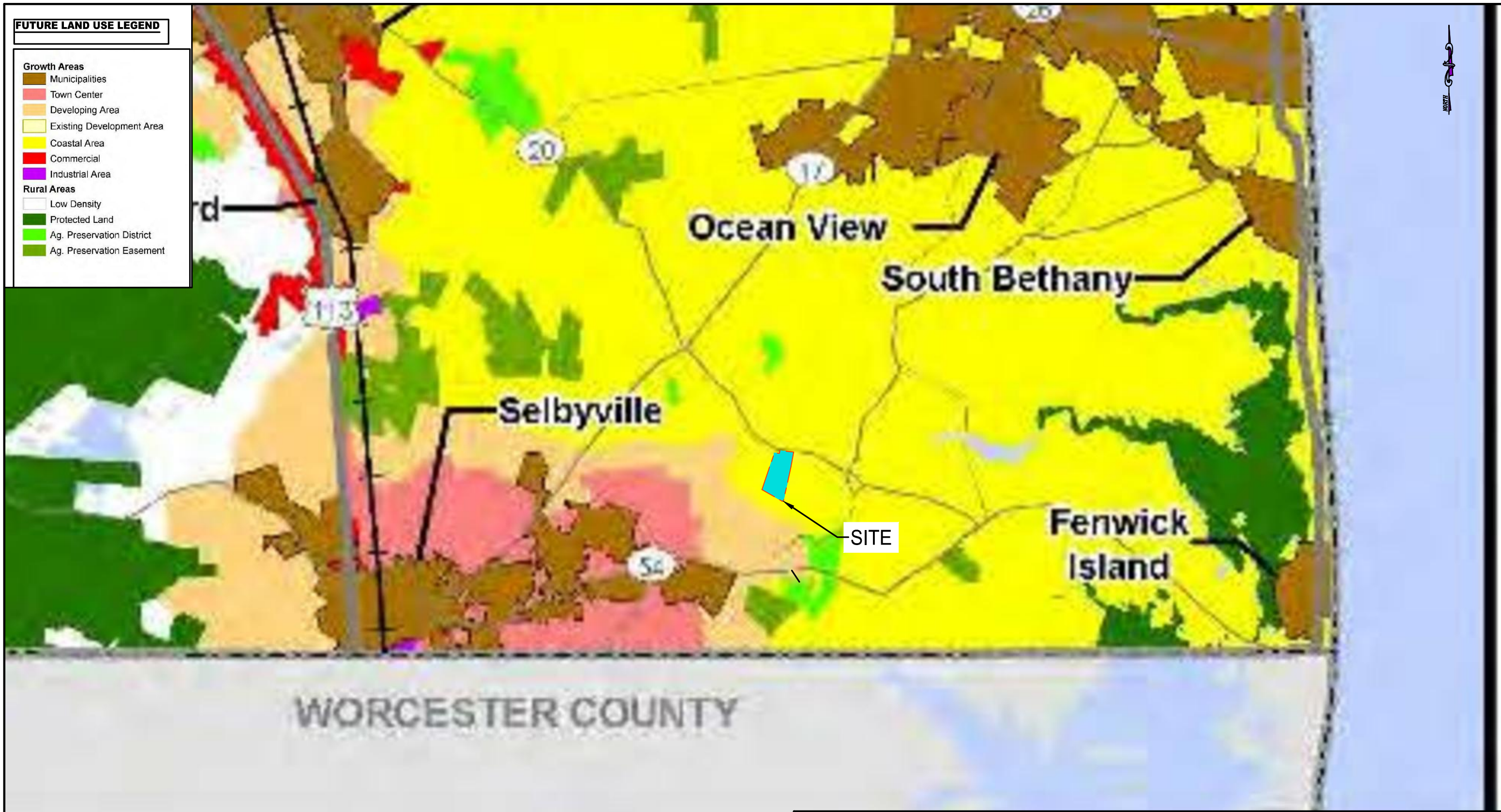
SUSSEX COUNTY, DE

SCALE: 1"=500'	DATE: 4/15/21	DRAWN BY: CJF	DESIGN BY: CJF	REVIEW BY: PLT	JOB NO. : 20426
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**FUTURE LAND USE LEGEND**

- Growth Areas**
- Municipalities
- Town Center
- Developing Area
- Existing Development Area
- Coastal Area
- Commercial
- Industrial Area
- Rural Areas**
- Low Density
- Protected Land
- Ag. Preservation District
- Ag. Preservation Easement



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**FUTURE LAND USE EXHIBIT**  
 FOR  
**TWIN CEDARS**

SUSSEX COUNTY, DE

SCALE: 1"=5,000'	DATE: 5/21/20	DRAWN BY: CJF	DESIGN BY: CJF	REVIEW BY: PLT	JOB NO. : 20426
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# LEGEND


 SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD



The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.









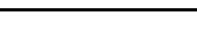
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

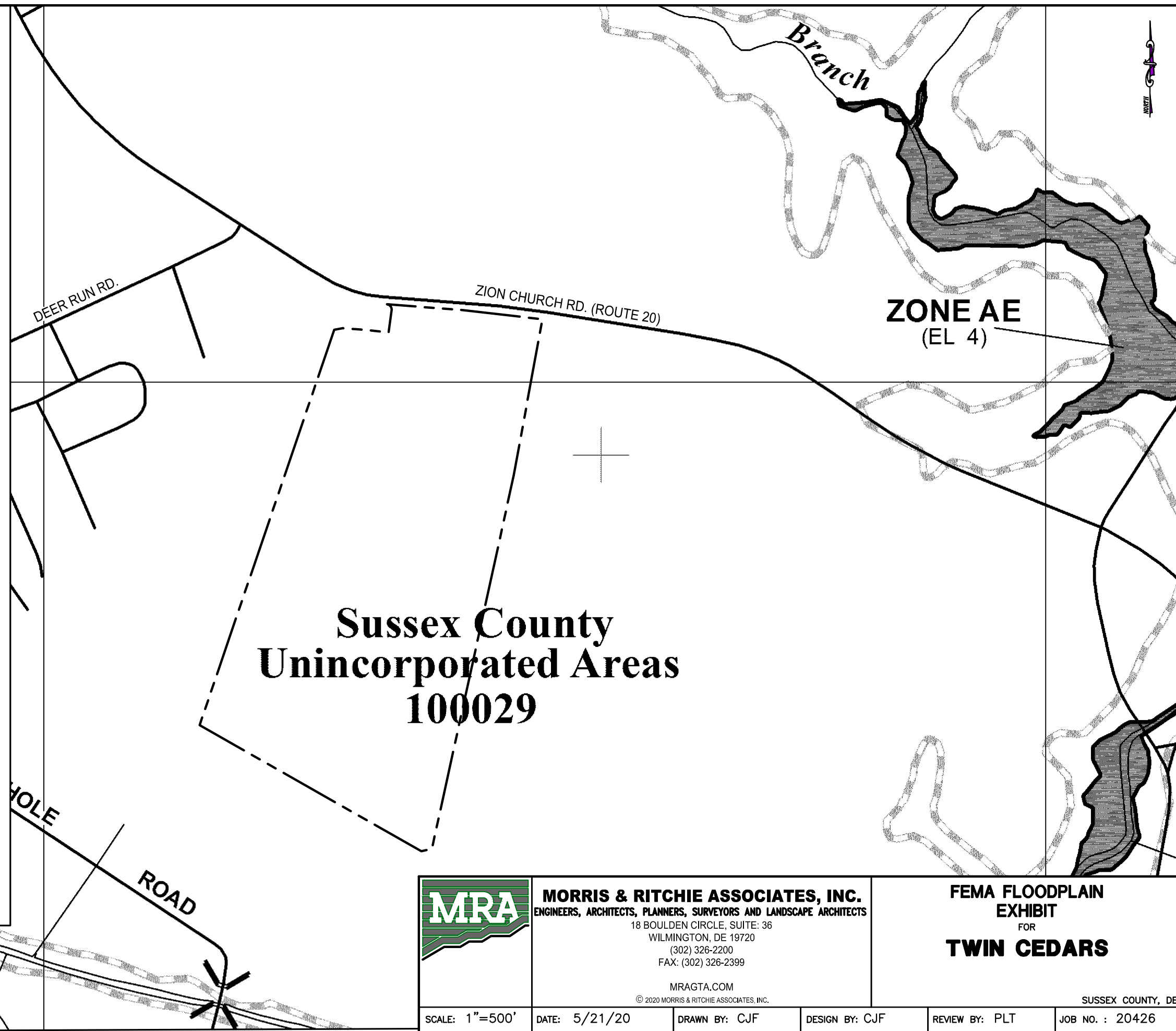
 FLOODWAY AREAS IN ZONE AE  
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

 OTHER FLOOD AREAS  
**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

 OTHER AREAS  
**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.  
**ZONE D** Areas in which flood hazards are undetermined, but possible.

 COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS  
 OTHERWISE PROTECTED AREAS (OPAs)

- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
-  Floodplain boundary
  -  Floodway boundary
  -  Zone D boundary
  -  CBRS and OPA boundary
  -  Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
  -  Limit of Moderate Wave Action
  -  Advisory line estimating flooding extents if dunes are breached during a 0.2% annual chance flood event
  -  Base Flood Elevation line and value; elevation in feet\*  
(EL 987)
  -  Base Flood Elevation value where uniform within zone; elevation in feet\*



**MORRIS & RITCHE ASSOCIATES, INC.**  
ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
18 BOULDEN CIRCLE, SUITE 36  
WILMINGTON, DE 19720  
(302) 326-2200  
FAX: (302) 326-2399

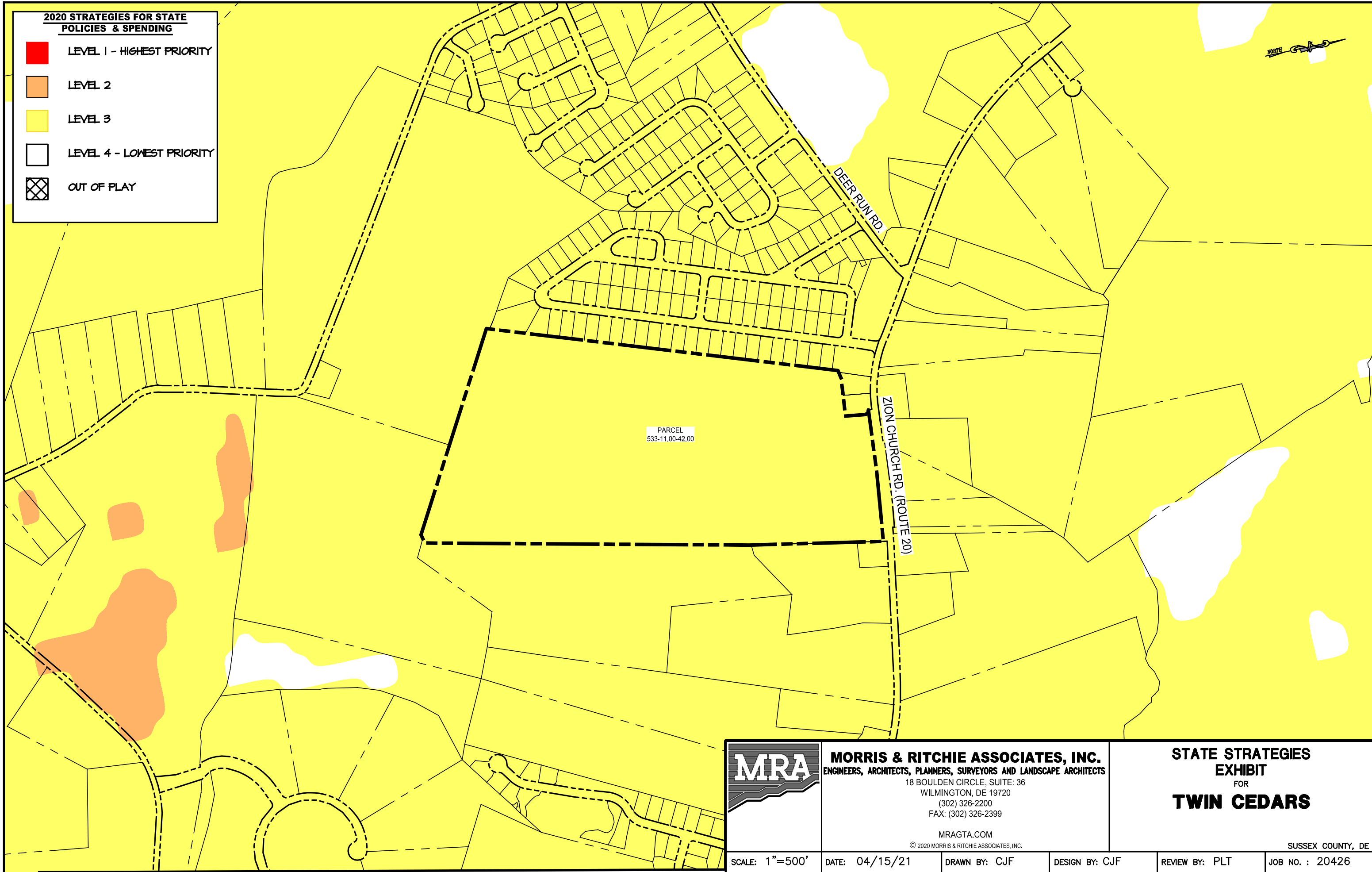
**FEMA FLOODPLAIN EXHIBIT FOR TWIN CEDARS**

SCALE: 1"=500'		DATE: 5/21/20	DRAWN BY: CJF	DESIGN BY: CJF	REVIEW BY: PLT	JOB NO.: 20426
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**2020 STRATEGIES FOR STATE  
POLICIES & SPENDING**

- LEVEL 1 - HIGHEST PRIORITY
- LEVEL 2
- LEVEL 3
- LEVEL 4 - LOWEST PRIORITY
- OUT OF PLAY



PARCEL  
533-11,00-42,00

DEER RUN RD.

ZION CHURCH RD. (ROUTE 20)



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**STATE STRATEGIES  
EXHIBIT  
FOR  
TWIN CEDARS**

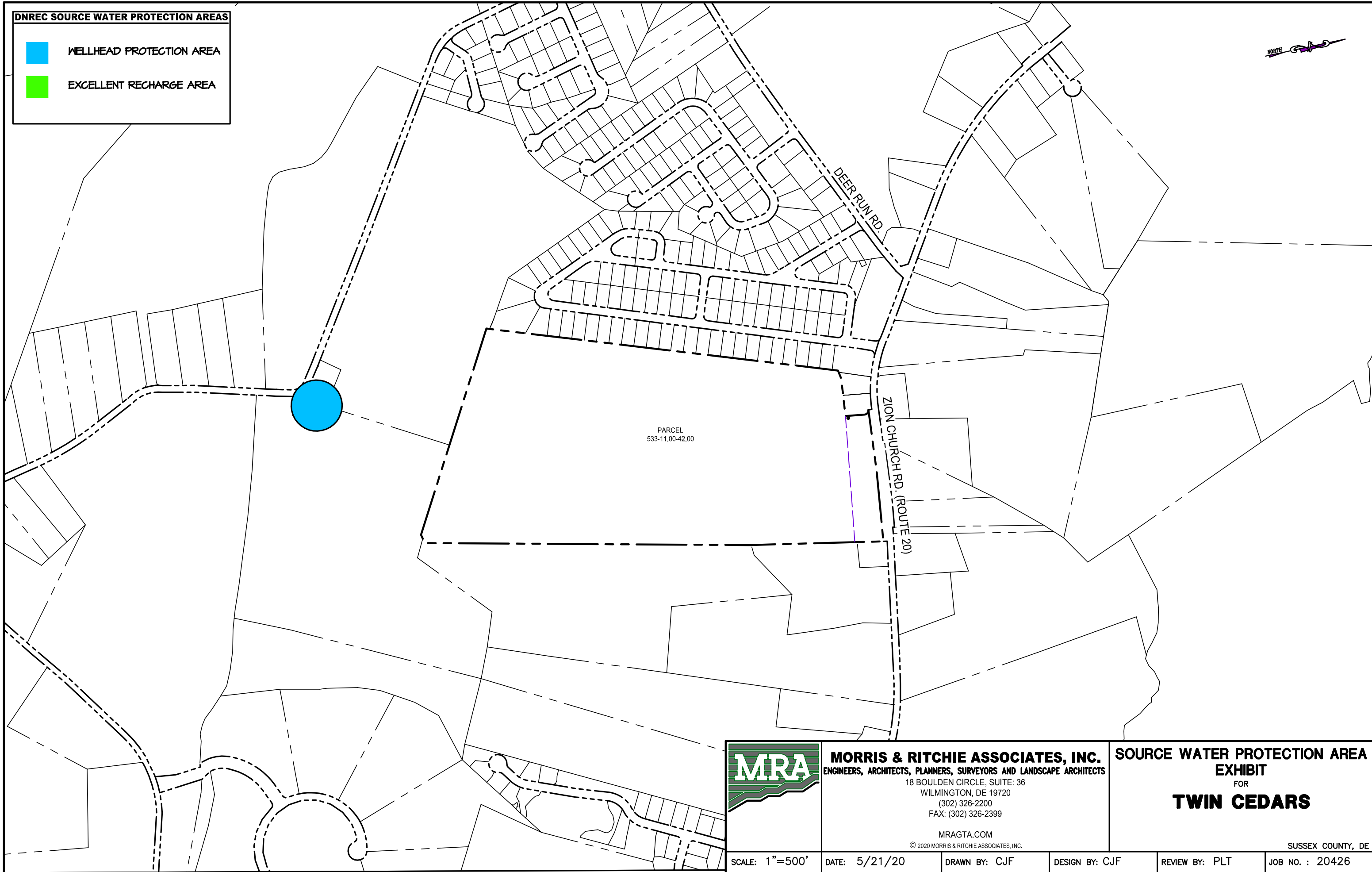
SUSSEX COUNTY, DE

SCALE: 1"=500'	DATE: 04/15/21	DRAWN BY: CJF	DESIGN BY: CJF	REVIEW BY: PLT	JOB NO. : 20426
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**DNREC SOURCE WATER PROTECTION AREAS**

-  WELLHEAD PROTECTION AREA
-  EXCELLENT RECHARGE AREA



**MORRIS & RITCHIE ASSOCIATES, INC.**  
ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
18 BOULDEN CIRCLE, SUITE: 36  
WILMINGTON, DE 19720  
(302) 326-2200  
FAX: (302) 326-2399

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**SOURCE WATER PROTECTION AREA  
EXHIBIT  
FOR  
TWIN CEDARS**

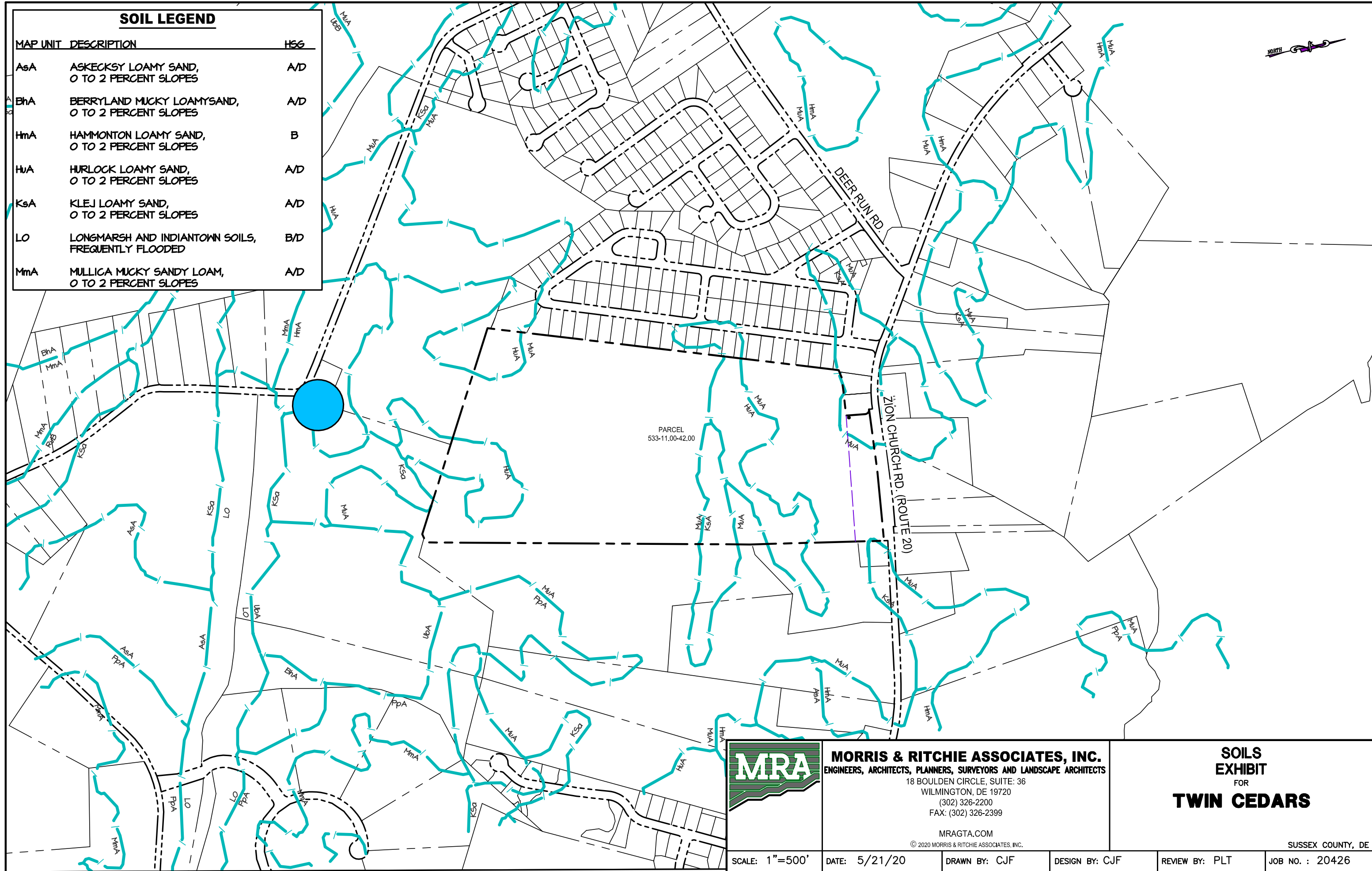
SUSSEX COUNTY, DE

SCALE: 1"=500'	DATE: 5/21/20	DRAWN BY: CJF	DESIGN BY: CJF	REVIEW BY: PLT	JOB NO. : 20426
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**SOIL LEGEND**

MAP UNIT	DESCRIPTION	HSG
AsA	ASKECKSY LOAMY SAND, 0 TO 2 PERCENT SLOPES	A/D
BhA	BERRYLAND MUCKY LOAMYSAND, 0 TO 2 PERCENT SLOPES	A/D
HmA	HAMMONTON LOAMY SAND, 0 TO 2 PERCENT SLOPES	B
HuA	HURLOCK LOAMY SAND, 0 TO 2 PERCENT SLOPES	A/D
KsA	KLEJ LOAMY SAND, 0 TO 2 PERCENT SLOPES	A/D
LO	LONGMARSH AND INDIANTOWN SOILS, FREQUENTLY FLOODED	B/D
MmA	MULLICA MUCKY SANDY LOAM, 0 TO 2 PERCENT SLOPES	A/D



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 (302) 326-2200  
 FAX: (302) 326-2399

**SOILS EXHIBIT**  
 FOR  
**TWIN CEDARS**

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SUSSEX COUNTY, DE

SCALE: 1"=500'	DATE: 5/21/20	DRAWN BY: CJF	DESIGN BY: CJF	REVIEW BY: PLT	JOB NO. : 20426
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## ***Appendix 4 – Preliminary Plan***



# TWIN CEDARS

SUSSEX COUNTY, DELAWARE

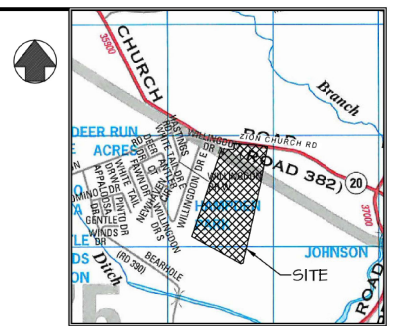
PRELIMINARY PLANS

SUSSEX COUNTY PLANNING # XXXX

GR - RPC

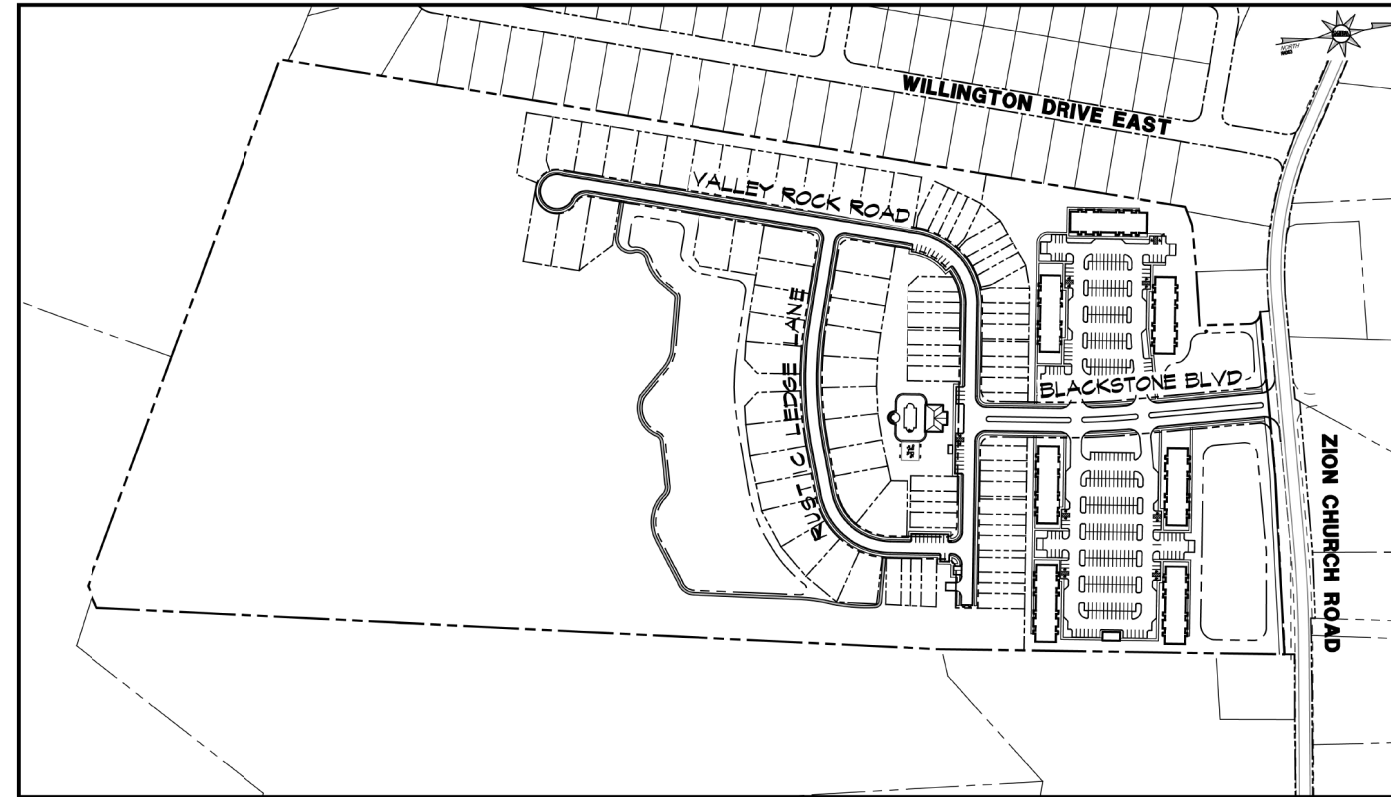
### LEGEND

- EXISTING PROPERTY LINE
- PROPOSED RM LINE
- PROPOSED LOT LINE
- PROPOSED BUILDING SETBACK LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED LOT NUMBER
- EXISTING WOODLANDS LINE
- WOODLAND PRESERVATION LINE



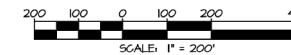
### LOCATION MAP

SCALE: 1" = 2000'



### SITE OVERVIEW

SCALE: 1" = 200'



### PROJECT TEAM

- DEVELOPER:** BAY DEVELOPERS, LLC  
220 WESTON DRIVE  
DOVER, DE 19904  
ATTN: MR. HENRY MAST
- LAND PLANNERS, CIVIL ENGINEER:** MORRIS & RITCHE ASSOCIATES, INC.  
18 BOULDEN CIRCLE, SUITE 36  
NEW CASTLE, DE 19720  
ATTN: MR. PHILLIP L. TOLLIVER, P.E.
- SURVEYOR:** MORRIS & RITCHE ASSOCIATES, INC.  
8 WEST MARKET STREET  
GEORGETOWN DE 19447  
ATTN: MR. GARY POWERS
- ENVIRONMENTAL CONSULTANT:** GEO-TECHNOLOGY ASSOCIATES, INC.  
3445 BOX HILL CORPORATE CENTER DRIVE, SUITE A  
ABINGDON, MD 21004  
ATTN: MR. ANDY STANSFIELD
- GEOTECHNICAL ENGINEER:** GEO-TECHNOLOGY ASSOCIATES, INC.  
2133 STERLING AVENUE, SUITE 7  
GEORGETOWN DE 19447  
ATTN: MR. GREG SAUTER
- TRAFFIC CONSULTANT:** THE TRAFFIC GROUP  
4800 FRANKLIN SQUARE DR. - SUITE H  
BALTIMORE, MD 21236  
ATTN: MR. JOE CALOGGERO, P.E.
- ATTORNEY:** MORRIS JAMES NILSON HALBROOK & BAYARD LLP  
107 W. MARKET STREET  
P.O. BOX 640  
GEORGETOWN DE 19447  
ATTN: MR. DAVID C. HUTT

### INDEX OF DRAWINGS

- 1 - PRELIMINARY TITLE SHEET
- 2 - PRELIMINARY GENERAL NOTES & DETAILS
- 3 - MASTER C-1/GR-RPC PLAN
- 4 - OVERALL PRELIMINARY PLAN
- 5 - PRELIMINARY PLAN
- 6 - PRELIMINARY PLAN
- 7 - PRELIMINARY PLAN
- 8 - PRELIMINARY PLAN

### DEVELOPER'S CERTIFICATION

I, UNDERSIGNED, AS DEVELOPER OF THE PROPERTY SHOWN HEREBY APPROVE THESE PLANS FOR DEVELOPMENT AS SHOWN OR OTHERWISE NOTED.

BAY DEVELOPERS, LLC DATE  
220 WESTON DRIVE  
DOVER, DE 19904

### OWNER'S CERTIFICATION

I, UNDERSIGNED, AS OWNER OF THE PROPERTY SHOWN HEREBY APPROVE THESE PLANS FOR DEVELOPMENT AS SHOWN OR OTHERWISE NOTED.

BAY DEVELOPERS, LLC DATE  
220 WESTON DRIVE  
DOVER, DE 19904

### WETLANDS STATEMENT

GEO-TECHNOLOGY ASSOCIATES, INC. (GTA) HAS CONDUCTED A FIELD REVIEW WITHIN THE BOUNDARIES OF THIS PLAT TO EVALUATE THE PRESENCE OR ABSENCE OF POTENTIAL STATE AND FEDERAL JURISDICTIONAL WETLANDS FOR THE PURPOSES OF DELAWARE WETLAND AND SUBAQUEOUS LAND REGULATIONS AND SECTION 404 OF THE CLEAN WATER ACT. GTA'S REVIEW WAS CONDUCTED IN GENERAL ACCORDANCE WITH THE TECHNIQUES AND CRITERIA PROVIDED IN THE 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, ATLANTIC AND GULF COASTAL PLAN REGION (VERSION 2.0), DATED NOVEMBER 2010. THE LIMITS OF THE WETLANDS WERE EVALUATED IN THE FIELD BY GTA PERSONNEL USING BEST PROFESSIONAL JUDGEMENT. NO WETLANDS OR WATERWAYS WERE OBSERVED WITHIN THE BOUNDARIES OF THIS PLAT. NO STATE OR FEDERAL JURISDICTIONAL APPROVAL HAS OBTAINED FOR THIS PROPERTY.

ANDY STANSFIELD DATE  
GEO-TECHNOLOGY ASSOCIATES, INC.

### ENGINEER'S CERTIFICATION

I, THE UNDERSIGNED, HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF DELAWARE AND THAT THE PLAN SHOWN AND DESCRIBED HEREON, IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY ACCEPTED STANDARDS AND PRACTICES AND BY THE SUSSEX COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS TO THE EXTENT THAT IT DESCRIBES THE PROPOSED MANNER AND LAYOUT OF THE SUBDIVISION.

PHILLIP L. TOLLIVER, P.E. DATE  
DE LICENSE NO. W2404

### PLAN APPROVALS

SUSSEX COUNTY ENGINEERING DEPARTMENT  
2 THE CIRCLE  
GEORGETOWN, DE 19447

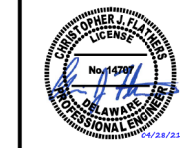
APPROVED: DATE

APPROVED BY: CHAIRMAN OR SECRETARY DATE  
SUSSEX COUNTY PLANNING AND ZONING COMMISSION

APPROVED BY: PRESIDENT DATE  
SUSSEX COUNTY PLANNING

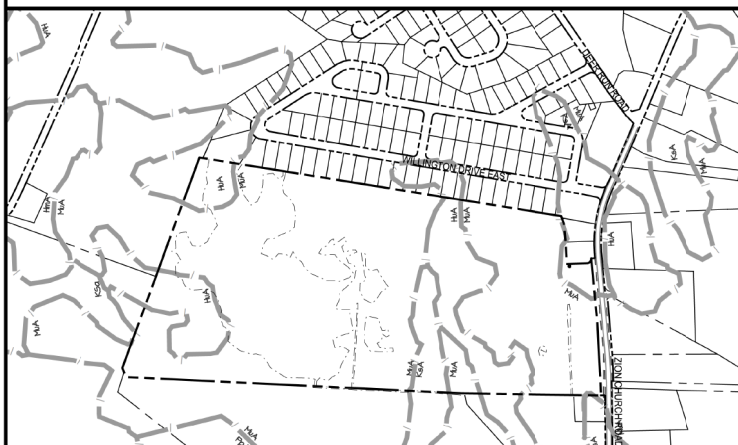


**MORRIS & RITCHE ASSOCIATES, INC.**  
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
18 BOULDEN CIRCLE, SUITE 36  
NEW CASTLE, DELAWARE 19720  
(302) 326-2200  
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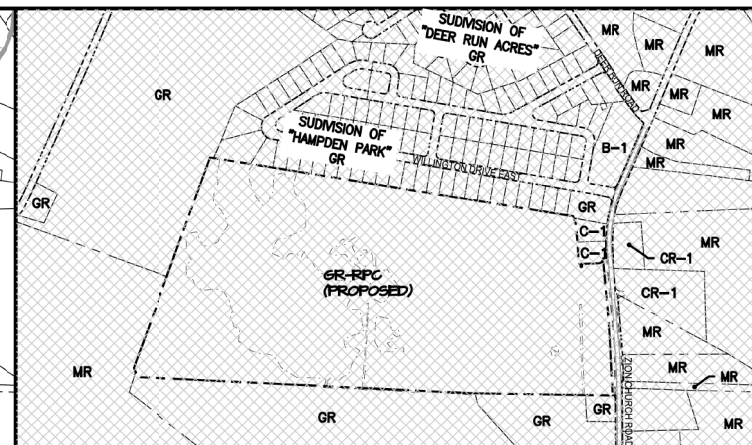


**TITLE SHEET**  
**PRELIMINARY PLAN**  
FOR  
**TWIN CEDARS**

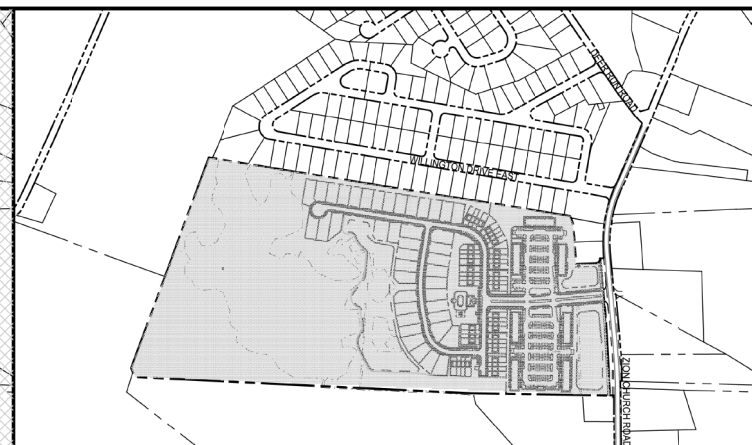
DATE	REVISIONS	JOB NO.: 20426
03/11/21	EX. PARCEL ZONING / PROP. GR-RPC	SCALE: AS NOTED
04/27/21	UPDATED WETLANDS INFORMATION	DATE: 10/21/2019
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 1 OF 8



**SOILS MAP**  
SCALE: 1" = 500'



**ZONING MAP**  
SCALE: 1" = 500'



**PHASING MAP**  
SCALE: 1" = 500'



CONSTRUCTION NOTES

- 1. CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT (1-800-282-8555) AT LEAST (3) WORKING DAYS PRIOR TO EXCAVATION...
2. ALL MATERIALS & WORKMANSHIP SHALL MEET THE STATE OF DELAWARE STANDARDS & SPECIFICATIONS...
3. ALL MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS...
4. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING TWO WEEKS PRIOR TO THE START OF CONSTRUCTION AND SHALL APPRISE AND COORDINATE DURING ALL PHASES OF CONSTRUCTION...
5. CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL RIGHT-OF-WAY LINES AND PROPERTY LINES TO HIS OWN SATISFACTION...
6. INFORMATION SHOWN HEREON IS BASED UPON GIS DATA OBTAINED THROUGH THE STATE OF DELAWARE GIS WEBSITE...
7. EXISTING UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE DIVISION UPON THE BEST AVAILABLE INFORMATION...
8. DRAWINGS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY...
9. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF TRAFFIC IN ALL WORK AREAS...
10. ROUGH GRADING SHALL BE COMPLETE PRIOR TO THE CONSTRUCTION OF WATER & SEWER SYSTEMS...
11. USE ONLY SUITABLE AND APPROVED GRANULAR MATERIAL IN ACCORDANCE WITH SECTION 209 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS...
12. CONTRACTOR SHALL ADJUST TO FINISH GRADE AS NECESSARY ANY VALVE BOXES, MANHOLES, CATCH BASINS ETC., PRIOR TO PLACING PAVING...
13. CONTRACTOR SHALL PROVIDE STAKEOUT NECESSARY FOR THE INSTALLATION OF UTILITIES, STORMDRAINS, PAVING AND ALL OTHER SITE WORK INCLUDED IN THESE PLANS...
14. CONTRACTOR TO MAINTAIN MINIMUM OF 3.0 FEET OF COVER OVER ALL NEW WATER LINES AS MEASURED FROM TOP OF PIPE TO FINISHED GRADE...
15. SEWER LINES SHALL HAVE MINIMUM VERTICAL CLEARANCE OF 18 INCHES FROM WATER MAINS AT CROSSING...
16. LATERALS SHALL BE 6 INCHES IN DIAMETER, WITH VERTICAL CLEARANCES OF 6 INCHES IN DIAMETER...
17. ALL GRAVITY SEWER PIPES SHALL BE PVC SDR 35 FOR PIPE SLOPES SEE FINAL CONSTRUCTION DRAWINGS FOR SANITARY SEWER PROFILES...
18. MATERIAL OF CONSTRUCTION FOR SEWER FORCE MAINS SHALL BE AS NOTED ON THE FINAL CONSTRUCTION DRAWINGS...
19. ALL SEWER LINES MUST BE SUCCESSFULLY TESTED ACCORDING TO SUSSEX COUNTY ORDINANCE 30...
20. ALL SANITARY SEWER SYSTEM CONSTRUCTION PERFORMED SHALL BE IN ACCORDANCE WITH SUSSEX COUNTY ORDINANCE 30...
21. ALL DROP MANHOLES TO BE 5'-0" IN DIAMETER...
22. FITTINGS SHOWN ON THE PLANS ILLUSTRATE ANTICIPATED ANGLE OF DEFLECTION...
23. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY DEVIATION FROM THESE PLANS UNLESS WRITTEN APPROVAL HAS BEEN PROVIDED BY THE ENGINEER...
24. ALL DISTURBED AREAS IN THE STATED RIGHT OF WAY, BUT NOT IN THE PAVEMENT SECTION MUST BE TOPSOILED (6" MINIMUM), FERTILIZED, MULCHED, AND SEEDDED...
25. ALL PAVEMENT MARKINGS AND SIGNAGE SHALL BE PLACED IN ACCORDANCE WITH THE MUTCD, MANUAL, MOST CURRENT EDITION...
26. ALL PROPOSED STORM DRAIN DESIGNATED AS "RCCP" IS TO BE REINFORCED CONCRETE CIRCULAR PIPE, MEETING AASHTO M-10 SPECIFICATIONS...
27. ALL LENGTHS OF SANITARY SEWER PIPE ARE MEASURED HORIZONTALLY FROM CENTER LINES OF INLETS, MANHOLES OR FITTINGS...
28. WHERE SPECIFIED, HDPE STORM DRAIN PIPE SHALL BE ADS N-12 (SMOOTH INTERIOR) PIPE WITH ADS PRO-LINK W/ (BELL/BELL COUPLER) FOR WATER TIGHT CONNECTIONS...
29. ALL EMBEDMENT MATERIALS USED FOR BEDDING, HAUNCHING, AND INITIAL BACKFILL FOR HDPE PIPE SHALL CONFORM TO AASHTO SECTION 30 AND ASTM D-2221 AS PER MANUFACTURER INSTALLATION REQUIREMENTS...
30. UNLESS OTHERWISE SPECIFIED ALL ROADWAY INLETS SHALL HAVE A TYPE I INLET GRATE AND TYPE 5 TOP UNIT PER DELDOT STANDARDS, CURRENT REVISION...
31. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE THAT PAVING IS INSTALLED TO THE ELEVATIONS SHOWN AND THAT NO PONDING OF WATER EXISTS AFTER PAVING IS COMPLETE.

SUSSEX COUNTY CONSTRUCTION NOTES:

- 1. ROADWAY STAKEOUTS:
A. RIGHT-OF-WAY STAKES SHALL BE OFFSET A MINIMUM OF FIVE (5) FEET OUTSIDE THE RIGHT-OF-WAY...
B. STATION NUMBERS TO BE INDICATED ON EACH SIDE OF THE STAKE...
C. THE CENTERLINE ROADWAY CUT AND CUT-LINE SHALL BE LOCATED ON THE SIDE OF THE STAKE WHICH FACES THE CENTERLINE, ALSO A "CL" DESIGNATION SHALL BE INCLUDED...
D. THE SHALE CUT AND CUT-LINE SHALL BE INDICATED ON THE OUTSIDE OF THE STAKE, WHILE ALSO CONTAINING A "SM" DESIGNATION...
2. THE CONTRACTOR SHALL PROVIDE TWO (2) WORKING DAYS NOTICE TO THE COUNTY INSPECTOR PRIOR TO PAVING...
3. SURFACE TREATMENT SHALL NOT BE APPLIED, (SURFACE TREATMENT NOT USED)
A. AFTER NOVEMBER 1 OR PRIOR TO APRIL 1, OR
B. WHEN THE TEMPERATURE IS BELOW 50° F, OR
C. ON ANY WET OR FROZEN SURFACE...
4. HOT MIX SHALL NOT BE APPLIED:
A. WHEN THE TEMPERATURE IS BELOW 40° F, OR
B. ON ANY WET OR FROZEN SURFACE...
5. FOR ALL WOODED AREAS, A SUFFICIENT AREA BEYOND THE RIGHT-OF-WAY SHALL BE CLEARED AND GRUBBED...
6. ALL DISTURBED AREAS MUST BE STABILIZED WITH 4 INCHES OF TOPSOIL, SEED, AND MULCH.

DELDOT RECORD PLAN NOTES:

- 1. NO LANDSCAPING SHALL BE ALLOWED WITHIN DELDOT MAINTAINED R/W UNLESS THE PLANS ARE COMPLIANT WITH SECTION 3.1 OF THE DEVELOPMENT COORDINATION MANUAL (DCM)...
2. ALL ENTRANCES SHALL CONFORM TO THE DELAWARE DEPARTMENT OF TRANSPORTATION'S (DELDOT'S) CURRENT DEVELOPMENT COORDINATION MANUAL (DCM)...
3. SHRUBBERY, PLANTINGS, SIGNS AND/OR OTHER VISUAL BARRIERS THAT COULD OBSTRUCT THE SIGHT DISTANCE OF A DRIVER PREPARING TO ENTER THE ROADWAY ARE PROHIBITED...
4. UPON COMPLETION OF THE CONSTRUCTION OF THE SIDEWALK OR SHARED-USE PATH ACROSS THIS PROJECT'S FRONTAGE...
5. SUBDIVISION STREETS CONSTRUCTED WITHIN THE LIMITS OF THE RIGHT-OF-WAY ARE PRIVATE...
6. THE SIDEWALK AND SHARED-USE PATH SHALL BE THE RESPONSIBILITY OF THE DEVELOPER...
7. ALL LOTS SHALL HAVE ACCESS ONLY FROM THE INTERNAL SUBDIVISION STREETS...
8. DRIVENAYS WILL NOT BE PERMITTED TO BE PLACED AT CATCH BASIN LOCATIONS...
9. THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MONUMENTS IN ACCORDANCE WITH DELDOT'S DEVELOPMENT COORDINATION MANUAL...
10. THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MARKERS TO PROVIDE A PERMANENT REFERENCE FOR RE-ESTABLISHING THE RIGHT-OF-WAY AND PROPERTY CORNERS...
11. FOREST COVER:
EXIST. FOREST: 58.78 AC. ±
FOREST CLEARED: 10.32 AC. ±
FOREST REMAINING: 28.46 AC. ±
REFORESTATION: 0.00 AC. ±
PROPOSED TOTAL: 28.46 AC. ±
12. WATER SERVICE: PUBLIC (ARTESIAN WATER)
13. SANITARY SEWER: PUBLIC (SUSSEX COUNTY)
14. PARKING ANALYSIS:
PARKING REQUIRED: 168 MF - APT X 2 SP/DU = 336 SP
44 MF - TH X 2 SP/DU = 88 SP
42 SP/D X 2 SP/DU = 84 SP
TOTAL = 508 SP
PARKING PROVIDED: 168 MF - APT X 2 SP/DU = 337 SP
44 MF - TH X 2 SP/DU = 88 SP
42 SP/D X 2 SP/DU = 84 SP
GLENNHOUSE AREA = 13 SP
TOWNHOUSE OVERFLOW = 21 SP
TOTAL = 563 SP

PROJECT PHASING

PHASE 1 - 4 YEARS

TOTAL PROJECT BUILDOUT - 4 YEARS
ESTIMATED PROJECT COMPLETION DATE - DECEMBER 2024

THE PROJECT IS BE APPROVED AS A SINGLE PHASE PROJECT, WITH THREE (3) OPERATIONAL BREAKS FOR PURPOSES OF BONDING, BENEFICIAL OCCUPANCY INSPECTION, RELEASE OF USE AND OCCUPANCY PERMITS.

GENERAL NOTES:

- 1. SUBDIVISION STREETS ARE TO REMAIN PRIVATE AND ARE TO BE CONSTRUCTED IN ACCORDANCE WITH SUSSEX COUNTY REGULATIONS...
2. MAINTENANCE OF THE STREET WITHIN THIS SUBDIVISION WILL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER AND/OR HOME OWNERS ASSOCIATION...
3. ACCESS TO ALL LOTS IS TO BE FROM SUBDIVISION STREETS OR DRIVE ACCESS LOOPS...
4. MAINTENANCE OF THE STORM WATER MANAGEMENT AREAS WILL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER AND/OR HOMEOWNERS ASSOCIATION...
5. THE PROPOSED ENTRANCES/EXITS ARE CONCEPTUAL ONLY AND ARE SUBJECT TO REVIEW AND APPROVAL BY THE DELAWARE DEPARTMENT OF TRANSPORTATION BEFORE A CONSTRUCTION PERMIT IS ISSUED.

SITE DATA

- PROJECT TITLE/NAME: TWIN CEDARS
1. TAX PARCEL: 593-11.00-42.00
2. OWNER INFORMATION: TWIN CEDARS, LLC (ATTN: MR. JAMES T. GORDON)
3. DEVELOPER: BAY DEVELOPERS, LLC
4. ZONING: C-1, CR-1, AND GR
5. DEVELOPMENT TYPE: RESIDENTIAL PLANNED COMMUNITY (RPC)
6. BULK AREA STANDARDS (GR-RPC)

Table with columns: SINGLE FAMILY, GR ZONE, PROPOSED BY REG., MIN. FRONT YARD, MIN. SIDE YARD, MIN. REAR YARD, MIN. LOT WIDTH, MIN. LOT AREA.

Table with columns: TOWNHOUSES, GR ZONE, PROPOSED BY REG., MIN. FRONT YARD, MIN. SIDE YARD, MIN. REAR YARD, MIN. LOT AREA, APARTMENTS, GR ZONE, PROPOSED BY REG., MIN. FRONT YARD, MIN. SIDE YARD, MIN. REAR YARD, MIN. LOT AREA.

Table with columns: NET SITE AREA, TOTAL SITE AREA, PROPOSED ROAD ROW, NET SITE AREA.

ALLOWABLE DWELLING UNITS: NET SITE AREA \* ALLOWABLE DENSITY = ALLOWABLE DUJ. GR: 58.84 AC. X 12.0 DUJ./AC. = 706 DUJ.

PROPOSED DENSITY: 254 DUJ. / 58.84 AC. ± = 4.31 DUJ./AC. (NET) 254 DUJ. / 64.32 AC. ± = 3.95 DUJ./AC. (GROSS)

Table with columns: PROPOSED\*, PASSEIVE, ACTIVE, TOTAL PROPOSED.

Table with columns: EXIST. FOREST, FOREST CLEARED, FOREST REMAINING, REFORESTATION, PROPOSED TOTAL.

Table with columns: WATER SERVICE, PUBLIC (ARTESIAN WATER); SANITARY SEWER, PUBLIC (SUSSEX COUNTY).

Table with columns: PARKING ANALYSIS, PARKING REQUIRED, PARKING PROVIDED.

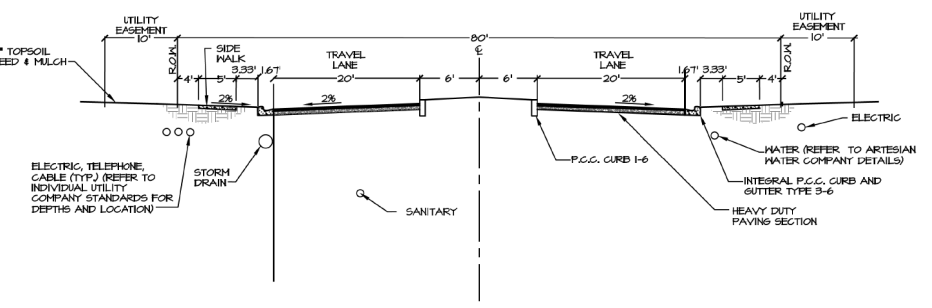
15. A WETLAND REPORT FOR THE SUBJECT PROJECT AREA WAS PREPARED BY GEO-TECHNOLOGY ASSOCIATES, INC. (GTA) IN MARCH 2021...

16. ALL DROP MANHOLES TO BE 5' OR LARGER IN DIAMETER.

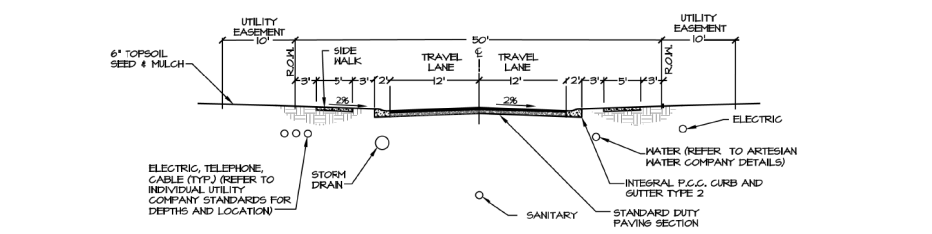
17. ALL FACILITIES TO MEET SUSSEX COUNTY ENGINEERING DEPARTMENT'S STANDARDS AND SPECIFICATIONS.

18. CLEANOUTS TO BE AT EDGE OF ROAD PAVEMENT OR EDGE OF RIGHT-OF-WAY; 6-INCH LATERAL FOR ALL SINGLE FAMILY HOUSES.

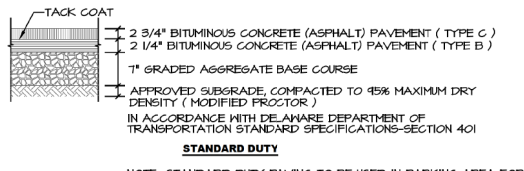
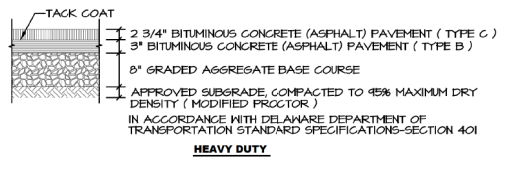
19. NO CHURCHES, SCHOOLS, OR COMMERCIAL USE AREAS PROPOSED ON THIS SITE.



TYPICAL SECTION - ENTRANCE ROAD (80' R.O.W.)



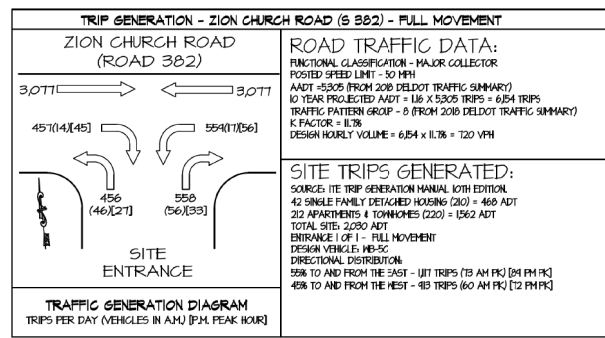
TYPICAL CLOSED SECTION ROAD (50' R.O.W.)



NOTE: STANDARD DUTY PAVING TO BE USED IN PARKING AREA FOR APARTMENTS

PAVING SECTIONS

NOT TO SCALE



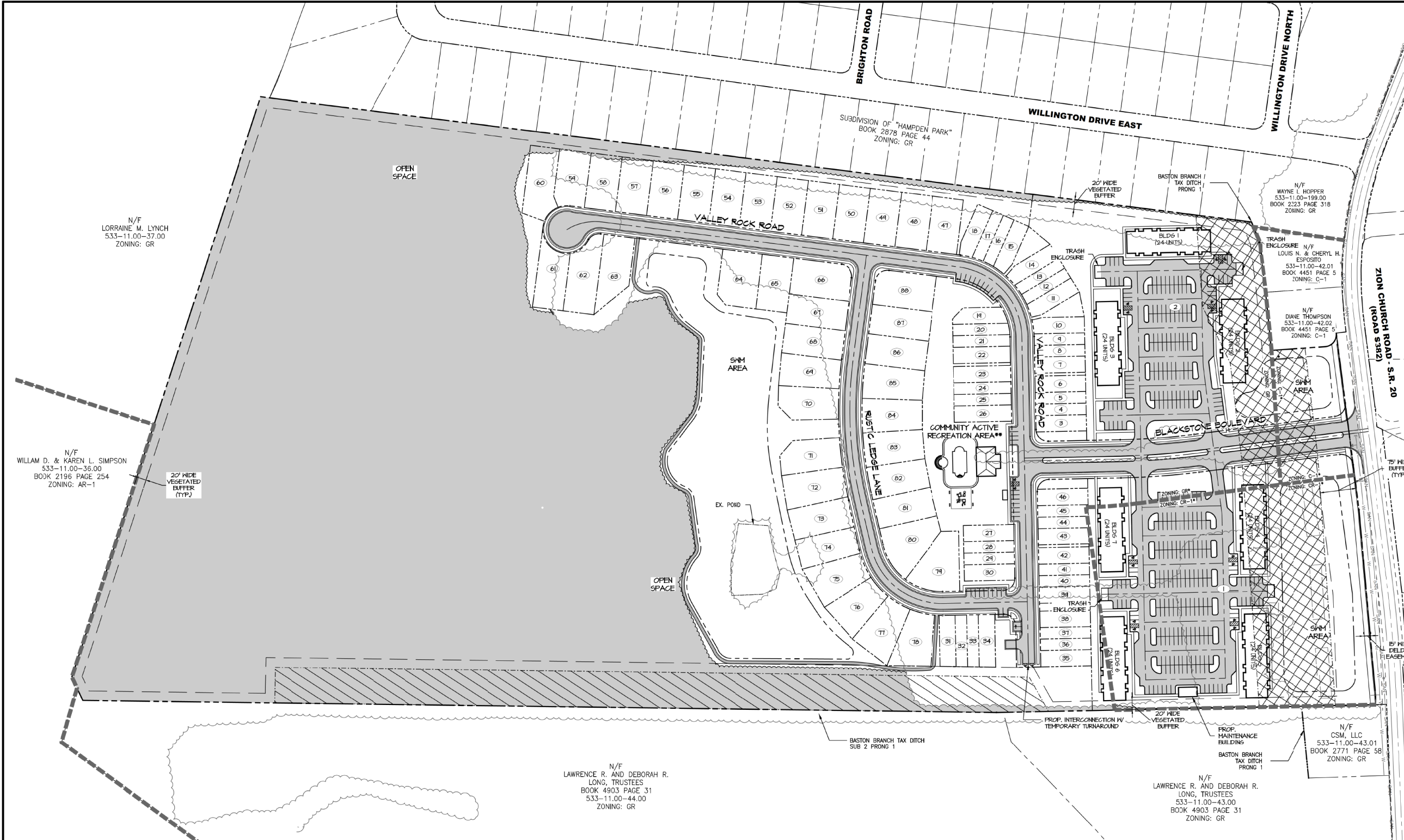
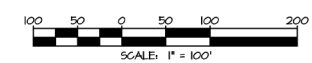
MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS. 18 BOULDER CIRCLE, SUITE 36 NEW CASTLE, DELAWARE 19720. (302) 326-2200. FAX: (302) 326-2399. WWW.MRAGTA.COM. GR-RPC GENERAL NOTES & DETAILS FOR TWIN CEDARS.





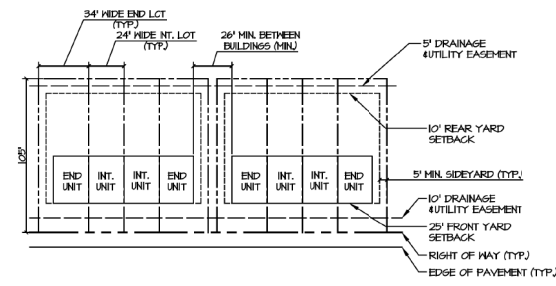
**LEGEND**

	EXIST. PARCEL BOUNDARY
	EXIST. RIGHT-OF-WAY
	EXIST. LOT LINE
	ZONING: AR-1
	EXIST. HOODS
	PROP. HOODS TO REMAIN
	PROP. CURB
	PROP. SIDEWALK
	PROP. LOT LINE
	PROP. RIGHT-OF-WAY
	PROP. ROAD CENTERLINE
	PROP. SHM AREA
	EXIST. JURISDICTIONAL NON-TIDAL WETLANDS
	EXIST. 'MAYERS OF US.'
	EXIST. TAX DITCH R/W (TO REMAIN)
	EXIST. TAX DITCH R/W (TO BE REVISED)



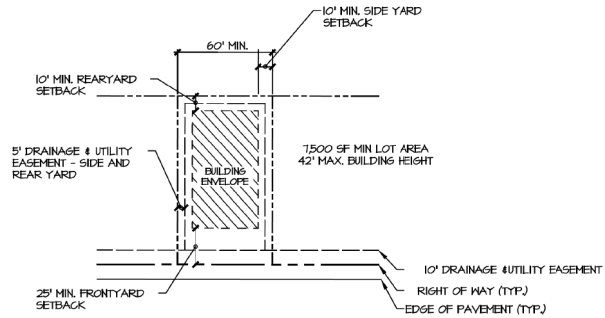
**\* NOTE:**  
ALL EXISTING PORTIONS OF THE SITE CURRENTLY ZONED C-1 OR GR-1 AREAS ON THE SUBJECT PARCEL ARE TO BE REZONED GR BY THIS PLAN.

**\*\* NOTE:**  
THE EXACT SIZE AND CONFIGURATION OF COMMUNITY ACTIVE RECREATION AREA, INCLUDING THE POOL HOUSE, POOL, AND DECKING, SHALL BE DETERMINED DURING THE FINAL ENGINEERING PROCESS AND SHALL BE SHOWN ON A SEPARATE SITE PLAN PREPARED FOR THE SAME.



**TYPICAL LAYOUT TOWNHOME 24' WIDE DWELLING UNITS**

NOT TO SCALE



**TYPICAL LAYOUT SINGLE FAMILY LOT (VARIABLE WIDTHS)**

NOT TO SCALE

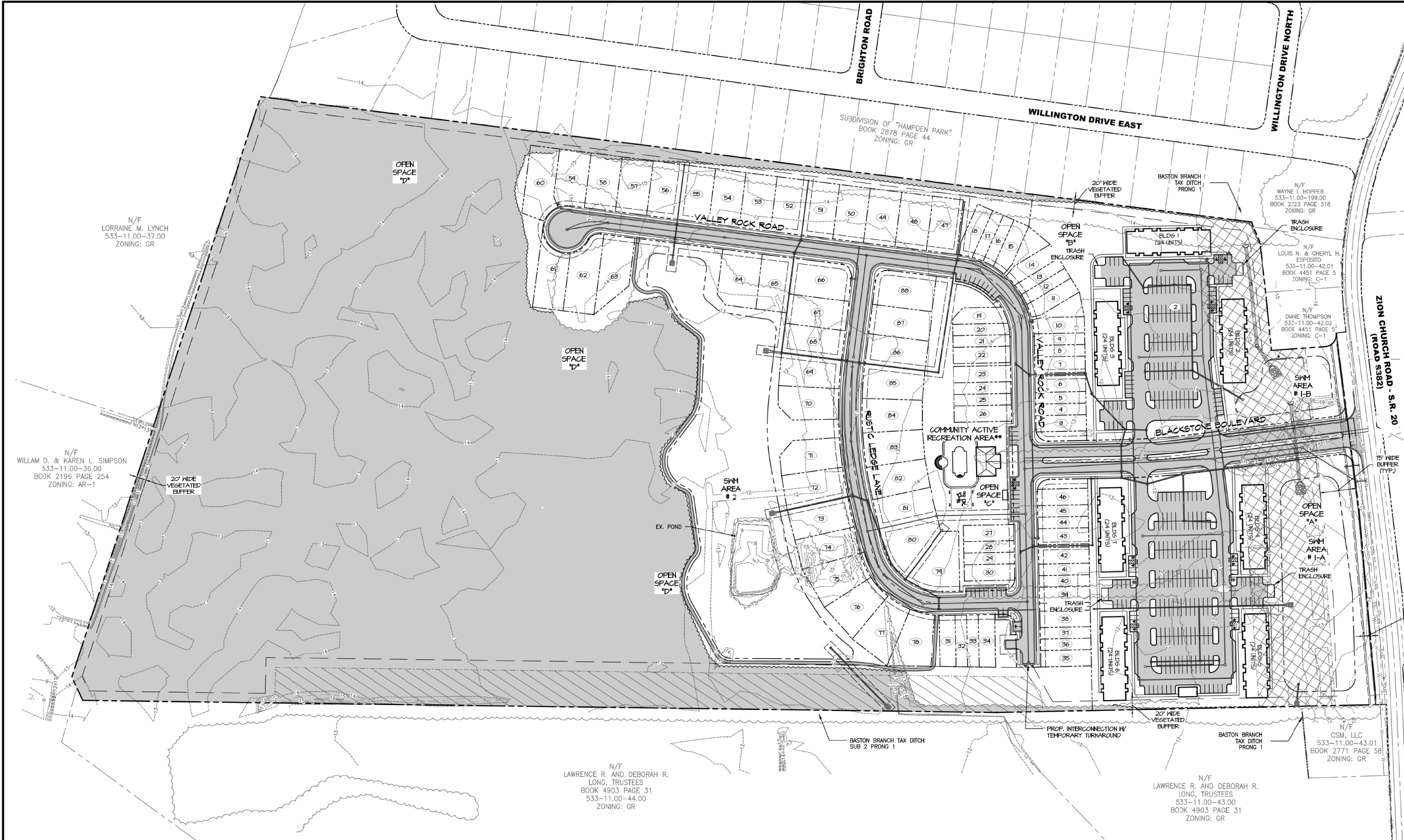
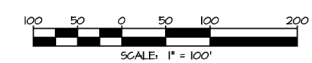
		<b>MORRIS &amp; RITCHE ASSOCIATES, INC.</b> ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS 18 BOULDEN CIRCLE, SUITE 36 NEW CASTLE, DELAWARE 19720 (302) 326-2200 FAX: (302) 326-2399 WWW.MRAGTA.COM <small>©2021 MORRIS &amp; RITCHE ASSOCIATES, INC.</small>	
		<b>PRELIMINARY PLAN</b> <b>MASTER GR-R.P.C. PLAN</b> FOR <b>TWIN CEDARS</b>	
		ENGINEER'S SEAL BALTIMORE HUNDRED SUSSEX COUNTY, DELAWARE	
DATE	REVISIONS	JOB NO.: 20426	
03/11/21	EX. PARCEL ZONING / PROP. GR-RPC	SCALE: 1" = 100'	
04/27/21	UPDATED WETLANDS INFORMATION	DATE: 10/21/19	
		DRAWN BY: RDG	
		DESIGN BY: CJF	
		REVIEW BY: PLT	
		SHEET: 3 OF 8	







- LEGEND**
- EXIST. PARCEL BOUNDARY
  - - - EXIST. RIGHT-OF-WAY
  - EXIST. LOT LINE
  - ZONING: AR-1
  - - - EXIST. HOODS
  - - - PROP. HOODS TO REMAIN
  - - - PROP. CURB
  - - - PROP. SIDEWALK
  - - - PROP. LOT LINE
  - - - PROP. RIGHT-OF-WAY
  - - - PROP. ROAD CENTERLINE
  - - - PROP. SHM AREA
  - ◻ EXIST. NON-TIDAL JURISDICTIONAL WETLANDS
  - US — US — EXIST. "WATERS OF U.S."
  - ▨ EXIST. TAX DITCH R/W (TO REMAIN)
  - ▩ EXIST. TAX DITCH R/W (TO BE REMOVED)
  - 50 — EXIST. CONTOUR
  - 50 — PROP. CONTOUR
  - 50.00 SPOT ELEVATION
  - ~ EXIST. VEGETATION
  - ~ VEGETATION TO REMAIN
  - EXIST. STORM DRAIN
  - PROP. STORM DRAIN
  - EXIST. SANITARY SEWER
  - PROP. SANITARY SEWER
  - EXIST. WATER LINE
  - PROP. WATER LINE

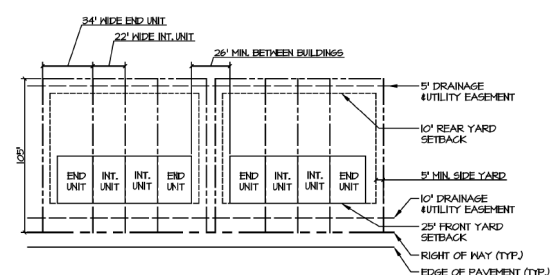


**PROPOSED OPEN SPACE SUMMARY**

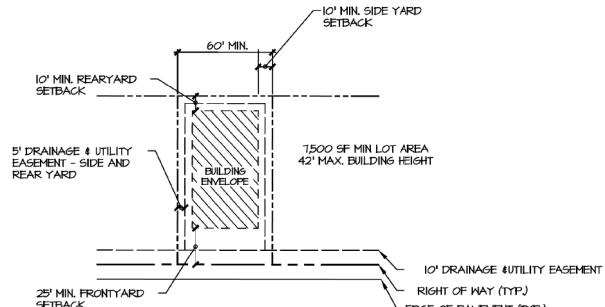
AREA	SHM FACILITY	ACTIVE OPEN SPACE	PASSIVE OPEN SPACE*
A	1.41 AC. ±	-	2.15 AC. ±
B	0.43 AC. ±	-	1.78 AC. ±
C	3.41 AC. ±	1.01 AC. ±	31.51 AC. ±
TOTAL	5.25 AC. ±	1.01 AC. ±	41.50 AC. ±

**\* NOTE:**  
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**\*\* NOTE:**  
THE EXACT SIZE AND CONFIGURATION OF COMMUNITY ACTIVE RECREATION AREA, INCLUDING THE POOL HOUSE, POOL, AND DECKING, SHALL BE DETERMINED DURING THE FINAL ENGINEERING PROCESS AND SHALL BE SHOWN ON A SEPARATE SITE PLAN PREPARED FOR THE SAME.



**TYPICAL LAYOUT TOWNHOME 24' WIDE DWELLING UNITS**  
NOT TO SCALE



**TYPICAL LAYOUT SINGLE FAMILY LOT (VARIABLE WIDTHS)**  
NOT TO SCALE

**MORRIS & RITCHE ASSOCIATES, INC.**  
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
18 BOULDEN CIRCLE, SUITE 36  
NEW CASTLE, DELAWARE 19720  
(302) 326-2200  
FAX: (302) 326-2399  
WWW.MRAGTA.COM  
©2021 MORRIS & RITCHE ASSOCIATES, INC.

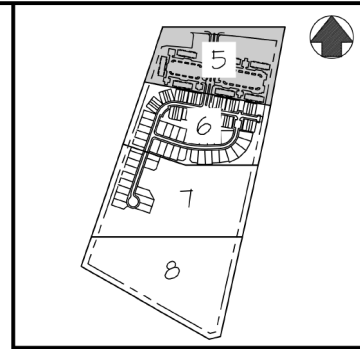
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**PRELIMINARY PLAN**  
OVERALL PRELIMINARY PLAN  
FOR  
**TWIN CEDARS**

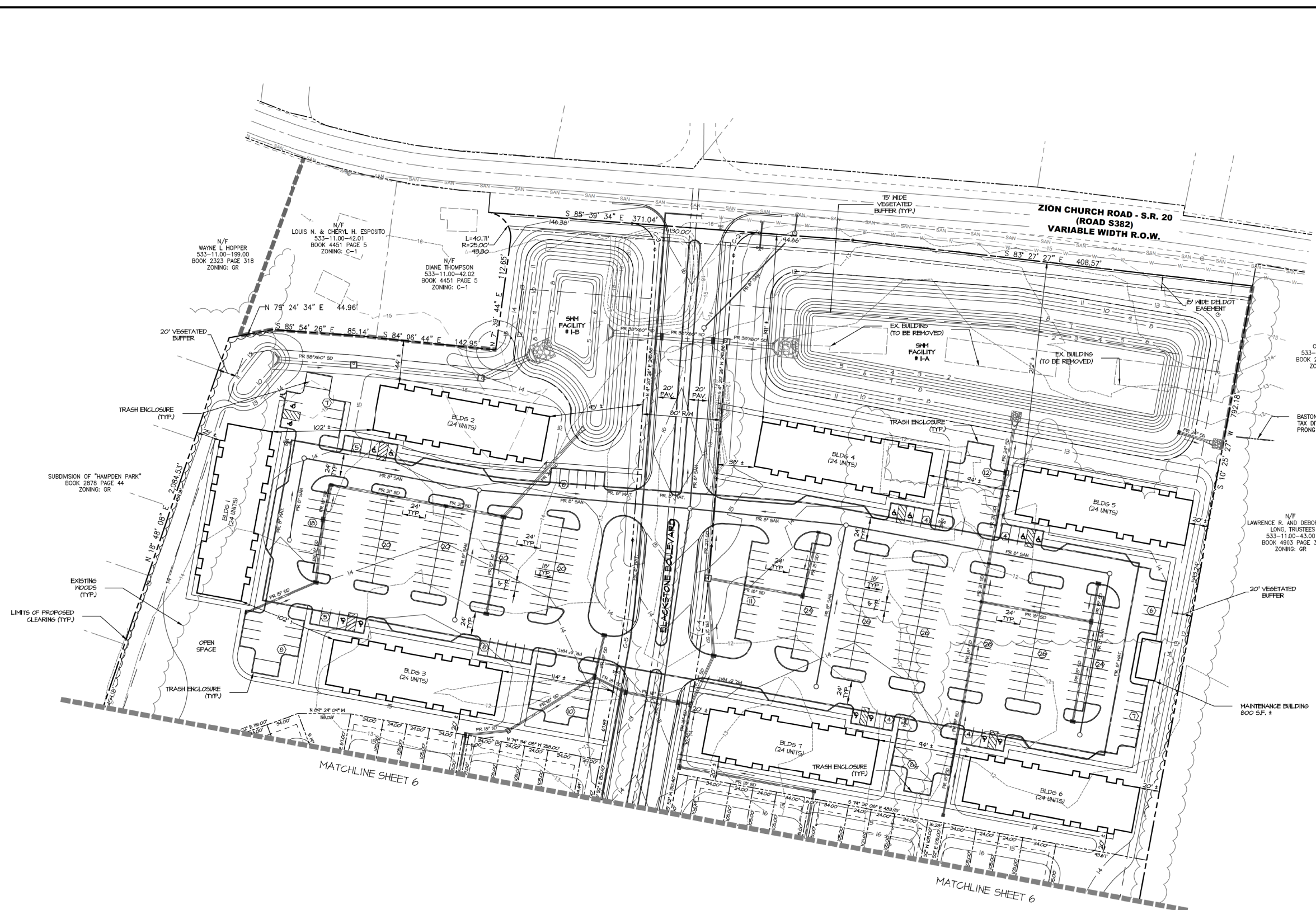
BALTIMORE HUNDRED  
SUSSEX COUNTY, DELAWARE

DATE	REVISIONS	JOB NO.:
03/11/21	EX. PARCEL ZONING / PROP. GR-RPC	20426
04/27/21	UPDATED WETLANDS INFORMATION	SCALE: 1" = 100'
		DATE: 10/21/19
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 4 OF 8





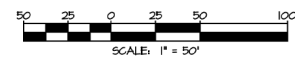
**KEY MAP**  
SCALE: 1"=800'



- LEGEND**
- EXIST. PARCEL BOUNDARY
  - EXIST. RIGHT-OF-WAY
  - EXIST. LOT LINE
  - ZONING: AR-1
  - EXIST. ZONING
  - EXIST. WOODS
  - PROP. WOODS TO REMAIN
  - PROP. CURB
  - PROP. SIDEWALK
  - PROP. LOT LINE
  - PROP. RIGHT-OF-WAY
  - PROP. ROAD CENTERLINE
  - PROP. SHM AREA
  - EXIST. WETLANDS
  - EXIST. WATERS OF U.S.
  - EXIST. TAX DITCH R/W (TO REMAIN)
  - EXIST. TAX DITCH R/W (TO BE REMOVED)
  - EXIST. CONTOUR
  - PROP. CONTOUR
  - SPOT ELEVATION
  - EXIST. VEGETATION
  - VEGETATION TO REMAIN
  - EXIST. STORM DRAIN
  - PROP. STORM DRAIN
  - EXIST. SANITARY SEWER
  - PROP. SANITARY SEWER
  - EXIST. WATER LINE
  - PROP. WATER LINE

**RIGHT-OF-WAY CURVE TABLE**

CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C-2	25.00'	34.27'	S 49° 20' 26" W	35.36'
C-3	25.00'	34.27'	N 40° 34' 34" W	35.36'
C-4	1540.00'	163.70'	S 07° 23' 04" W	163.63'
C-5	1460.00'	155.20'	N 07° 23' 04" E	155.13'



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NEW CASTLE, DELAWARE 19720  
(302) 326-2200  
FAX: (302) 326-2399  
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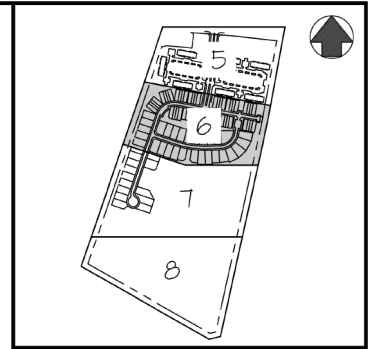
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**GR-RPC**  
**PRELIMINARY PLAN**  
FOR  
**TWIN CEDARS**

---

DATE	REVISIONS	JOB NO.: 20426
03/11/21	REVISED EX. PARCEL ZONING INFO	SCALE: 1"= 50'
04/27/21	UPDATED WETLANDS INFORMATION	DATE: 10/21/2019
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 5 OF 8

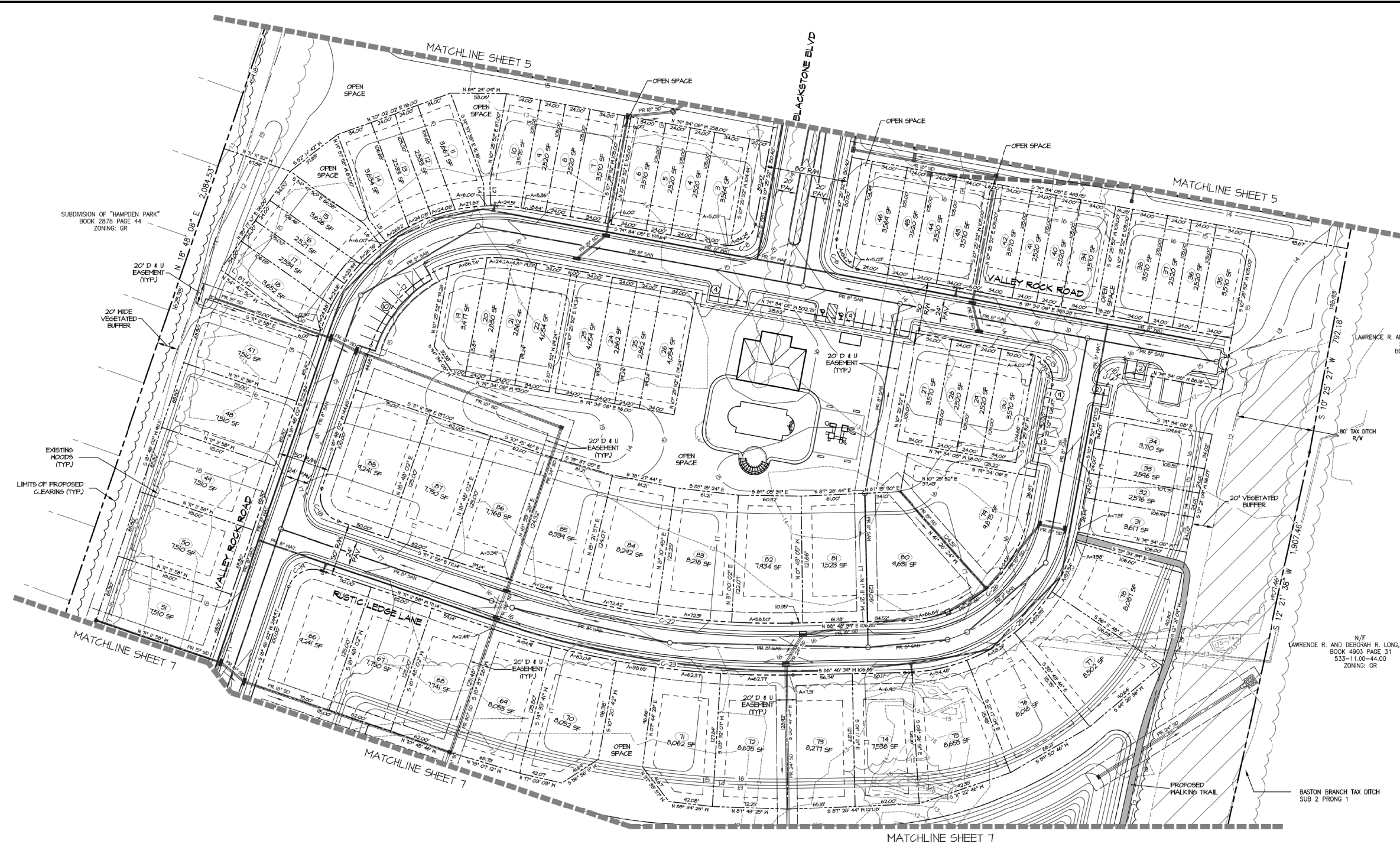




**KEY MAP**  
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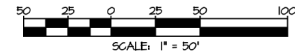
**LEGEND**

- EXIST. PARCEL BOUNDARY
- EXIST. RIGHT-OF-WAY
- EXIST. LOT LINE
- ZONING: AR-1
- EXIST. WOODS
- PROP. WOODS TO REMAIN
- PROP. CURB
- PROP. SIDEWALK
- PROP. LOT LINE
- PROP. RIGHT-OF-WAY
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- EXIST. WETLANDS
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- PROP. CONTOUR
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- EXIST. STORM DRAIN
- PROP. STORM DRAIN
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. WATER LINE
- PROP. WATER LINE



LINE	BEARING	DISTANCE
L2	N 01° 56' 07" W	21.98'
L4	S 01° 58' 07" E	21.98'
L5	S 37° 32' 44" E	26.53'
L6	S 37° 32' 44" E	26.53'
L10	S 71° 11' 58" E	26.51'

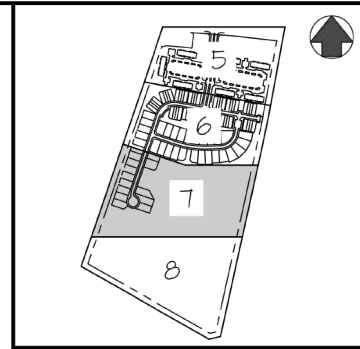
CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C-6	25.00'	34.27'	S 34° 34' 08" E	35.36'
C-8	25.00'	34.27'	N 55° 25' 52" E	35.36'
C-1	175.00'	244.33'	N 54° 36' 57" E	228.77'
C-12	125.00'	170.09'	S 54° 56' 57" W	163.41'
C-13	25.00'	34.27'	N 34° 34' 04" W	35.36'
C-15	25.00'	34.27'	S 55° 25' 52" W	35.36'
C-16	25.00'	34.27'	S 26° 11' 58" E	35.36'
C-19	25.00'	34.27'	S 63° 48' 02" W	35.36'
C-22	800.00'	274.11'	S 81° 11' 34" E	277.64'
C-23	850.00'	246.55'	N 81° 11' 34" W	245.05'
C-25	175.00'	238.25'	S 44° 48' 36" W	222.27'
C-26	125.00'	171.00'	N 44° 37' 16" E	151.47'



**NOTE:**  
THE EXACT SIZE AND CONFIGURATION OF POOL HOUSE, POOL, AND DECKING SHALL BE DETERMINED DURING THE FINAL ENGINEERING PROCESS AND SHALL BE SHOWN ON A SEPARATE SITE PLAN PREPARED FOR THE SAME.

	<b>MORRIS &amp; RITCHIE ASSOCIATES, INC.</b> ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS 18 BOULDEN CIRCLE, SUITE 36 NEW CASTLE, DELAWARE 19720 (302) 326-2200 FAX: (302) 326-2399 WWW.MRAGTA.COM <small>©2021 MORRIS &amp; RITCHIE ASSOCIATES, INC.</small>										
	<b>GR-RPC</b> <b>PRELIMINARY PLAN</b> FOR <b>TWIN CEDARS</b>										
	ENGINEER'S SEAL BALTIMORE HUNDRED	SUSSEX COUNTY, DELAWARE JOB NO.: 20426 SCALE: 1"= 50' DATE: 10/21/2019 DRAWN BY: RDG DESIGN BY: CJF REVIEW BY: PLT SHEET: 6 OF 8									
<table border="1"> <thead> <tr> <th>DATE</th> <th>REVISIONS</th> <th>JOB NO.:</th> </tr> </thead> <tbody> <tr> <td>03/11/21</td> <td>REVISED EX. PARCEL ZONING INFO</td> <td>20426</td> </tr> <tr> <td>04/27/21</td> <td>UPDATED WETLANDS INFORMATION</td> <td></td> </tr> </tbody> </table>	DATE	REVISIONS	JOB NO.:	03/11/21	REVISED EX. PARCEL ZONING INFO	20426	04/27/21	UPDATED WETLANDS INFORMATION			
DATE	REVISIONS	JOB NO.:									
03/11/21	REVISED EX. PARCEL ZONING INFO	20426									
04/27/21	UPDATED WETLANDS INFORMATION										

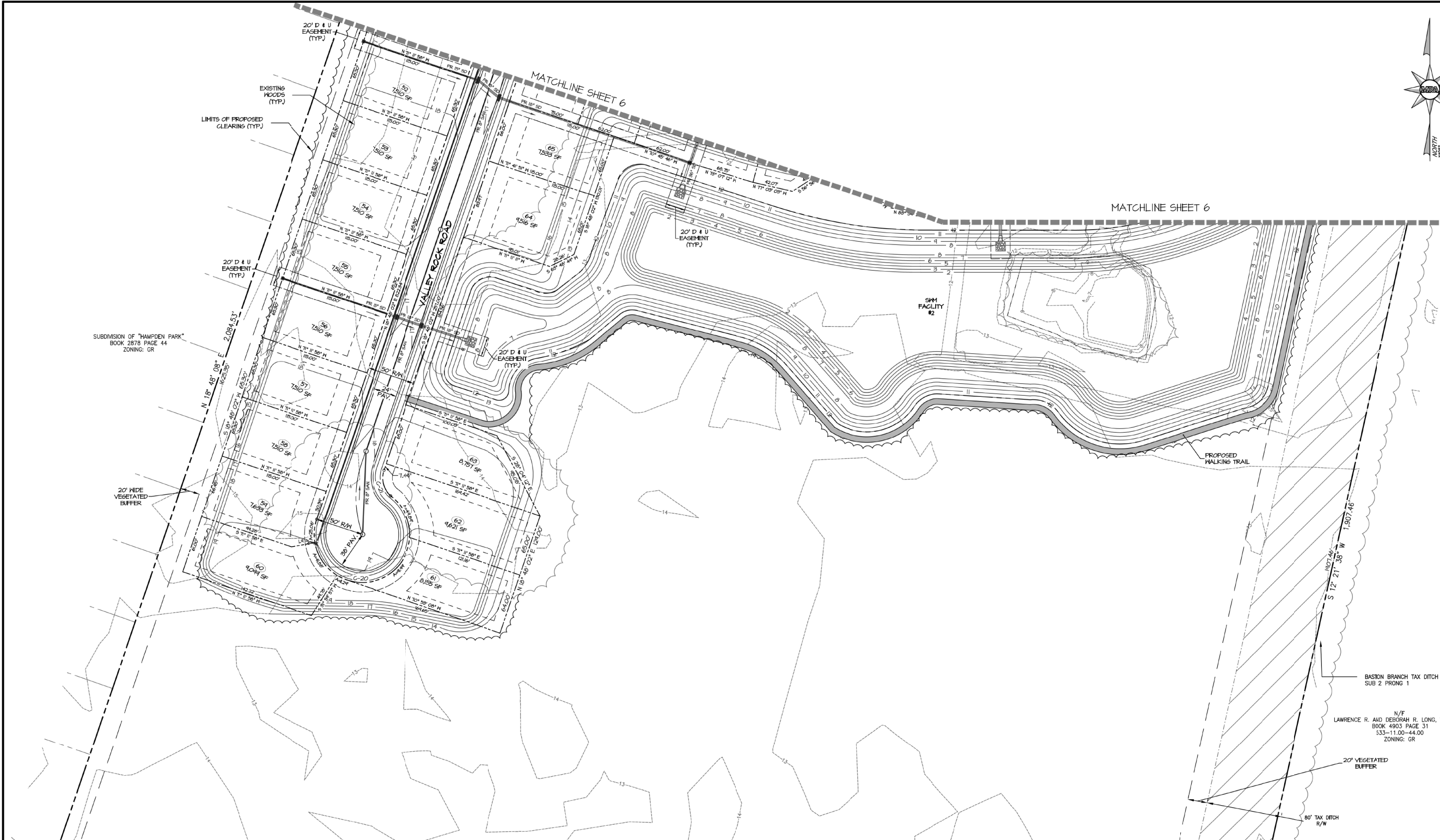




**KEY MAP**  
SCALE: 1"=800'

**LEGEND**

- EXIST. PARCEL BOUNDARY
- EXIST. RIGHT-OF-WAY
- EXIST. LOT LINE
- ZONING: AR-1
- EXIST. WOODS
- PROP. WOODS TO REMAIN
- PROP. CURB
- PROP. SIDEWALK
- PROP. LOT LINE
- PROP. RIGHT-OF-WAY
- PROP. ROAD CENTERLINE
- PROP. SHM AREA
- EXIST. WETLANDS
- EXIST. WATERS OF U.S.
- EXIST. TAX DITCH R/W (TO REMAIN)
- EXIST. TAX DITCH R/W (TO BE REMOVED)
- EXIST. CONTOUR
- PROP. CONTOUR
- SPOT ELEVATION
- EXIST. VEGETATION
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- EXIST. STORM DRAIN
- PROP. STORM DRAIN
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. WATER LINE
- PROP. WATER LINE

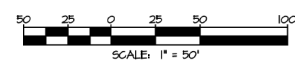


MATCHLINE SHEET 8

MATCHLINE SHEET 6

**RIGHT-OF-WAY CURVE TABLE**

CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C-20	50.00'	220.11'	S 72° 35' 33" W	80.78'
C-21	25.00'	24.18'	S 14° 38' 12" E	21.55'



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	 <small>ENGINEER'S SEAL</small>	
DATE	REVISIONS	JOB NO.: 20426
03/11/21	REVISED EX. PARCEL ZONING INFO	SCALE: 1"= 50'
04/27/21	UPDATED WETLANDS INFORMATION	DATE: 10/21/2019
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 7 OF 8





MATCHLINE SHEET 7

MATCHLINE SHEET 7

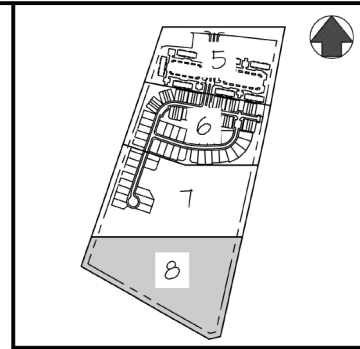
SUBDIVISION OF "HAMPTON PARK"  
BOOK 2878 PAGE 44  
ZONING: GR

20' VEGETATED BUFFER

N/F  
LORRINE M. LYNCH  
533-11.00-37.00  
ZONING: GR

N/F  
WILLAM D. & KAREN L. SIMPSON  
533-11.00-36.00  
BOOK 2196 PAGE 254  
ZONING: AR-1

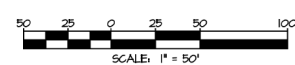
N/F  
LAWRENCE R. AND DEBORAH R. LONG, TRUSTEES  
BOOK 4903 PAGE 31  
533-11.00-44.00  
ZONING: GR



KEY MAP  
SCALE: 1"=800'

LEGEND

- EXIST. PARCEL BOUNDARY
- EXIST. RIGHT-OF-WAY
- EXIST. LOT LINE
- ZONING: AR-1
- EXIST. ZONING
- EXIST. WOODS
- PROP. WOODS TO REMAIN
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- PROP. WATER LINE



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	<b>GR-RPC PRELIMINARY PLAN FOR TWIN CEDARS</b>	
	ENGINEER'S SEAL	BALTIMORE HUNDRED
DATE	REVISIONS	JOB NO.: 20426
03/11/21	REVISED EX. PARCEL ZONING INFO	SCALE: 1"= 50'
04/27/21	UPDATED WETLANDS INFORMATION	DATE: 10/21/2019
		DRAWN BY: RDG
		DESIGN BY: CJF
		REVIEW BY: PLT
		SHEET: 8 OF 8



***Appendix 5 – PLUS Review Response Letter***



# MORRIS & RITCHIE ASSOCIATES, INC.

ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS,  
AND LANDSCAPE ARCHITECTS



Date: February 22, 2021

Office of State Planning Coordination  
122 Martin Luther King Jr. Blvd. South  
Dover, DE 19901

Attention: Ms. Constance C. Holland, Director

Subject: Twin Cedars  
PLUS Review 2019-07-05

Dear Ms. Holland:

We are in receipt of your comment letter dated August 21, 2019 with regard to Concept Plan associated with the proposed Twin Cedars residential subdivision proposed in Sussex County and respond as follows:

## **Strategies for State Policies and Spending**

Comment 1: This project is located in Investment Level 3 according to the Strategies for State Policies and Spending. Investment Level 3 reflects areas where growth is anticipated by local, county, and state plans in the longer term future, or areas that may have environmental or other constraints to development. State investments may support future growth in these areas, but may have priorities for the near future. Level 3 area means there may be environmental concerns on or near the parcel and we would encourage you to design the site with respect for the environmental features which are present.

*Response: Comment acknowledged. The project is located within the Sussex County Coastal Area growth zone and has access to public water and sewer infrastructure. Site design, including preservation and protection of existing natural resources, will be performed in accordance with requirements of the Sussex County Code in effect at the time of the Preliminary Plan application.*

## **Code Requirements/Agency Permitting Requirements**

### **Department of Transportation - Contact Bill Brockenbrough 760-2109**

Comment 2: The site access on Zion Church Road (Delaware Route 20) must be designed in accordance with DelDOT's Development Coordination Manual, which is available at <https://www.deldot.gov/Business/subdivisions/index.shtml?dc=changes>

*Response: Comment acknowledged; the site access will be designed in accordance with the Development Coordination Manual.*

Comment 3: Pursuant to Section P.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. The form needed to request the meeting and guidance on what will be covered there and how to prepare for it is located at [https://deldot.gov/Business/subdivisions/pdfs/Meeting\\_Request\\_Form.pdf?08022017](https://deldot.gov/Business/subdivisions/pdfs/Meeting_Request_Form.pdf?08022017)

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*Response: Comment acknowledged; a Pre-Submittal Meeting with the DelDOT Subdivision Section will be scheduled prior to submittal of plans for review.*

Comment 4: Section P.5 of the Manual addresses fees that are assessed for the review of development proposals. DelDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when construction plans are submitted for review.

*Response: Comment acknowledged; review fees are anticipated to be provided in accordance with current DelDOT policy.*

Comment 5: Per Section 2.2.2.1 of the Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. From the PLUS application, the total daily trips are estimated at 2,030 vehicle trip ends per day. DelDOT calculates a higher number, 2,051 vehicle trip ends per day, but regardless the warrant for a TIS is met.

On July 30, 2008, DelDOT commented to the County on its review of a TIS for an earlier plan to develop these lands. Having reviewed the attached letter, DelDOT finds that a new TIS, conforming to current DelDOT regulations, is needed to address the plan now proposed. The primary purpose of a TIS is to determine the need for off-site transportation improvements. Without prejudging the results of the TIS, DelDOT expects to require turning lanes at the site entrance and a signal agreement for the intersection of Zion Church Road, Johnson Road aka Bunting Road (Sussex Road 382A) and Bayard Road (Sussex Road 384).

*Response: Comment addressed; the Preliminary TIS report was approved by DelDOT on February 5, 2020. The Final TIS Report was submitted for DelDOT review and approved by DelDOT on July 13, 2020. Recommendations for the TIS approval include site entrance construction, frontage road upgrades to current DelDOT standards, and participation in signal agreement for future improvements at the intersection of Zion Church Road and Johns Road / Bayard Road*

Comment 6: As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, DelDOT require dedication of right-of-way along the site's frontage on Zion Church Road. By this regulation, this dedication is to provide a minimum of 40 feet of right-of-way from the physical centerline along both roads. The following right-of-way dedication note is required, "An X-foot wide right-of-way is hereby dedicated to the State of Delaware, as per this plat."

*Response: Comment addressed; as shown on the Preliminary Plan, right-of-way dedication for Zion Church Road has been provided along the project frontage to current DelDOT standards. Dedication of this right-of-way will be noted on final Record Plans utilizing DelDOT standard language requirements.*

Comment 7: In accordance with Section 3.2.5.1.2 of the Manual, DelDOT will require the establishment of a 15-foot wide permanent easement across the property frontage on Zion Church Road. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the site. The following note is required, "A 15-foot wide permanent easement is hereby established for the State of Delaware, as per this plat."

*Response: Comment addressed; the requested easement area has been shown on the plan. The Record Plan will include the requested easement note in accordance with DelDOT requirements.*

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Comment 8: Referring to Section 3.4.2.1 of the Manual, the following items, among other things, are required on the Record Plan:

- A Traffic Generation Diagram. See Figure 3.4.2-a for the required format and content.
- Depiction of all existing entrances within 600 feet of the entrances on Zion Church Road.
- Notes identifying the type of off-site improvements, agreements (signal, letter) contributions and when the off-site improvements are warranted.

*Response: Comment acknowledged; Record Plans will be prepared in and submitted for DelDOT review in accordance with current DelDOT requirements.*

Comment 9: Section 3.5 of the Manual provides DelDOT's requirements with regard to connectivity. The requirements in Sections 3.5.1 through 3.5.3 shall be followed for all development projects having access to state roads or proposing DelDOT maintained public streets for subdivisions. DelDOT supports the proposed extension of Road B.

*Response: Comment addressed; the Preliminary Plan shows the stub of Valley Rock Road (formerly Road "B") to enable a possible future interconnection with the lands to the southeast of the subject development area.*

Comment 10: Section 3.5.4.2 of the Manual addresses requirements for shared-use paths and sidewalks. For projects in Level 1 and 2 Investment Areas, installation of paths or sidewalks along the frontage on State-maintained roads is required. DelDOT anticipates requiring the developer to build Shared Use Paths along their frontage on Zion Church Road.

*Response: Comment addressed; the easement area for a Shared Use Path has been shown on the Preliminary Plan as noted above. The requirement to provide the Shared Use Path will be discussed with the Subdivision Engineer to determine whether construction along the limited frontage area, or payment of the fee in lieu would be a better alternative at this location.*

Comment 11: Referring to Section 3.5.5 of the Manual, existing and proposed transit stops and associated facilities as required by the Delaware Transit Corporation (DTC) or DelDOT shall be shown on the Record Plan.

*Response: Comment acknowledged; the project site is not located along any current DART routes. Therefore, no transit stops or associated facilities are anticipated to be required for this project. We will confirm any changes to this approach with DTC and revise Record Plan accordingly.*

Comment 12: In accordance with Section 3.8 of the Manual, storm water facilities, excluding filter strips and bio swales, shall be located a minimum of 20 feet from the ultimate State right-of-way along Zion Church Road.

*Response: Comment addressed; all SWM areas are shown a minimum of 20' beyond the area of DelDOT Right-of-Way dedication.*

Comment 13: In accordance with Section 5.2.9 of the Manual, the Auxiliary Lane Worksheet should be used to determine whether auxiliary lanes are warranted at the site entrances and how long those lanes should be. The worksheet can be found at <https://deldot.gov/Business/subdivisions/index.shtml>.

*Response: Comment acknowledged; site entrance will be designed in accordance with current DelDOT requirements. Supporting design calculations will be provided as part of the*

*plan review package. Design deviation requests will be submitted for DelDOT consideration in accordance with current DelDOT policy.*

Comment 14: In accordance with Section 5.14 of the Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.

*Response: Comment acknowledged; plans will be developed and submitted for DelDOT review in accordance with current DelDOT requirements.*

### **Department of Natural Resources and Control - Contact Michael Tholstrup 735-3352**

#### **Habitat of Conservation Concern (Site Assessment)**

Comment 15: This project parcel was surveyed on September 21, 2006 to search for habitat of conservation concern and to assess the ecological quality of the area. A copy of this report has been included with these comments. During the survey, the forest at this site was determined to be 25 to 75 years of age; however, some individuals were identified that were likely 100 years of age or greater.

Contact the Division of Fish and Wildlife for assistance in identifying, preserving, and managing the existing forest on-site. For technical assistance or to schedule a site visit please contact Katie Kadlubar, [Kathryn.Kadlubar@delaware.gov](mailto:Kathryn.Kadlubar@delaware.gov).

*Response: Comment acknowledged; as shown by the Preliminary Plan, a majority of the wooded areas are to remain undisturbed on site. All on-site clearing will be performed in accordance with Sussex County and DNREC regulations.*

#### **Wetland and Forest Preservation**

Comment 16: DNREC mapping indicates presence of forested wetlands and hydric soils (Hurlock) which encompass a large portion of the subject parcel.

*Response: Comment acknowledged; as shown by the Preliminary plan, and as noted above, a majority of the wooded areas are to remain undisturbed on site. Disturbance to any wetland areas are anticipated to be performed under the requirements of Army Corps of Engineering (ACOE) Nationwide Permit 27 for the enhancement of the aquatic habitat.*

Comment 17: DNREC botanist, Bill McAvoy, can assist in drafting a list of plants suitable for this site. Bill can be contacted at (302) 735-8668 or [William.McAvoy@delaware.gov](mailto:William.McAvoy@delaware.gov).

*Response: Comment acknowledged; a Landscape Plan will be developed and certified by a licensed Landscape Architect in accordance with the requirements of the Sussex County Code.*

### **State Historic Preservation Office - Contact Carlton Hall 736-7400**

Comment 18: There are no known archaeological sites or known National Register listed or eligible properties on the parcel. There was a farmstead that disappeared by 1965. There is a suspicious tree spot on the 1937 aerial east of the house that may indicate a cemetery. The soils range from somewhat poorly drained to very poorly drained. There is potential for a mid-19th century archaeological site and possibly a cemetery. Therefore, our office recommends an archaeological survey of the project area. If you have any questions please contact our office for assistance at 302-736-7408...

*Response: Comment acknowledged; recommendations for archaeological survey have been noted.*



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Comment 19: If any project or development proceeds, the developer should be aware of the Unmarked Human Burials and Human Skeletal Remains Law (Del. C. Title 7, Ch.54). Prior to any demolition or ground-disturbing activities, the developer should hire an archaeological consultant to examine the parcel for archaeological resources, including unmarked human burials or human skeletal remains, to avoid those sites or areas.

*Response: Comment acknowledged; no documented burial sites are known to exist within the project development area.*

Comment 20: If there is federal involvement, in the form of licenses, permits, or funds, the federal agency, often through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. For further information on the Section 106 process please review the Advisory Council on Historic Preservation's website at: [www.achp.gov](http://www.achp.gov)

*Response: Comment acknowledged.*

### **Delaware State Fire Marshall's Office - Contact Duane Fox 259-7037**

Comment 21: At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation:

#### **Fire Protection Water Requirements:**

- Water distribution system capable of delivering at least 1000 gpm for 1-hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers.
- Where a water distribution system is proposed for residential sites, the infrastructure for fire protection water shall be provided, including the size of water mains for fire hydrants

#### **Fire Protection Features:**

- All structures over 10,000 Sq. Ft. aggregate will require automatic sprinkler protection installed.
- Buildings occupied as apartments (multi-family living units comprising of 3 or more units) will require automatic sprinkler protection installed.
- Buildings greater than 10,000 sq. ft., 3-stories or more, over 35 feet, or classified as High Hazard, are required to meet fire lane marking requirements
- For townhouse buildings, provide a section I detail and the UL design number of the 2-hour fire rated separation wall on the Site plan
- Show Fire Department Connection location (Must be within 300 feet of fire hydrant), and detail as shown in the DSFPR.
- Show Fire Lanes and Sign Detail as shown in DSFPR

#### **Accessibility:**

- All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. The road island at the entrance from the main thoroughfare must be constructed so fire department apparatus may negotiate it...

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- Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.
- Any dead end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property

**Gas Piping and System Information:**

- Provide type of fuel proposed, and show locations of bulk containers on plan.

**Required Notes:**

- Provide a note on the final plans submitted for review to read " All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations"
- Proposed Use
- Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
- Square footage of each structure (Total of all Floors)
- National Fire Protection Association (NFPA) Construction Type
- Maximum Height of Buildings (including number of stories)
- Note indicating if building is to be sprinklered
- Name of Water Provider
- Letter from Water Provider approving the system layout
- Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
- Provide Road Names, even for County Roads

*Response: Comment acknowledged; plans will be prepared and submitted to the SFMO in accordance with the current Delaware Fire Regulations.*

**Sussex County - Contact Rob Davis 302-855-7820**

Comment 22: The parcel is within Tier I - Sussex County Unified Sanitary Sewer District and sewer service is available. A sewer system concept evaluation must be requested to define a connection point. The proposal for 254-unit subdivision 64.22 acres is within sewer system design assumptions and sewer capacity can be assumed. A "Use of Existing Infrastructure Agreement" is required and must be approved prior to approval of construction plans. Sussex County Code, Chapter 1 10, requires that the Engineer and/or Developer request a Sewer System Concept Evaluation (SSCE) from the Utility Planning Department for their project by providing the parcel(s) estimated equivalent dwelling units (EDU) for the project, along with payment of \$1,000.00 payable to Sussex County Council. The Utility Planning Department will review the parcel(s) and EDU, confirm capacity, provide the connection point and define any additional parcels that must be served as part of the project. Should it be determined that a pump station is required for

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the project, additional information may be requested. This information will be conveyed to the engineer and/or developer as well as the Sussex County Public Works department. The Public Works Division will use this information when reviewing construction drawings to verify that the correct connection point is used, and all required parcels are served.

*Response: Comment acknowledged; the SSCE was provided by Sussex County Engineering on September 23, 2019. All required agreements are anticipated to be processed prior to construction plan approval. No sanitary sewer pump stations are anticipated to be required for the proposed Twin Cedars project.*

**Comment 23:** The proposed development will require a developer installed collection system in accordance with Sussex County standards and procedures.

*Response: Plans will be developed in accordance with Sussex County standards and submitted concurrently to both Sussex County Engineering and the Delaware Department of Natural Resources for ultimate approval of the plans and construction.*

**Comment 24:** Onetime system connection charges will apply. Please contact the Utility Permits Division at 302 855-7719 for additional information on charges.

*Response: Comment acknowledged; connection charges will be paid in accordance with Sussex County Code requirements.*

### **Recommendations/Additional Information**

This section includes a list of site specific suggestions that are intended to enhance the project. These suggestions have been generated by the State Agencies based on their expertise and subject area knowledge. These suggestions do not represent State code requirements. They are offered here in order to provide proactive ideas to help the applicant enhance the site design, and it is hoped (but in no way required) that the applicant will open a dialogue with the relevant agencies to discuss how the suggestions can benefit the project.

### **Department of Transportation - Bill Brockenbrough 760-2109**

**Recommendation 1:** The applicant should expect a requirement that any substation and/or wastewater facilities will be required to have access from an internal driveway with no direct access to Zion Church Road.

*Response: Comment acknowledged; no substations or wastewater facilities are anticipated to be constructed by the Developer as part of the proposed Twin Cedars project.*

**Recommendation 2:** The applicant should expect a requirement that all PLUS and Technical Advisory Committee (TAC) comments be addressed prior to submitting plans for review.

*Response: Comment acknowledged; plans will be submitted to DelDOT with revisions to address TAC and PLUS comments as noted above.*

**Recommendation 3:** Please be advised that the Standard General Notes have been updated and posted to the DelDOT website. Please begin using the new versions and look for the revision dates of March 21, 2019 and March 25, 2019. The notes can be found at <https://www.deldot.gov/Business/subdivisions/>.

*Response: Comment acknowledged; plans to be submitted to DelDOT will reference latest General Notes for Record Plans, Entrance Plans, and Maintenance of Traffic Plans.*

**Department of Natural Resources and Environmental Control - Contact Michael Tholstrup 735-3352**

**Habitat of Conservation Concern (Site Assessment)**

Recommendation 4: Small animals, such as salamanders have difficulty climbing vertical curbs. DNREC recommends designing the development to exclude curbs is best for these species but if road curbing is part of the design, curbing that allows small animals to climb out of the roadbed (such as Cape Cod curbing) is preferred over steep, vertical curbing.

*Response: Comment acknowledged; all streets will be designed in accordance with State and County design standards. It is anticipated that internal subdivision streets will include rolled curbs to eliminate a vertical barrier to any wildlife that may be crossing proposed road areas.*

Recommendation 5: Avoid installing sewers with grates, which can create hazard for amphibians and reptiles.

*Response: Comment acknowledged; all streets will be designed in accordance with State and County design standards. As such, inlet and grate styles will utilize typical DelDOT details.*

Recommendation 6: Any culverts installed should be open bottom box culverts to allow for natural substrate to remain and in-water passage of aquatic life. Additionally, culverts should be left as wide as possible to ensure that salamanders can travel through them.

*Response: Comment acknowledged; stormwater drainage, including on-site conveyance and stormwater management outfalls will be designed in accordance with State and County Code requirements.*

Recommendation 7: To deter waterfowl from taking up residence in the stormwater ponds, DNREC recommends planting pond perimeters with a mix of native grasses and wildflowers (to be planted in accordance with Sediment and Stormwater Plan requirements and delegated agency approval). In addition to deterring nuisance waterfowl, the native wildflower mix will also serve to attract pollinators like bees and butterflies, and reduce run-off, which can contain pollutants from nearby impervious surfaces.

*Response: Comment acknowledged; buffer areas around the SWM facilities will be planted with materials to discourage waterfowl per SCD recommendations. Plant material selection will be made by licensed Landscape Architect in accordance DNREC Stormwater Section guidelines as well as Sussex County and SCD requirements.*

**Wetland and Forest Preservation**

Recommendation 8: Given the benefit of trees in erosion control and flood abatement, tree removal for construction activities and stormwater management should be minimized. The site plan should be designed in a way that allows for preservation of as much of this wooded area as feasible.

*Response: Comment acknowledged; tree clearing is anticipated to be limited to those areas necessary for construction of road, residential lots, and infrastructure directly associated with the proposed residential subdivision.*

Recommendation 9: Tree clearing should be restricted to the areas that are absolutely necessary for the footprint of homes and infrastructure.

*Response: Comment acknowledged; tree clearing is anticipated to be limited to those areas necessary for construction of road, residential lots, and infrastructure directly associated with the proposed residential subdivision.*

Recommendation 10: To reduce impacts to nesting birds and other wildlife species that utilize forests for breeding, forest clearing should not occur April 1st to July 31st.

*Response: Comment acknowledged; the developer / contractor will comply with all State and County regulatory requirements related to Nesting/Breeding Birds.*

Recommendation 11: Low spillage lightbulbs (those that reflect light directly downward onto the illuminated area) should be used on roads and homes within 750-feet of the forested wetlands on site. Fluorescent and mercury vapor lighting should not be used.

*Response: Comment acknowledged; cutoff style light fixtures will be utilized throughout the community for the road lighting purposes. It is anticipated that these fixtures will utilize LED technology. Recommendations for any exterior lighting on the proposed residential structures will be shared with potential builders for their consideration.*

Recommendation 12: Green-technology stormwater management is highly recommended. Efforts to mitigate for impervious cover (pervious pavers) should also be implemented where applicable. Avoid diverting surface water from roadways and stormwater facilities into the wetlands on-site. Water quality could be detrimentally affected by run-off which can contain oil and other pollutants, such as fertilizers and other lawn treatments applied by homeowners.

*Response: Comment acknowledged; consideration to green technology / infiltration based SWM practices will be performed during the SWM strategy development. Due to high groundwater table conditions anticipated for the site, the applicability of these practices was anticipated to be severely limited. Runoff from the developed site will be directed to on-site BMPs to the maximum extent practicable. The discharge from the BMPs are anticipated to be directed for off-site conveyance into the existing tax ditch / drainage ways on site to minimize impacts to the on-site wetlands located at the rear of the parcel.*

Recommendation 13: Avoid causing increases or decreases in water levels by maintaining inputs to natural wetlands at pre-construction levels.

*Response: Comment acknowledged; the on-site grading will attempt to maintain the drainage patterns of the undeveloped site. Discharge from the site will utilize techniques to provide for non-erosive discharge from all SWM facilities. Consideration of runoff volumes with regard to input to interior wetlands areas will be given throughout the grading and SWM design for the developed site condition.*

Recommendation 14: Generally, a 100-foot vegetated buffer is sufficiently protective of water quality.

*Response: Comment acknowledged; buffers to wetlands and other natural resources will be provided in accordance with Sussex County Code requirements in effect at the time of the Preliminary Plan application submittal.*

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**Delaware State Fire Marshall's - Contact Duane Fox259-7037**

Recommendation 15: Although not a requirement of the State Fire Prevention Regulations, the Office of the State Fire Marshal encourages home builders to consider the benefits of home sprinkler protection in dwellings. The Office of the State Fire Marshal also reminds home builders that they are obligated to comply with requirements of Subchapter III of Chapter 36 of Title 6 of the Delaware Code which can be found at the following website: <http://delcode.delaware.gov/title6/c036/sc03/index.shtml>

*Response: Comment acknowledged; recommendation will be shared with home builder for their consideration.*

Recommendation 16: Preliminary meetings with fire protection specialists are encouraged prior to formal submittal. Please call for appointment. Applications and brochures can be downloaded from our website: [www.statefiremarshal.delaware.gov](http://www.statefiremarshal.delaware.gov), technical services link, plan review, applications or brochures.

**State Housing Authority - Contact: Jonathan Adkins-Taswell 739-4263**

Recommendation 17: DSHA strongly supports the site plan for 254 units of 168 multi-family apartments on 64.22 acres along Zion Church Road in Sussex County. This would provide Sussex County an excellent opportunity to facilitate a more affordable housing product in the southern Coastal Area. The need for housing affordable to the many county residents who work in this resort economy is acute and well documented. Considering the site's close proximity to the Rt. 54 and north of Selbyville and location within a DSHA-defined "Areas of Opportunity" provides economic opportunity, high performing school district, and supportive infrastructure that help households succeed. This is an excellent location for a more affordable housing product. As a result, DSHA recommends that Sussex County embrace the opportunity to approve this proposal permitting residents to live close to their jobs, as well as, access the resources and benefits this area provides.

*Response: Comment acknowledged.*

Recommendation 18: DSHA encourages a site layout and quality design measures that creates desirable rental units which are vital to any well-balanced community, the intensity of the proposal warrants design measures to create human-scaled, and pedestrian-oriented community. Incorporating attractive streetscapes, community recreation areas, visually appealing facade treatments, significant landscaping and pedestrian-oriented measures will help the proposal to integrate well into the larger coastal area.

*Response: Comment acknowledged; perimeter landscape / forested buffer areas will be provided in accordance with Sussex County requirements. Sidewalks and street trees will be provided along both sides of all subdivision streets. A centrally located community recreation area is to be provided for the benefit of all residents of the Twin Cedars community. It is anticipated that architectural styles utilized throughout the community will be similar in nature to those employed at other nearby communities that have been recently constructed.*

Recommendation 19: If you have any questions or would like more information, please feel free to call me at (302) 739-4263 ext.245 or via e-mail at [Jonathan@destatehousing.com](mailto:Jonathan@destatehousing.com).

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*Response: Comment acknowledged.*

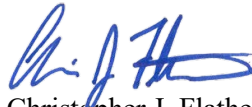
**Sussex County Housing - Contact Brandy Naurman**

In addition to the comments above our office has received a letter from Brandy Nauman, Sussex County Housing Coordinator & Fair Housing Compliance Officer. A copy of that letter is enclosed with this letter.

*Response: Comment acknowledged; information will be shared with developer and home builder for their consideration.*

A Preliminary Plan application has been submitted to Sussex County Department of Planning and Zoning review and approval. If you should require additional information regarding this PLUS application, please contact me to discuss at 302-326-2200.

Very Truly Yours,  
MORRIS & RITCHIE ASSOCIATES, INC.



Christopher J. Flathers, P.E.  
Senior Project Manager

cc: J. Whitehouse, Sussex County  
H. Mast, Bay Developers, LLC  
D. Hutt, Esq.  
P. Tolliver, MRA  
File

## ***Appendix 6 – Web Soil Survey Report***







United States  
Department of  
Agriculture

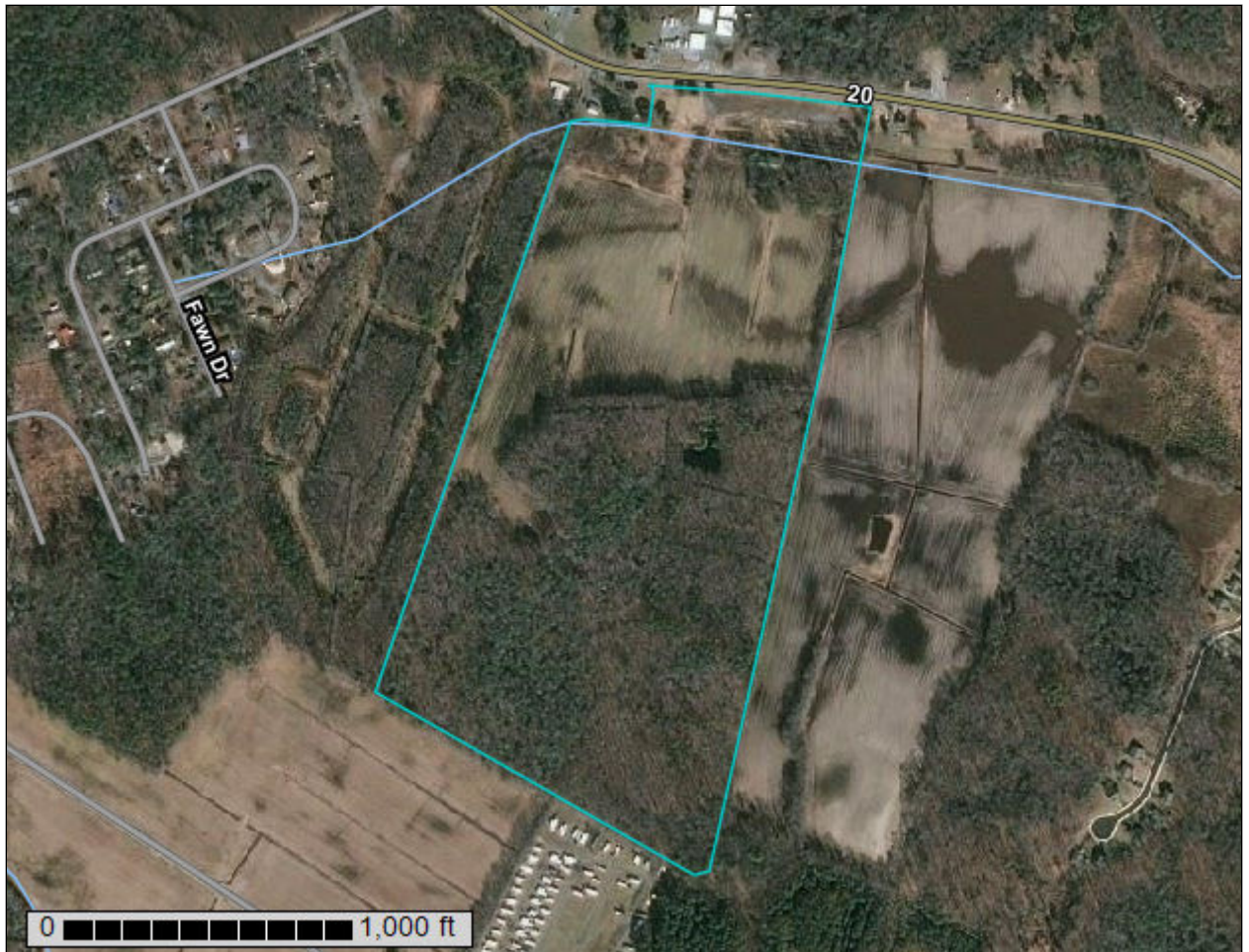
**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for **Sussex County, Delaware**

## Twin Cedars



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

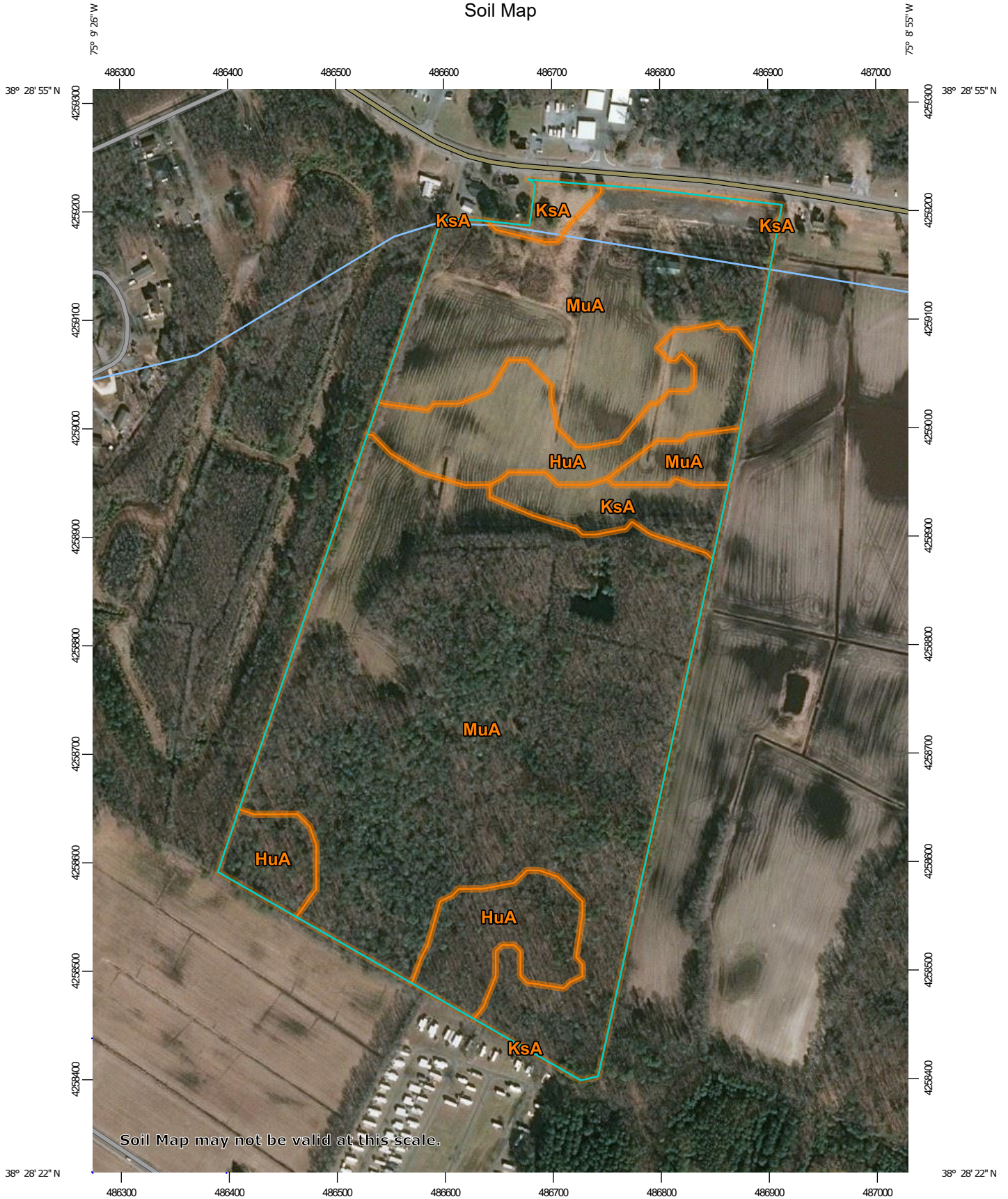


# Soil Map

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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:4,870 if printed on A portrait (8.5" x 11") sheet.

0 50 100 200 300 Meters

0 200 400 800 1200 Feet

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 1:24,000.

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: Sussex County, Delaware  
 Survey Area Data: Version 20, Sep 13, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 21, 2018—Mar 12, 2019

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
HuA	Hurlock loamy sand, 0 to 2 percent slopes	10.5	16.3%
KsA	Klej loamy sand, 0 to 2 percent slopes	3.1	4.8%
MuA	Mullica-Berryland complex, 0 to 2 percent slopes	50.8	78.9%
<b>Totals for Area of Interest</b>		<b>64.3</b>	<b>100.0%</b>

## 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 components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

## Custom Soil Resource Report

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Sussex County, Delaware

### HuA—Hurlock loamy sand, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 1qth8

*Elevation:* 0 to 140 feet

*Mean annual precipitation:* 42 to 48 inches

*Mean annual air temperature:* 52 to 58 degrees F

*Frost-free period:* 180 to 220 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Hurlock, undrained, and similar soils:* 40 percent

*Hurlock, drained, and similar soils:* 40 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Hurlock, Undrained

##### Setting

*Landform:* Depressions, flats, swales

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Concave, linear

*Across-slope shape:* Concave, linear

*Parent material:* Loamy fluviomarine sediments

##### Typical profile

*Oe - 0 to 3 inches:* moderately decomposed plant material

*A - 3 to 6 inches:* loamy sand

*Eg - 6 to 13 inches:* sandy loam

*Btg - 13 to 25 inches:* sandy loam

*Cg - 25 to 63 inches:* loamy sand

*2Cg - 63 to 80 inches:* silt loam

##### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Poorly drained

*Runoff class:* Negligible

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high  
(0.06 to 5.95 in/hr)

*Depth to water table:* About 0 to 10 inches

*Frequency of flooding:* None

*Frequency of ponding:* Occasional

*Available water storage in profile:* Moderate (about 7.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4w

*Hydrologic Soil Group:* A/D

*Hydric soil rating:* Yes

## Description of Hurlock, Drained

### Setting

*Landform:* Flats, swales, depressions  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Linear, concave  
*Parent material:* Loamy fluviomarine sediments

### Typical profile

*Ap - 0 to 10 inches:* loamy sand  
*Eg - 10 to 13 inches:* sandy loam  
*Btg - 13 to 25 inches:* sandy loam  
*Cg - 25 to 63 inches:* loamy sand  
*2Cg - 63 to 80 inches:* silt loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high  
(0.06 to 5.95 in/hr)  
*Depth to water table:* About 10 to 20 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Rare  
*Available water storage in profile:* Moderate (about 6.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3w  
*Hydrologic Soil Group:* A/D  
*Hydric soil rating:* Yes

## Minor Components

### Klej

*Percent of map unit:* 5 percent  
*Landform:* Depressions, flats  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* No

### Hammonton

*Percent of map unit:* 5 percent  
*Landform:* Flats, drainageways, depressions  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Linear, concave  
*Hydric soil rating:* No

### Glassboro

*Percent of map unit:* 5 percent  
*Landform:* Drainageways, flats  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**Galloway**

*Percent of map unit:* 5 percent  
*Landform:* Flats, depressions  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Linear, concave  
*Hydric soil rating:* No

**KsA—Klej loamy sand, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 1qthw  
*Elevation:* 0 to 200 feet  
*Mean annual precipitation:* 42 to 48 inches  
*Mean annual air temperature:* 52 to 58 degrees F  
*Frost-free period:* 180 to 220 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Klej and similar soils:* 70 percent  
*Minor components:* 30 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Klej**

**Setting**

*Landform:* Flats, depressions  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Linear, concave  
*Parent material:* Sandy eolian deposits and/or fluviomarine sediments

**Typical profile**

*A - 0 to 7 inches:* loamy sand  
*E - 7 to 14 inches:* loamy sand  
*Bw - 14 to 20 inches:* loamy sand  
*C - 20 to 62 inches:* loamy sand  
*Cg - 62 to 80 inches:* sand

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (0.57 to 19.98 in/hr)  
*Depth to water table:* About 10 to 20 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 4.4 inches)



**Interpretive groups**

*Land capability classification (irrigated): 3w*  
*Land capability classification (nonirrigated): 3w*  
*Hydrologic Soil Group: A/D*  
*Hydric soil rating: No*

**Minor Components**

**Galloway**

*Percent of map unit: 10 percent*  
*Landform: Flats, depressions*  
*Down-slope shape: Linear, concave*  
*Across-slope shape: Linear, concave*  
*Hydric soil rating: No*

**Berryland, drained**

*Percent of map unit: 5 percent*  
*Landform: Flats, depressions, swales*  
*Landform position (three-dimensional): Talf*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Hydric soil rating: Yes*

**Hurlock, drained**

*Percent of map unit: 5 percent*  
*Landform: Swales, flats, depressions*  
*Landform position (three-dimensional): Dip*  
*Down-slope shape: Concave, linear*  
*Across-slope shape: Linear, concave*  
*Hydric soil rating: Yes*

**Runclint**

*Percent of map unit: 5 percent*  
*Landform: Knolls, flats, dunes, fluvio-marine terraces*  
*Landform position (three-dimensional): Rise*  
*Down-slope shape: Convex, linear*  
*Across-slope shape: Convex, linear*  
*Hydric soil rating: No*

**Hammonton**

*Percent of map unit: 5 percent*  
*Landform: Flats, drainageways, depressions*  
*Down-slope shape: Linear, concave*  
*Across-slope shape: Linear, concave*  
*Hydric soil rating: No*

**MuA—Mullica-Berryland complex, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol: 1qtjb*  
*Elevation: 0 to 100 feet*

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*Mean annual precipitation:* 42 to 48 inches  
*Mean annual air temperature:* 52 to 58 degrees F  
*Frost-free period:* 180 to 220 days  
*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Mullica, drained, and similar soils:* 25 percent  
*Berryland, drained, and similar soils:* 25 percent  
*Berryland, undrained, and similar soils:* 15 percent  
*Mullica, undrained, and similar soils:* 15 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Mullica, Drained

#### Setting

*Landform:* Flats, swales, depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*Ap - 0 to 10 inches:* mucky sandy loam  
*A - 10 to 14 inches:* mucky sandy loam  
*Bg - 14 to 24 inches:* sandy loam  
*Cg - 24 to 65 inches:* sand  
*2Ab - 65 to 80 inches:* silt loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Very poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 5.95 in/hr)  
*Depth to water table:* About 0 to 10 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Rare  
*Available water storage in profile:* Low (about 4.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2w  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* A/D  
*Hydric soil rating:* Yes

### Description of Berryland, Drained

#### Setting

*Landform:* Depressions, flats, swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy eolian deposits and/or fluviomarine sediments

#### Typical profile

*Ap - 0 to 10 inches:* mucky loamy sand  
*A - 10 to 17 inches:* loamy sand  
*Bh - 17 to 24 inches:* loamy sand

## Custom Soil Resource Report

*C - 24 to 70 inches: sand*  
*2Ab - 70 to 80 inches: silt loam*

### Properties and qualities

*Slope: 0 to 2 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Natural drainage class: Very poorly drained*  
*Runoff class: Negligible*  
*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)*  
*Depth to water table: About 0 to 10 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: Rare*  
*Available water storage in profile: Low (about 4.4 inches)*

### Interpretive groups

*Land capability classification (irrigated): 2w*  
*Land capability classification (nonirrigated): 2w*  
*Hydrologic Soil Group: A/D*  
*Hydric soil rating: Yes*

## Description of Berryland, Undrained

### Setting

*Landform: Depressions, flats, drainageways, swales*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Parent material: Sandy eolian deposits and/or fluviomarine sediments*

### Typical profile

*Oe - 0 to 2 inches: moderately decomposed plant material*  
*A1 - 2 to 14 inches: mucky loamy sand*  
*A2 - 14 to 17 inches: loamy sand*  
*Bh - 17 to 24 inches: loamy sand*  
*C - 24 to 70 inches: sand*  
*2Ab - 70 to 80 inches: silt loam*

### Properties and qualities

*Slope: 0 to 2 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Natural drainage class: Very poorly drained*  
*Runoff class: Negligible*  
*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)*  
*Depth to water table: About 0 to 10 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: Frequent*  
*Available water storage in profile: Low (about 5.1 inches)*

### Interpretive groups

*Land capability classification (irrigated): None specified*  
*Land capability classification (nonirrigated): 4w*  
*Hydrologic Soil Group: A/D*  
*Hydric soil rating: Yes*

## Description of Mullica, Undrained

### Setting

*Landform:* Flats, drainageways, swales, depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy and loamy fluviomarine sediments

### Typical profile

*Oe - 0 to 3 inches:* moderately decomposed plant material  
*A - 3 to 10 inches:* mucky sandy loam  
*Eg - 10 to 14 inches:* sandy loam  
*Bg - 14 to 24 inches:* sandy loam  
*Cg - 24 to 65 inches:* sand  
*2Ab - 65 to 80 inches:* silt loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Very poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 5.95 in/hr)  
*Depth to water table:* About 0 to 10 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Available water storage in profile:* Moderate (about 6.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* A/D  
*Hydric soil rating:* Yes

## Minor Components

### Klej

*Percent of map unit:* 10 percent  
*Landform:* Flats, depressions  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Linear, concave  
*Hydric soil rating:* No

### Askecksy, drained

*Percent of map unit:* 5 percent  
*Landform:* Depressions, swales, flats  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* Yes

### Galloway

*Percent of map unit:* 5 percent  
*Landform:* Depressions, flats  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* No

## Custom Soil Resource Report

# **Soil Information for All Uses**

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## **Soil Properties and Qualities**

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

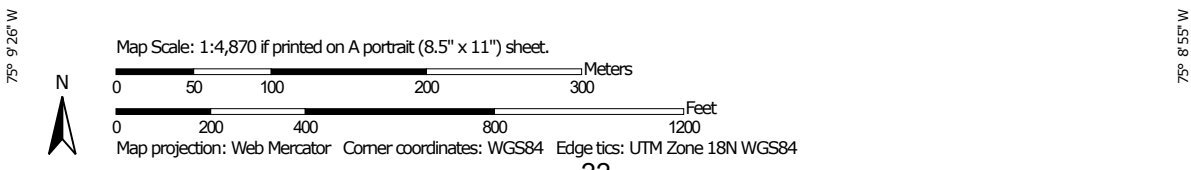
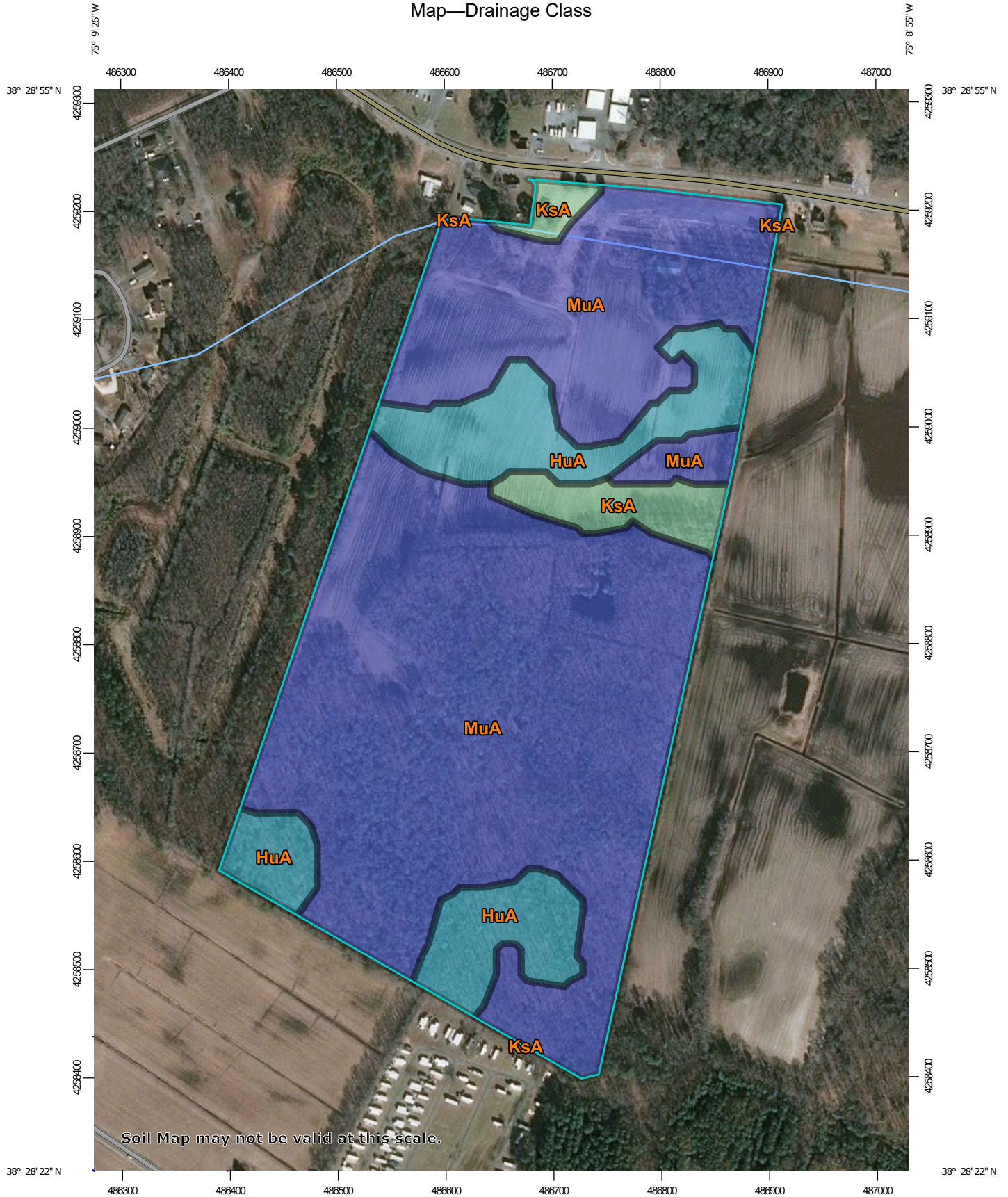
## **Soil Qualities and Features**

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

## **Drainage Class**


"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

# Custom Soil Resource Report Map—Drainage Class



### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

-  Excessively drained
-  Somewhat excessively drained
-  Well drained
-  Moderately well drained
-  Somewhat poorly drained
-  Poorly drained
-  Very poorly drained
-  Subaqueous
-  Not rated or not available


**Soil Rating Lines**

-  Excessively drained
-  Somewhat excessively drained
-  Well drained
-  Moderately well drained
-  Somewhat poorly drained
-  Poorly drained
-  Very poorly drained
-  Subaqueous
-  Not rated or not available






**Soil Rating Points**

-  Excessively drained
-  Somewhat excessively drained
-  Well drained
-  Moderately well drained
-  Somewhat poorly drained
-  Poorly drained
-  Very poorly drained
-  Subaqueous
-  Not rated or not available


**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 1:24,000.

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: Sussex County, Delaware  
 Survey Area Data: Version 20, Sep 13, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 21, 2018—Mar 12, 2019

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.



**Table—Drainage Class**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HuA	Hurlock loamy sand, 0 to 2 percent slopes	Poorly drained	10.5	16.3%
KsA	Klej loamy sand, 0 to 2 percent slopes	Somewhat poorly drained	3.1	4.8%
MuA	Mullica-Berryland complex, 0 to 2 percent slopes	Very poorly drained	50.8	78.9%
<b>Totals for Area of Interest</b>			<b>64.3</b>	<b>100.0%</b>

**Rating Options—Drainage Class**

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

**Hydrologic Soil Group**

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

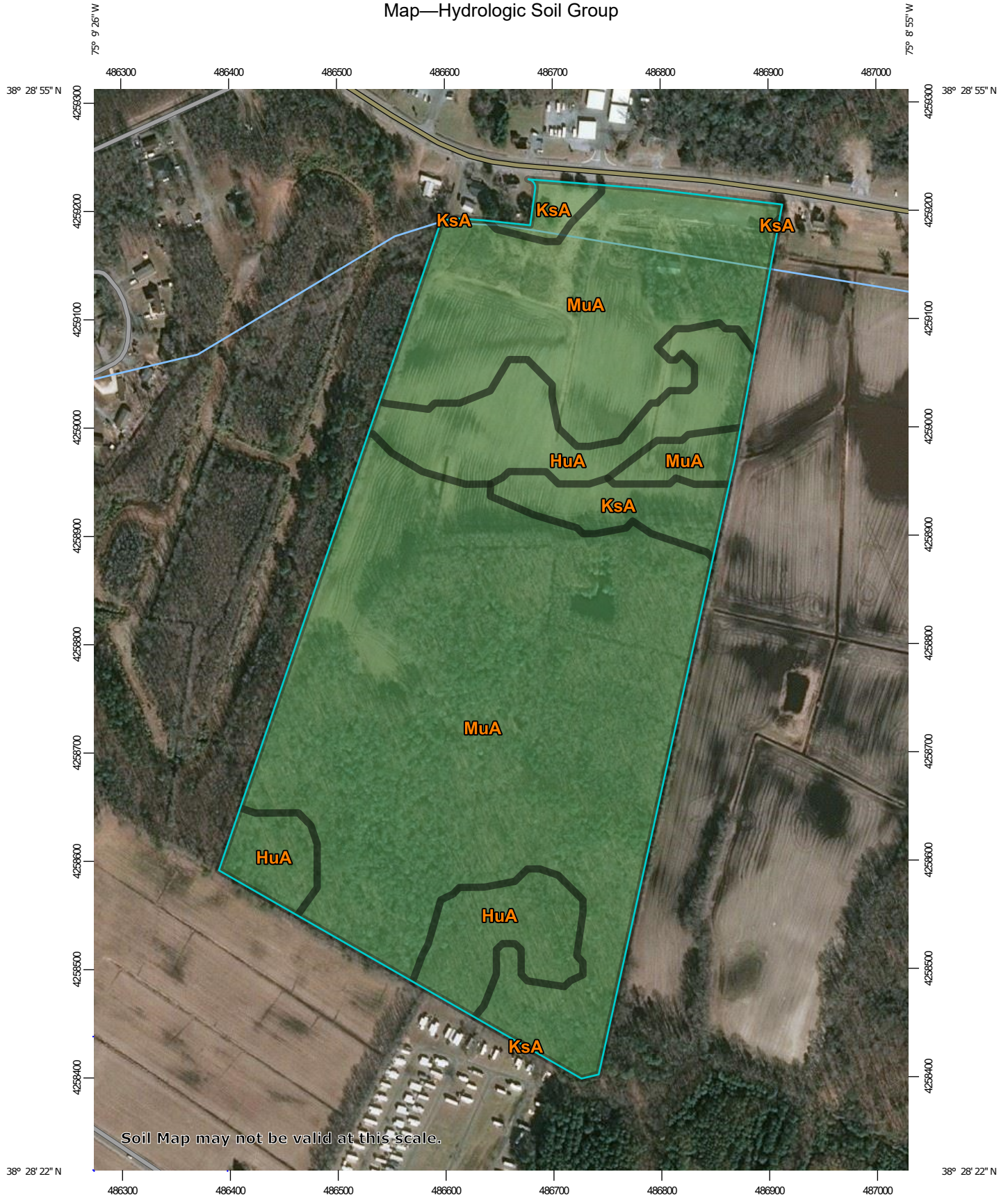
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at

## Custom Soil Resource Report

or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

# Custom Soil Resource Report Map—Hydrologic Soil Group




Soil Map may not be valid at this scale.

Map Scale: 1:4,870 if printed on A portrait (8.5" x 11") sheet.  
0 50 100 200 300 Meters  
0 200 400 800 1200 Feet  
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 Rating Polygons**





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Lines**


-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Points**






-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

**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 1:24,000.

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: Sussex County, Delaware  
 Survey Area Data: Version 20, Sep 13, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 21, 2018—Mar 12, 2019

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.

**Table—Hydrologic Soil Group**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HuA	Hurlock loamy sand, 0 to 2 percent slopes	A/D	10.5	16.3%
KsA	Klej loamy sand, 0 to 2 percent slopes	A/D	3.1	4.8%
MuA	Mullica-Berryland complex, 0 to 2 percent slopes	A/D	50.8	78.9%
<b>Totals for Area of Interest</b>			<b>64.3</b>	<b>100.0%</b>

**Rating Options—Hydrologic Soil Group**

*Aggregation Method:* Dominant Condition  
*Component Percent Cutoff:* None Specified  
*Tie-break Rule:* Higher

**Water Features**

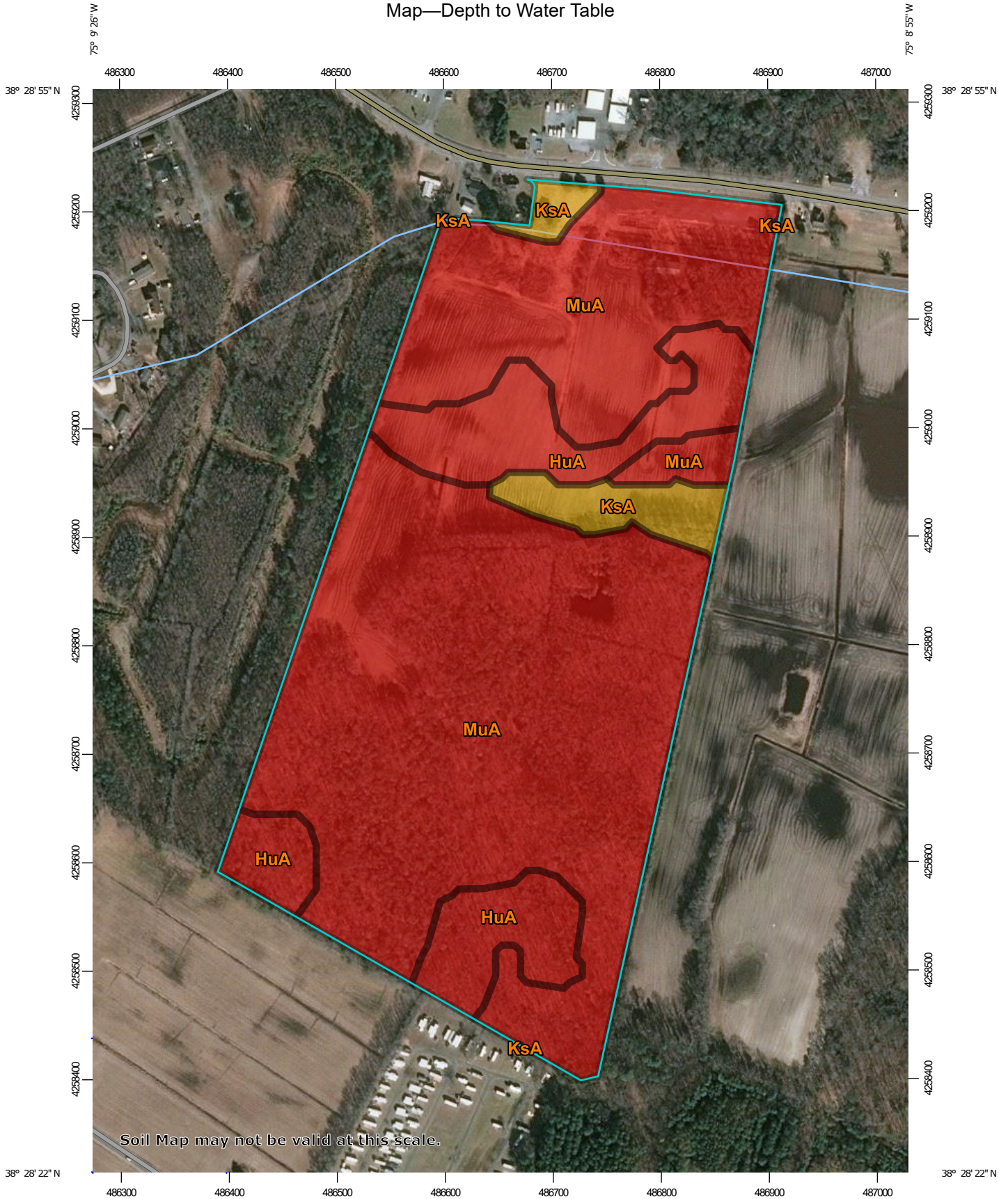
Water Features include ponding frequency, flooding frequency, and depth to water table.

**Depth to Water Table**

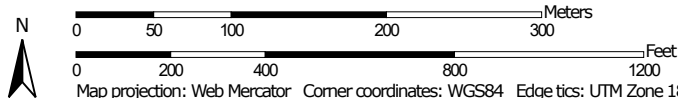
"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report  
Map—Depth to Water Table




Map Scale: 1:4,870 if printed on A portrait (8.5" x 11") sheet.










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 Rating Polygons**


-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200
-  Not rated or not available

**Soil Rating Lines**






-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200
-  Not rated or not available


**Soil Rating Points**


-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200

**Water Features**  
 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**  
 Aerial Photography

 Not rated or not available

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Sussex County, Delaware  
 Survey Area Data: Version 20, Sep 13, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 21, 2018—Mar 12, 2019

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.

**Table—Depth to Water Table**

<b>Map unit symbol</b>	<b>Map unit name</b>	<b>Rating (centimeters)</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
HuA	Hurlock loamy sand, 0 to 2 percent slopes	13	10.5	16.3%
KsA	Klej loamy sand, 0 to 2 percent slopes	30	3.1	4.8%
MuA	Mullica-Berryland complex, 0 to 2 percent slopes	13	50.8	78.9%
<b>Totals for Area of Interest</b>			<b>64.3</b>	<b>100.0%</b>



### **Rating Options—Depth to Water Table**

*Units of Measure:* centimeters

*Aggregation Method:* Dominant Component

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

*Interpret Nulls as Zero:* No

*Beginning Month:* January

*Ending Month:* December

## Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

## Building Site Development

This folder contains a collection of tabular reports that present soil interpretations related to building site development. The reports (tables) include all selected map units and components for each map unit, limiting features and interpretive ratings. Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

## Dwellings and Small Commercial Buildings

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. This table shows the degree and kind of soil limitations that affect dwellings and small commercial buildings.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

*Dwellings* are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced

concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

*Small commercial buildings* are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

## **Report—Dwellings and Small Commercial Buildings**

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Custom Soil Resource Report

Dwellings and Small Commercial Buildings—Sussex County, Delaware							
Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HuA—Hurlock loamy sand, 0 to 2 percent slopes							
Hurlock, undrained	40	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Hurlock, drained	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KsA—Klej loamy sand, 0 to 2 percent slopes							
Klej	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MuA—Mullica-Berryland complex, 0 to 2 percent slopes							
Berryland, drained	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Mullica, drained	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Berryland, undrained	15	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Mullica, undrained	15	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

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## Custom Soil Resource Report

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***Appendix 7 – Wetlands Evaluation***

**“Wetland Delineation Report”, Geo-Technology Associates, Inc., March 31,  
2021**







# WETLAND DELINEATION REPORT

---

## TWIN CEDARS

SUSSEX COUNTY, DELAWARE

March 31, 2021

Prepared For:

**BAY DEVELOPERS, LLC**

680 Forest Street  
Dover, Delaware 19904  
Attn: Mr. Henry Mast

---

Prepared By:

**GEO-TECHNOLOGY ASSOCIATES, INC.**

*Geotechnical and Environmental Consultants*

3445-A Box Hill Corporate Center Drive  
Abingdon, Maryland 21009  
Phone: (410) 515-9446  
[www.gtaeng.com](http://www.gtaeng.com)

GTA Project No: 31190731



# GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND  
ENVIRONMENTAL CONSULTANTS

*A Practicing Geoprofessional Business Association Member Firm*



March 31 2021

Bay Developers, LLC  
680 Forest Street  
Dover, Delaware 19904

Attn: Mr. Henry Mast

Re: Wetland Delineation Report  
***Twin Cedars***  
Sussex County, Delaware

Dear Mr. Mast:

Pursuant to your request, Geo-Technology Associates, Inc. (GTA) has performed a wetland delineation of the above referenced site. The subject site is located south of Zion Church Road in the Selbyville area of Sussex County, Delaware. The subject site encompasses approximately 64.34 acres and is identified as Sussex County Tax Parcel 5-33-11.00-42.00. The purpose of the review was to evaluate the presence and extent of wetlands and/or waterways with respect to Federal and State regulatory authority. This Report and the accompanying *Wetland Delineation Plan* summarize GTA's findings.

We appreciate the opportunity to have been of service to you. If you have questions or require additional information, please contact this office at (410) 515-9446.

Sincerely,  
**GEO-TECHNOLOGY ASSOCIATES, INC.**

Matthew Jennette  
Senior Project Scientist

T. Andy Stansfield Jr.  
Vice President

TAB/MAJ/TAS/cds  
31190731

\\psmc-data\gta\Shared\Project Files\2019\31190731 - Twin Cedars\Reports - Permitting\31190731 Wetland Report.doc

3445-A Box Hill Corporate Center Drive, Abingdon, MD 21009 (410) 515-9446

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**WETLAND DELINEATION REPORT  
TWIN CEDARS  
SUSSEX COUNTY, DELAWARE  
MARCH 31, 2021**

**1.0 INTRODUCTION**

The Twin Cedars property (subject site) is located south of Zion Church Road in the Selbyville area of Sussex County, Delaware. The subject site encompasses approximately 64.34 acres and is identified as Sussex County Tax Parcel 5-33-11.00-42.00. A *Site Location Map* depicting the location of the subject site is attached as *Figure 1*. Geo-Technology Associates, Inc. (GTA) has been retained to provide a review and delineation of the subject site's wetlands and/or "waters of the United States."

At the time of GTA's environmental review, the subject site consisted primarily of agricultural fields and wooded areas. The approximate latitude and longitude coordinates of the center of the subject site is 38.478105° and -75.152701° respectively.

**2.0 DOCUMENT REVIEW**

**2.1 Site Plans**

GTA personnel utilized a base plan provided by Morris & Ritchie Associates, Inc. (MRA). The base plan identifies existing structures, roads, tree lines, and contours.

**2.2 United States Geological Survey Topographic Maps**

The United States Geological Survey (USGS), Selbyville, DE Quadrangle, 7.5-minute Topographic Map Series for the area (*Figure 2*) was used as a reference to identify possible waterways within the site. USGS topographic maps identify elevations, streams, ponds, wetlands, and roads. Zion Church Road is depicted north of the subject site. The USGS Topographic Map depicts linear waterways along the eastern, and western edges of the subject site, and within the northern portion of the subject site. The topography depicted on the USGS Topographic Map indicates that the subject site generally drains to the south towards Dirickson Creek. Dirickson Creek is a tributary to Assawoman Bay.

### 2.3 Soil Survey Information

GTA consulted the U.S. Department of Agriculture, Natural Resources Conservation Service’s (NRCS) *Web Soil Survey*<sup>1</sup> to identify the presence of possible hydric soils. The *Web Soil Survey* (Figure 3) depicts 3 soil units (Table 1) within the subject site. According to the NRCS National Hydric Soils List<sup>2</sup>, each of the soil units located within the subject site contain hydric components (Table 1).

**Table 1: Mapped Soil Units**

SYMBOL <sup>1</sup>	NAME/DESCRIPTION <sup>1</sup>	HYDRIC SOIL <sup>2</sup>	HYDRIC COMPONENT <sup>2</sup>	PERCENTAGE OF MAPPING UNIT <sup>2</sup>	POSITION IN LANDSCAPE <sup>2</sup>
HuA	Hurlock loamy sand, 0-2% slopes	Yes	Hurlock, undrained	40	Depressions, Flats, Swales
			Hurlock, drained	40	Flats, Swales, Depressions
KsA	Klej loamy sand, 0-2% slopes	Yes	Hurlock, drained	5	Flats, Depressions, Swales
			Berryland, drained	5	Swales, Flats, Depressions
MuA	Mullica – Berryland complex, 0-2% slopes	Yes	Berryland, drained	25	Depressions, Flats, Swales
			Mullica, drained	25	Flats, Swales, Depressions
			Mullica, undrained	15	Flats, Drainageways, Swales, Depressions
			Berryland, undrained	15	Depressions, Flats, Drainageways, Swales
			Askecksy, drained	5	Depressions, Swales, Flats

### 2.4 Wetland Indicator Maps

GTA’s environmental scientists also consulted digital wetlands data available from the United States Fish and Wildlife Service’s (USFWS) National Wetlands Inventory<sup>3</sup> (NWI; Figure 4). The NWI wetland map depicts linear riverine systems along the eastern and western

<sup>1</sup> United States Department of Agriculture, Natural Resource Conservation Service, Web Soil Survey. Available online at <<http://websoilsurvey.nrcs.usda.gov>> and accessed on June 13, 2019.

<sup>2</sup> United States Department of Agriculture, Natural Resource Conservation Service. State Soil Data Access (SDA) Hydric Soils List. Available online at <[https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcseprd1316619.html#reportref](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316619.html#reportref)>. Accessed June 13, 2019.

<sup>3</sup> United States Fish and Wildlife Service, National Wetlands Inventory. Last updated October 9, 2019.



boundaries of the subject site, and within the northern portion of the subject site, which appear to correspond with the waterways depicted on the USGS Topographic Map. Three palustrine wetland systems are depicted within the subject site. The NWI Wetlands Map depicts a palustrine system (PUBHx) within the central portion of the subject site, a palustrine system (PFO1B) within in the southwestern portion of the subject site, and a palustrine system (PFO1C) within the southeastern portion of the subject site. These features are classified by USFWS using the Cowardin system, as detailed in *Table 2*.

**Table 2: USFWS NWI Cowardin Designations**

SYMBOL <sup>3</sup>	SYSTEM <sup>3</sup>	SUBSYSTEM <sup>3</sup>	CLASS <sup>3</sup>	SUBCLASS <sup>3</sup>	WATER REGIME <sup>3</sup>	SPECIAL MODIFIER
PUBHx	Palustrine (P)	N/A	Unconsolidated Bottom (UB)	N/A	Permanently Flooded (H)	Excavated (x)
R2UBHx	Riverine (R)	Lower Perennial (2)	Unconsolidated Bottom (UB)	N/A	Permanently Flooded (H)	Excavated (x)
PFO1B	Palustrine (P)	N/A	Forested (FO)	Broad-Leaved Deciduous (1)	Seasonally Saturated (B)	N/A
PFO1C	Palustrine (P)	N/A	Forested (FO)	Broad-Leaved Deciduous (1)	Seasonally Flooded (C)	N/A

## 2.5 Aerial Imagery

GTA reviewed aerial imagery dated 1937, 1954, 1961, 1968, 1992, 1997, 2002, 2005, 2006, 2007, 2009, 2010, 2012, 2013, 2015 and 2017 (*Figure 5*), available from the Delaware Environmental Monitoring and Analysis Center<sup>4</sup> and the National Agricultural Imagery Program. Based on the aerial imagery reviewed by GTA, the subject site appeared to contain apparent agricultural fields and wooded areas since 1937. Apparent ditches are depicted along the eastern, western, northern and central portions of the subject site and appear to extend beyond the subject site. These ditches appear to be consistent with the waterways depicted on the USGS Topographic and the linear riverine systems depicted on the NWI Wetlands Map. Between 1992 and 1997, an apparent open water area was excavated within the central portion of the subject site. This area appears to correlate with the PUBHx system on the NWI Wetlands Map.

<sup>4</sup> Delaware Environmental Monitoring and Analysis Center. Available online at <<http://demac.udel.edu/>>

### **3.0 METHODOLOGY**

#### **3.1 General Methodology**

The purpose of GTA's review was to evaluate the presence and extent of wetlands and waterways with respect to Federal and State jurisdictional authority. GTA based its evaluation on the United States Army Corps of Engineers' (Corps) definition of "waters of the U.S." and "navigable waters of the U.S.," which are defined in Title 33 Code of Federal Regulations (CFR), Parts 328 and 329. GTA employed the three-parameter approach set forth in the *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-01*, dated 1987 (*1987 Manual*) and the *Corps Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)*, dated November, 2010 (*Supplement*) as a reference for delineating wetlands. The methodology of wetland delineation included identifying hydric soil, wetland hydrology, and dominant hydrophytic vegetation. GTA also considered other regulated waters of the United States, such as ponds, lakes, streams, and rivers. If these waters were observed on the property, GTA incorporated them into the nontidal wetland delineation and labeled them accordingly.

#### **3.2 Hydrology**

The *1987 Manual* defines wetland hydrology as the sum of the total wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation. *The 1987 Manual* further defines areas with evident characteristics of wetland hydrology as those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions. Wetland hydrology exists when a minimum of one primary indicator or two secondary indicators are present. Indicators of wetland hydrology are generally derived from observations of surface water or saturated soils, evidence of recent inundation, evidence of current or recent soil saturation, and evidence from other site conditions or data. Additional evidence of wetland hydrology can also be used with appropriate documentation.

### **3.3 Vegetation**

Hydrophytic vegetation can be defined as plant life growing in water or on a substrate that is at least periodically inundated by water. The USFWS has assigned an indicator status to plants that occur in and around wetlands, describing how often that species is found in a wetland:

Obligate Wetland (OBL): Occur in wetlands with an estimated 99% probability.

Facultative Wetland (FACW): Usually occur in wetlands, with an estimated 67%-99% probability.

Facultative (FAC): Equally likely to occur in wetlands and uplands, with an estimated 34%-66% probability of occurring in wetlands.

Facultative Upland (FACU): Usually occur in uplands, with an estimated 67%-99% probability of occurring in uplands.

Obligate Upland (UPL): Occur in uplands with an estimated 99% probability.

For vegetation within a community to be determined hydrophytic in accordance with the *Supplement*, it must pass the Dominance Test, where more than 50% of the dominant plant species observed must have the indicator statuses OBL, FACW, and FAC. If the vegetation observed in the community fails the Dominance Test and indicators of wetland hydrology and hydric soils are present, the Prevalence Index should be applied. Hydrophytic vegetation is present if a Prevalence Index of 3.0 or less is determined.

### **3.4 Soils**

A hydric soil is defined as a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions (*Supplement*). According to the *Supplement*, indicators of hydric soils form mostly from the loss or accumulation of iron, manganese, sulfur, or carbon compounds during saturated and anaerobic conditions.

### **3.5 On-Site Data Collection**

Data Collection Points (DCPs) were established on-site at locations to evaluate the presence of wetlands and waterways, and to demonstrate the typical characteristics of uplands and wetlands. In areas where hydrologic indicators were observed with hydrophytic vegetation,

GTA personnel excavated or augured test pits in the ground to a depth of 20 inches or more to observe features of the soil column. GTA personnel reviewed soil samples from test pits at numbered DCPs in order to describe and classify the soil as either hydric or non-hydric. At these DCPs, GTA personnel also evaluated the surrounding vegetative species and hydrologic indicators. Data Forms were prepared to record observations of the conditions within the wetland and upland areas. Data Forms were also prepared to record data from adjacent upland areas to further support the delineation in the field. The DCPs have been labeled on the *Wetland Delineation Plan* as DCP-1 through DCP-7. Data Forms with reference photographs are included in Appendix B to support the determination depicted on the accompanying *Wetland Delineation Plan* (Appendix D).

### **3.6 Delineation**

In June 2019, GTA's wetland scientists conducted an on-site review to evaluate whether wetlands and/or waterways are present within the subject site. GTA's field delineation consisted of identifying the limits of the wetlands and waterways with pink and black striped flags, numbered sequentially. Wetland flags were hung at the time of GTA's field visits. GTA used the base plan described in *Section 2.1* to navigate the site. Wetland and waterway flag locations were survey located by MRA in September 2019 and are shown on the accompanying *Wetland Delineation Plan* (Appendix D).

## **4.0 SYSTEMS IDENTIFIED**

GTA's wetland scientists identified one system within the subject site. This system is described in the following section:

### **4.1 System 1: Ditches and Forested Wetlands**

System 1 consists of three ditches (Ditches A, B and C) and four forested wetlands (Wetlands 1, 2, 3, and 4). Ditch A is an apparent ditch that originates between Wetlands 1 and 2 and continues east into Ditch B. Ditch B originates from Wetland 2 along the eastern boundary of the subject site and continues northeast along the subject site boundary. Ditch C is located along the northern portion of the subject site parallel to Zion Church Road. According to the *Delaware Tax Ditch Map* provided by the Delaware Department of Natural Resources and

Environmental Control, Delaware Drainage Program (accessed May 21, 2019), Ditch C is identified as the Baston Branch Prong 1 Tax Ditch. The Tax Ditch originates off-site and is enclosed within a culvert pipe through the western portion of the subject site, while the eastern portion of the Tax Ditch is an open channel. Wetland 1 is an open water pond and a palustrine forested wetland located north of Ditch A in the central portion of the subject site. Wetland 2 is a palustrine forested wetland located south of Ditch A and west of Ditch B. Wetland 3 is a palustrine forested wetland that is located in the central portion of the subject site northwest of Ditch A and west of Wetland 1. Wetland 4 is a palustrine forested wetland located on the northeastern corner of the subject site, south of Zion Church Road, adjacent to Ditch C.

Evidence of primary indicators of wetland hydrology included Indicators A1 (surface water) and B9 (water stained leaves). Within these wetlands, GTA's wetland scientists observed predominantly hydrophytic vegetation species including red maple (*Acer rubrum*, FAC), sweetgum (*Liquidambar styraciflua*, FAC), American holly (*Ilex opaca*), sweet pepperbush (*Clethra alnifolia*, FACW), netted chain fern (*Woodwardia areolata*, FACW), Virginia creeper (*Parthenocissus quinquefolia* FACU), trumpet creeper (*Campsis radicans*, FAC), smallspike false nettle (*Boehmeria cylindrica*, FACW), roundleaf greenbriar (*Smilax rotundifolia*, FAC), cat greenbriar (*Smilax glauca*) and sweet woodreed (*Cinna arundinacea*, FACW). GTA personnel excavated test pits to depths of 20 inches or greater within the limits of the wetland boundaries and observed the NRCS and Corps hydric soils field indicators A12 (Thick Dark Surface), S7 (Dark Surface), and F3 (Depleted Matrix). Ordinary high-water marks and defined beds and banks were observed within the limits of Ditches A, B, and C within the subject site.

## **5.0 OTHER FEATURES**

### **5.1 Agricultural Ditches**

Numerous agricultural ditches are located in the northern and central portions of the subject site. In GTA's professional opinion, the agricultural ditches appear to have been excavated from uplands and wholly drains uplands, and; therefore, should not be considered state or federal jurisdictional.

## **6.0 CONCLUSION**

In GTA's professional opinion, the forested palustrine wetlands identified within the subject site exhibited all three wetland parameters. These areas were flagged in the field and are identified on the *Wetland Delineation Plan*.

As a result of the environmental review of the subject site, it is GTA's professional opinion that there are non-tidal wetlands and waterways present within the subject site. Our conclusions regarding this subject site have been based on observations of existing conditions, professional experience in the area with similar projects, and generally accepted professional environmental practice under similar circumstances. Seasonal fluctuations in precipitation or weather conditions can result in differences in the perception of hydrologic conditions, which can alter GTA's evaluation of wetlands/waterways. It is important to note that this delineation is GTA's professional opinion, only. Decisions regarding the official jurisdictional status of wetlands/waterways are made by federal, state and/or local regulatory agencies.

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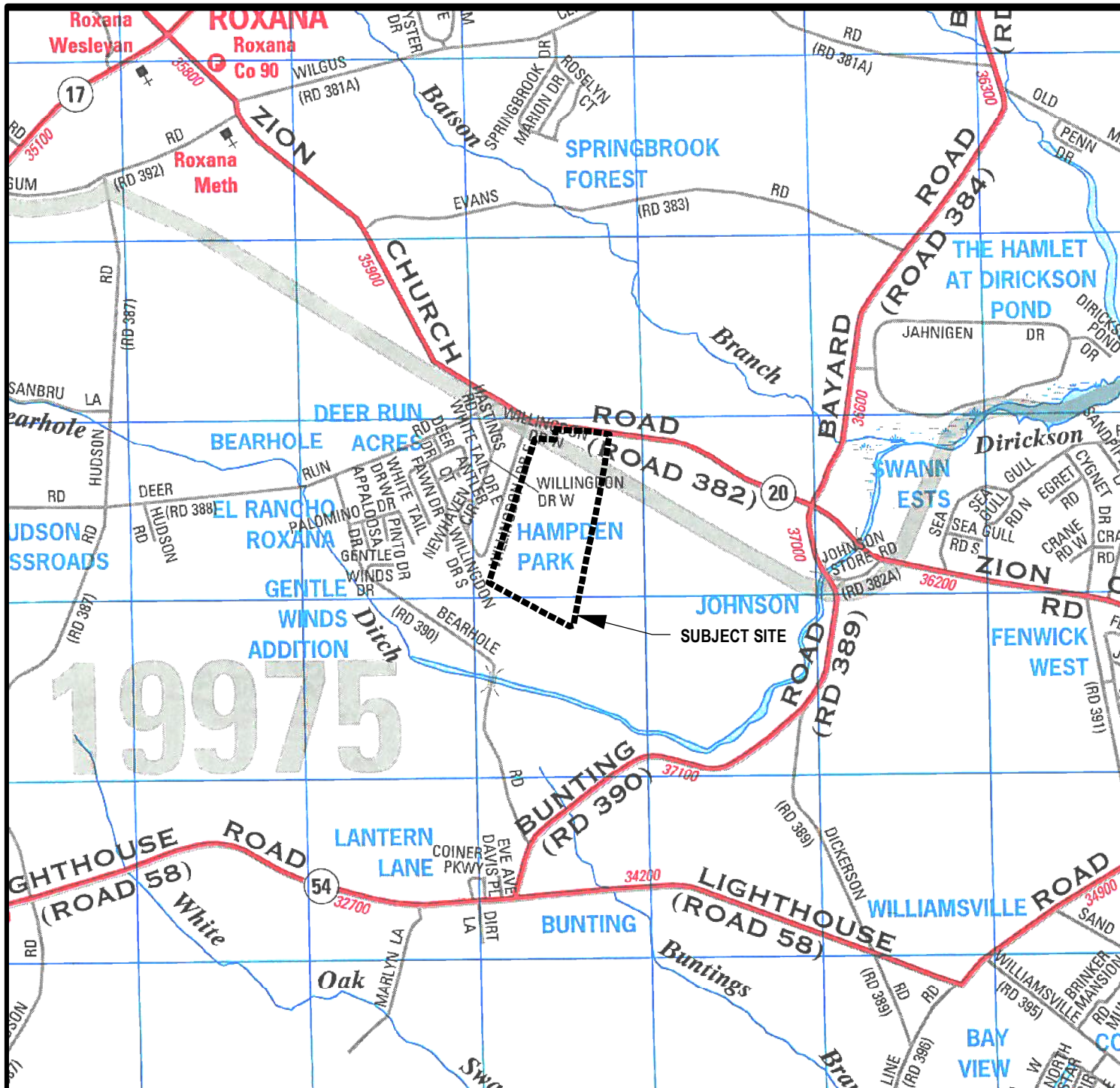
**\*\*\*\*\* END OF REPORT \*\*\*\*\***

# **Appendix A:**

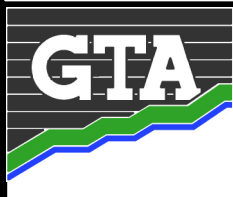
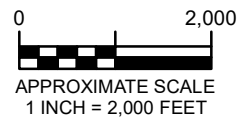
## **Figures**







SOURCE: MAP COPYRIGHT © ADC THE MAP PEOPLE, (800) 829-6277, PERMITTED USE NUMBER 031282B.



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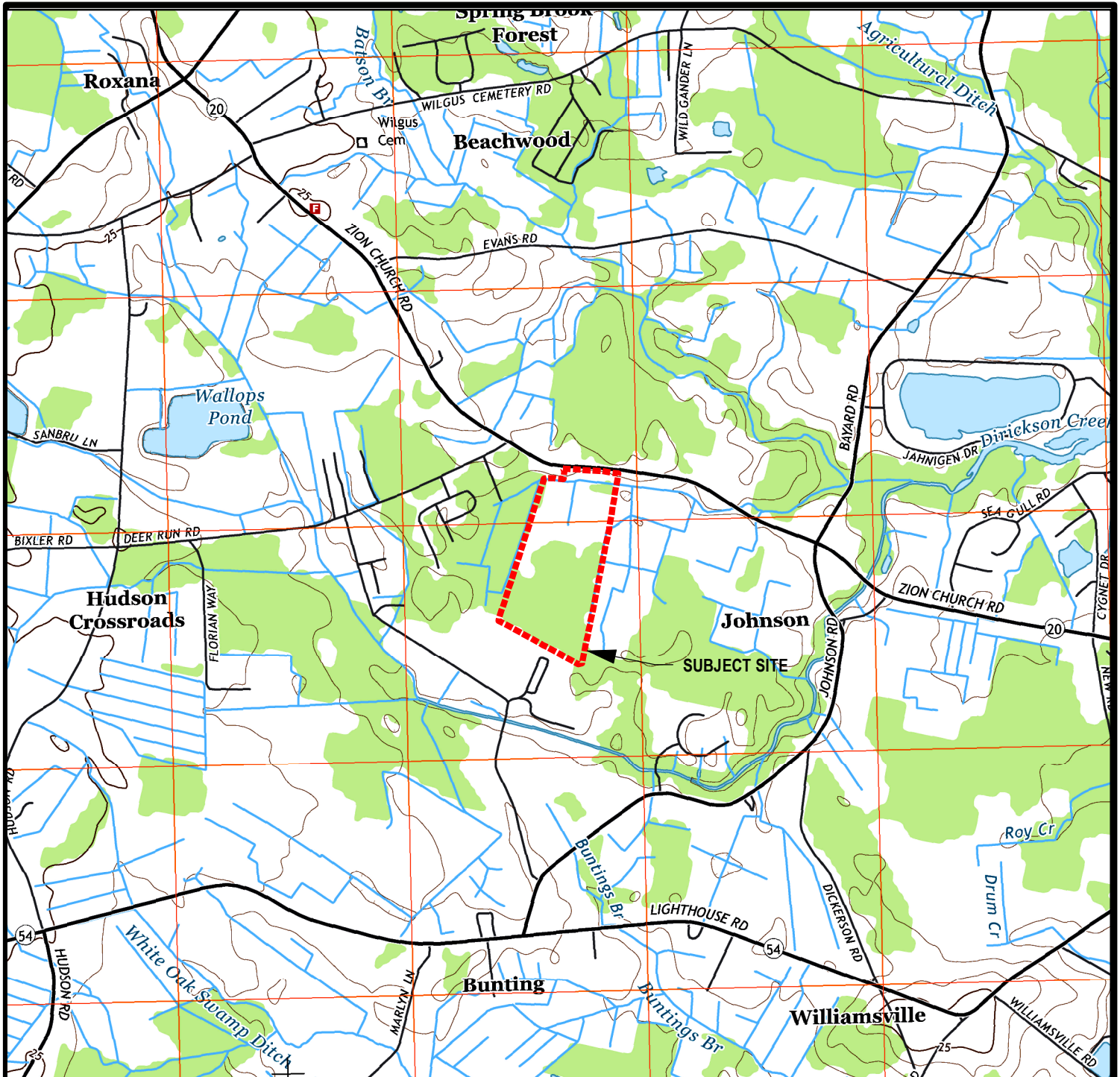
3445-A BOX HILL CORPORATE CENTER DRIVE  
 ABINGDON, MARYLAND 21009  
 410-515-9446  
 FAX: 410-515-4895  
 WWW.GTAENG.COM

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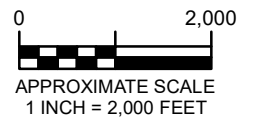
**SITE LOCATION MAP**  
**TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

JOB NO.	31190731	SCALE:	1" = 2,000'	DATE:	JUNE 13, 2019	DRAWN BY:	TAB	REVIEW BY:	TAS	FIGURE:	1
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SOURCE: UNITED STATES GEOLOGICAL SURVEY, SELBYVILLE, DE QUADRANGLE, 7.5 MINUTES TOPOGRAPHIC MAP SERIES. DATED 2014.



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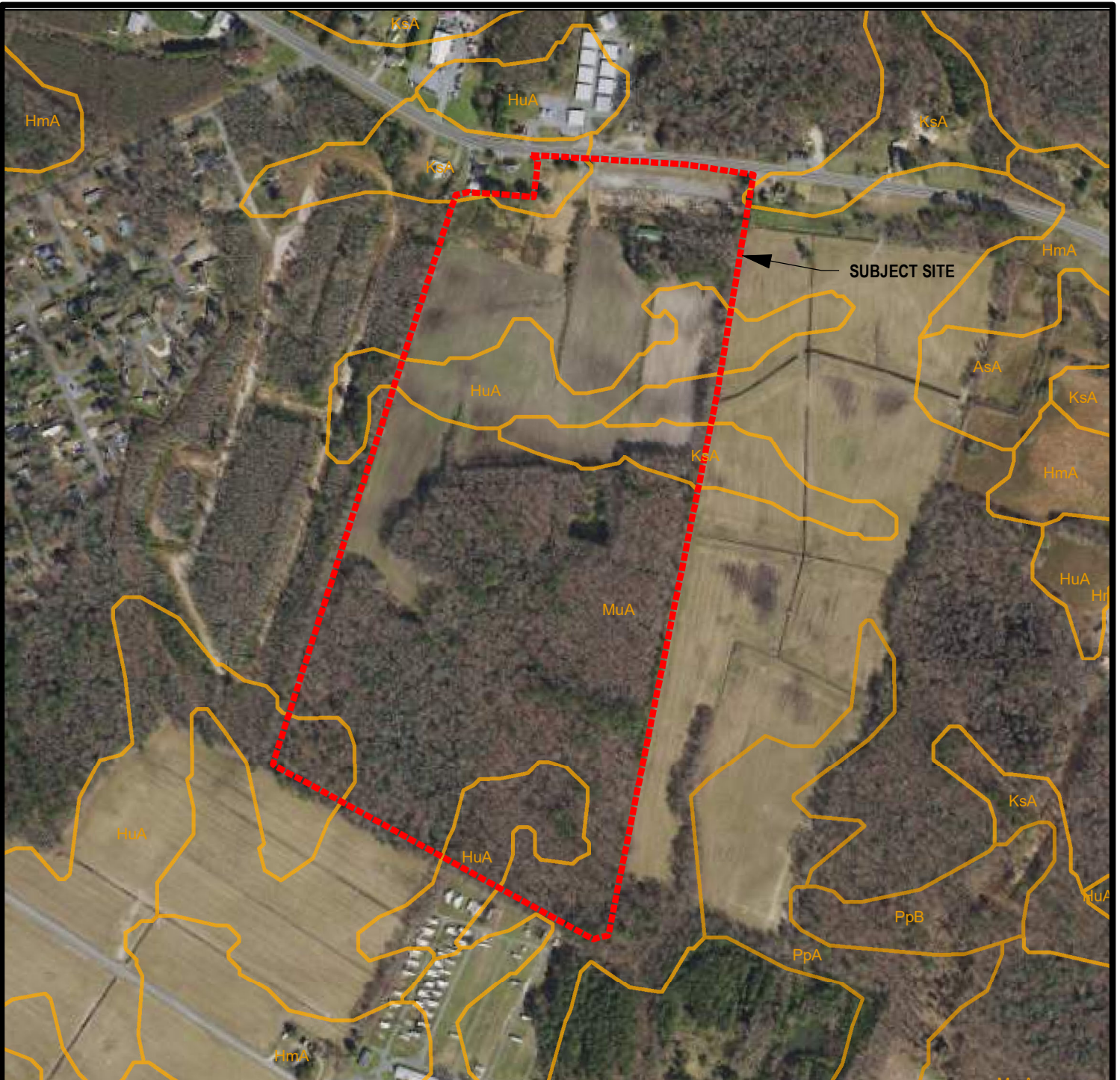
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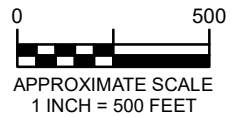
**USGS TOPOGRAPHIC MAP**  
**TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

JOB NO.	31190731	SCALE:	1" = 2,000'	DATE:	JUNE 13, 2019	DRAWN BY:	TAB	REVIEW BY:	TAS	FIGURE:	2
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SOURCE: AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE. GRIDDED SOIL SURVEY GEOGRAPHIC (gSSURGO) DATABASE FOR DELAWARE. DATED 2018. 2017 BASE AERIAL IMAGERY PROVIDED BY THE NATIONAL AGRICULTURAL IMAGERY PROGRAM.



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**SOIL SURVEY MAP**  
**TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

JOB NO.	31190731	SCALE:	1" = 500	DATE:	JUNE 13, 2019	DRAWN BY:	TAB	REVIEW BY:	TAS	FIGURE:	3
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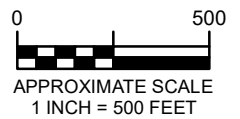


SUBJECT SITE

SOURCE: 2017 BASE AERIAL IMAGERY PROVIDED BY THE NATIONAL AGRICULTURAL IMAGERY PROGRAM.



NORTH



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2017 AERIAL IMAGERY  
**TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

JOB NO.	31190731	SCALE:	1" = 500	DATE:	JUNE 13, 2019	DRAWN BY:	TAB	REVIEW BY:	TAS	FIGURE:	5
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# **Appendix B:**

## **Data Forms**





**WETLAND DETERMINATION DATA FORM-Atlantic and Gulf Coastal Plain Region**

Project/Site: Twin Cedars City/County: Sussex Sampling Date: 17-Jun-19  
 Applicant/Owner: Bay Developers, LLC State: DE Sampling Point: DCP-1  
 Investigator(s): M. Jennette, R. McGehee Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0±  
 Subregion (LLR or MLRA): MLRA 153D Lat: 38.47773 Long: -75.15158 Datum: NAD83  
 Soil Map Unit Name: Mullica-Berryland Complex, 0-2% slopes (MuA) NWI classification: N/A  
 Are climatic/hydrologic conditions on the site are typical for this time of year? Yes X No      (If no, explain in Remarks)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS- Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u> Hydric Soil Present? Yes <u>    </u> No <u>X</u> Wetland Hydrology Present? Yes <u>    </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>    </u> No <u>X</u>
Remarks: This DCP was established within a wooded area east of Wetland 1.	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required, check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D*) (LRR T, U)	
<b>Field Observations:</b> Surface Water Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> Water Table Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> Saturation Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>    </u> No <u>X</u>	
Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Tree Stratum	(Plot size: 30' Radius )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>		60	Y	FAC
2. <i>Liquidambar styraciflua</i>		40	Y	FAC
3.				
4.				
5.				
6.				
7.				
		100 = Total Cover		
50% of total cover: 50		20% of total cover: 20		
Sapling / Shrub Stratum	(Plot size: 30' Radius )			
1. <i>Clethra alnifolia</i>		15	Y	FACW
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
		15 = Total Cover		
50% of total cover: 7.5		20% of total cover: 3		
Herb Stratum	(Plot size: 30' Radius )			
1. <i>Smilax rotundifolia</i>		5	Y	FAC
2. <i>Smilax glauca</i>		5	Y	FAC
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		10 = Total Cover		
50% of total cover: 5		20% of total cover: 2		
Woody Vine Stratum	(Plot size: 30' Radius )			
1. <i>Smilax rotundifolia</i>		5	Y	FAC
2.				
3.				
4.				
5.				
		5 = Total Cover		
50% of total cover: 2.5		20% of total cover: 1		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0<sup>1</sup>

4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling/Shrub** - Woody plants, excluding woody vines, a less than 3in. DBH and greater than or equal to 3.28 ft (1 m ) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall

**Woody vine** - All woody vines, greater than 3.28 ft. in height.

**Hydrophytic Vegetation Present?** Yes  No

Remarks: (Include photo numbers here or on a separate sheet).

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-13	10YR 2/1	100					L	
13-20	10YR 3/1	95	10YR 3/6	5	C	M	CL	

<sup>1</sup>Type: C=concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Very Shallow Dark Surface (TF12) (LRR T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes _____      No <b>X</b>
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Remarks:

**WETLAND DETERMINATION DATA FORM-Atlantic and Gulf Coastal Plain Region**

Project/Site: Twin Cedars City/County: Sussex Sampling Date: 17-Jun-19  
 Applicant/Owner: Bay Developers, LLC State: DE Sampling Point: DCP-2  
 Investigator(s): M. Jennette, R. McGehee Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1±  
 Subregion (LLR or MLRA): MLRA 153D Lat: 38.47776 Long: -75.15174 Datum: NAD83  
 Soil Map Unit Name: Mullica-Berryland Complex, 0-2% slopes (MuA) NWI classification: PFO  
 Are climatic/hydrologic conditions on the site are typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS- Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	

Remarks: This DCP was established within Wetland 1.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>	
Primary Indicators (minimum of one is required, check all that apply)			
<u>      </u> Surface Water (A1)	<u>      </u> Aquatic Fauna (B13)	<u>      </u> Surface Soil Cracks (B6)	<u>      </u> Sparsely Vegetated Concave Surface (B8)
<u>      </u> High Water Table (A2)	<u>      </u> Marl Deposits (B15) (LRR U)	<u>      </u> Drainage Patterns (B10)	<u>      </u> Moss Trim Lines (B16)
<u>      </u> Saturation (A3)	<u>      </u> Hydrogen Sulfide Odor (C1)	<u>      </u> Dry-Season Water Table (C2)	<u>      </u> Crayfish Burrows (C8)
<u>      </u> Water Marks (B1)	<u>      </u> Oxidized Rhizospheres on Living Roots (C3)	<u>      </u> Saturation Visible on Aerial Imagery (C9)	<u>      </u> Geomorphic Position (D2)
<u>      </u> Sediment Deposits (B2)	<u>      </u> Presence of Reduced Iron (C4)	<u>      </u> Shallow Aquitard (D3)	<u>      </u> FAC-Neutral Test (D5)
<u>      </u> Drift Deposits (B3)	<u>      </u> Recent Iron Reduction in Tilled Soils (C6)	<u>      </u> Sphagnum moss (D*) ( <b>LRR T, U</b> )	
<u>      </u> Algal Mat or Crust (B4)	<u>      </u> Thin Muck Surface (C7)		
<u>      </u> Iron Deposits (B5)	<u>      </u> Other (Explain in Remarks)		
<u>      </u> Inundation Visible on Aerial Imagery (B7)			
<u>X</u> Water Stained Leaves (B9)			

<b>Field Observations:</b>		Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>
Surface Water Present? Yes <u>      </u> No <u>X</u>	Depth (inches): <u>      </u>	
Water Table Present? Yes <u>      </u> No <u>X</u>	Depth (inches): <u>      </u>	
Saturation Present? Yes <u>      </u> No <u>X</u>	Depth (inches): <u>      </u>	

Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**

Tree Stratum	(Plot size: <u>30' Radius</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Liquidambar styraciflua</u>		50	Y	FAC
2. <u>Acer rubrum</u>		50	Y	FAC
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		100 = Total Cover		
50% of total cover: <u>50</u>		20% of total cover: <u>20</u>		
Sapling / Shrub Stratum	(Plot size: <u>30' Radius</u> )			
1. <u>Liquidambar styraciflua</u>		10	Y	FAC
2. <u>Acer rubrum</u>		10	Y	FAC
3. <u>Ilex opaca</u>		5	Y	FAC
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
		25 = Total Cover		
50% of total cover: <u>12.5</u>		20% of total cover: <u>5</u>		
Herb Stratum	(Plot size: <u>30' Radius</u> )			
1. <u>Cinna arundinacea</u>		60	Y	FACW
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
		60 = Total Cover		
50% of total cover: <u>30</u>		20% of total cover: <u>12</u>		
Woody Vine Stratum	(Plot size: <u>30' Radius</u> )			
1. <u>Smilax rotundifolia</u>		5	Y	FAC
2. _____				
3. _____				
4. _____				
5. _____				
		5 = Total Cover		
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

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**Hydrophytic Vegetation Indicators:**

\_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

\_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>

\_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

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**Definitions of Vegetation Strata:**

**Tree** - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling/Shrub** - Woody plants, excluding woody vines, a less than 3in. DBH and greater than or equal to 3.28 ft (1 m ) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall

**Woody vine** - All woody vines, greater than 3.28 ft. in height.

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**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet).

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 2/2	100					SaL	
3-15	10YR 4/2	90	10YR 5/8	10	C	M	SaL	
15-20	10YR 2/1	100					SaL	

<sup>1</sup>Type: C=concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> (MLRA 153B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Very Shallow Dark Surface (TF12) (LRR T, U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	
<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**WETLAND DETERMINATION DATA FORM-Atlantic and Gulf Coastal Plain Region**

Project/Site: Twin Cedars City/County: Sussex Sampling Date: 17-Jun-19  
 Applicant/Owner: Bay Developers, LLC State: DE Sampling Point: DCP-3  
 Investigator(s): M. Jennette, R. McGehee Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0±  
 Subregion (LLR or MLRA): MLRA 153D Lat: 38.47699 Long: -75.15161 Datum: NAD83  
 Soil Map Unit Name: Mullica-Berryland Complex, 0-2% slopes (MuA) NWI classification: PFO  
 Are climatic/hydrologic conditions on the site are typical for this time of year? Yes X No      (If no, explain in Remarks)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS- Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u> Hydric Soil Present? Yes <u>X</u> No <u>    </u> Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u>    </u>
Remarks: This DCP was established within Wetland 2.	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required, check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D*) (LRR T, U)	
<b>Field Observations:</b> Surface Water Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> Water Table Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> Saturation Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>	
Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Tree Stratum	(Plot size: 30' Radius )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Liquidambar styraciflua</i>		45	Y	FAC
2. <i>Acer rubrum</i>		40	Y	FAC
3.				
4.				
5.				
6.				
7.				
		85 = Total Cover		
50% of total cover: 42.5		20% of total cover: 17		
Sapling / Shrub Stratum	(Plot size: 30' Radius )			
1. <i>Ilex opaca</i>		10	Y	FAC
2. <i>Clethra alnifolia</i>		10	Y	FACW
3.				
4.				
5.				
6.				
7.				
8.				
9.				
		20 = Total Cover		
50% of total cover: 10		20% of total cover: 4		
Herb Stratum	(Plot size: 30' Radius )			
1. <i>Woodwardia areolata</i>		60	Y	OBL
2. <i>Cinna arundinacea</i>		10	N	FACW
3. <i>Toxicodendron radicans</i>		5	N	FAC
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		75 = Total Cover		
50% of total cover: 37.5		20% of total cover: 15		
Woody Vine Stratum	(Plot size: 30' Radius )			
1. Stratum Not Present				
2.				
3.				
4.				
5.				
		0 = Total Cover		
50% of total cover: 0		20% of total cover: 0		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

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**Hydrophytic Vegetation Indicators:**

\_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

\_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>

\_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**Definitions of Vegetation Strata:**

**Tree** - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling/Shrub** - Woody plants, excluding woody vines, a less than 3in. DBH and greater than or equal to 3.28 ft (1 m ) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall

**Woody vine** - All woody vines, greater than 3.28 ft. in height.

---

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet).



**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-15	5Y 2.5/1	100					LSa	
15-20	10YR 4/3	100					LSa	

<sup>1</sup>Type: C=concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)
<input checked="" type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**WETLAND DETERMINATION DATA FORM-Atlantic and Gulf Coastal Plain Region**

Project/Site: Twin Cedars City/County: Sussex Sampling Date: 17-Jun-19  
 Applicant/Owner: Bay Developers, LLC State: DE Sampling Point: DCP-4  
 Investigator(s): M. Jennette, R. McGehee Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0±  
 Subregion (LLR or MLRA): MLRA 153D Lat: 38.427724 Long: -75.15142 Datum: NAD83  
 Soil Map Unit Name: Mullica-Berryland Complex, 0-2% slopes (MuA) NWI classification: N/A  
 Are climatic/hydrologic conditions on the site are typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS- Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	Is the Sampled Area within a Wetland? Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	

Remarks: This DCP was established between Wetland 2 and Waters A.

**HYDROLOGY**

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required, check all that apply)	Secondary Indicators (minimum of two required)
<u>      </u> Surface Water (A1)	<u>      </u> Surface Soil Cracks (B6)
<u>      </u> High Water Table (A2)	<u>      </u> Sparsely Vegetated Concave Surface (B8)
<u>      </u> Saturation (A3)	<u>      </u> Drainage Patterns (B10)
<u>      </u> Water Marks (B1)	<u>      </u> Moss Trim Lines (B16)
<u>      </u> Sediment Deposits (B2)	<u>      </u> Dry-Season Water Table (C2)
<u>      </u> Drift Deposits (B3)	<u>      </u> Crayfish Burrows (C8)
<u>      </u> Algal Mat or Crust (B4)	<u>      </u> Saturation Visible on Aerial Imagery (C9)
<u>      </u> Iron Deposits (B5)	<u>      </u> Geomorphic Position (D2)
<u>      </u> Inundation Visible on Aerial Imagery (B7)	<u>      </u> Shallow Aquitard (D3)
<u>      </u> Water Stained Leaves (B9)	<u>      </u> FAC-Neutral Test (D5)
<u>      </u> Aquatic Fauna (B13)	<u>      </u> Sphagnum moss (D*) ( <b>LRR T, U</b> )
<u>      </u> Marl Deposits (B15) (LRR U)	
<u>      </u> Hydrogen Sulfide Odor (C1)	
<u>      </u> Oxidized Rhizospheres on Living Roots (C3)	
<u>      </u> Presence of Reduced Iron (C4)	
<u>      </u> Recent Iron Reduction in Tilled Soils (C6)	
<u>      </u> Thin Muck Surface (C7)	
<u>      </u> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present? Yes <u>      </u> No <u>X</u> Depth (inches): <u>      </u> Water Table Present? Yes <u>      </u> No <u>X</u> Depth (inches): <u>      </u> Saturation Present? Yes <u>      </u> No <u>X</u> Depth (inches): <u>      </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>
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Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**

Tree Stratum	(Plot size: 30' Radius )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>		60	Y	FAC
2. <i>Liquidambar styraciflua</i>		30	Y	FAC
3.				
4.				
5.				
6.				
7.				
		90 = Total Cover		
50% of total cover: 45		20% of total cover: 18		
Sapling / Shrub Stratum	(Plot size: 30' Radius )			
1. <i>Clethra alnifolia</i>		50	Y	FACW
2. <i>Ilex opaca</i>		10	N	FAC
3.				
4.				
5.				
6.				
7.				
8.				
9.				
		60 = Total Cover		
50% of total cover: 30		20% of total cover: 12		
Herb Stratum	(Plot size: 30' Radius )			
1. <i>Woodwardia areolata</i>		75	Y	OBL
2. <i>Clethra alnifolia</i>		10	N	FACW
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		85 = Total Cover		
50% of total cover: 42.5		20% of total cover: 17		
Woody Vine Stratum	(Plot size: 30' Radius )			
1. <i>Smilax rotundifolia</i>		5	Y	FAC
2.				
3.				
4.				
5.				
		5 = Total Cover		
50% of total cover: 2.5		20% of total cover: 1		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

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**Hydrophytic Vegetation Indicators:**

\_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

\_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>

\_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**Definitions of Vegetation Strata:**

**Tree** - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling/Shrub** - Woody plants, excluding woody vines, a less than 3in. DBH and greater than or equal to 3.28 ft (1 m ) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall

**Woody vine** - All woody vines, greater than 3.28 ft. in height.

---

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet).



**WETLAND DETERMINATION DATA FORM-Atlantic and Gulf Coastal Plain Region**

Project/Site: Twin Cedars City/County: Sussex Sampling Date: 17-Jun-19  
 Applicant/Owner: Bay Developers, LLC State: DE Sampling Point: DCP-5  
 Investigator(s): M. Jennette, R. McGehee Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0±  
 Subregion (LLR or MLRA): MLRA 153D Lat: 38.47791 Long: -75.15276 Datum: NAD83  
 Soil Map Unit Name: Mullica-Berryland Complex, 0-2% slopes (MuA) NWI classification: PFO  
 Are climatic/hydrologic conditions on the site are typical for this time of year? Yes X No      (If no, explain in Remarks)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS- Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u> Hydric Soil Present? Yes <u>X</u> No <u>    </u> Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u>    </u>
Remarks: This DCP was established within Wetland 3.	

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b>                  Primary Indicators (minimum of one is required, check all that apply)</p> <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"><u>    </u> Surface Water (A1)</td> <td style="width:50%; border: none;"><u>    </u> Aquatic Fauna (B13)</td> </tr> <tr> <td style="border: none;"><u>    </u> High Water Table (A2)</td> <td style="border: none;"><u>    </u> Marl Deposits (B15) (LRR U)</td> </tr> <tr> <td style="border: none;"><u>    </u> Saturation (A3)</td> <td style="border: none;"><u>    </u> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td style="border: none;"><u>    </u> Water Marks (B1)</td> <td style="border: none;"><u>    </u> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td style="border: none;"><u>    </u> Sediment Deposits (B2)</td> <td style="border: none;"><u>    </u> Presence of Reduced Iron (C4)</td> </tr> <tr> <td style="border: none;"><u>    </u> Drift Deposits (B3)</td> <td style="border: none;"><u>    </u> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td style="border: none;"><u>    </u> Algal Mat or Crust (B4)</td> <td style="border: none;"><u>    </u> Thin Muck Surface (C7)</td> </tr> <tr> <td style="border: none;"><u>    </u> Iron Deposits (B5)</td> <td style="border: none;"><u>    </u> Other (Explain in Remarks)</td> </tr> <tr> <td style="border: none;"><u>    </u> Inundation Visible on Aerial Imagery (B7)</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;"><u>X</u> Water Stained Leaves (B9)</td> <td style="border: none;"></td> </tr> </table>	<u>    </u> Surface Water (A1)	<u>    </u> Aquatic Fauna (B13)	<u>    </u> High Water Table (A2)	<u>    </u> Marl Deposits (B15) (LRR U)	<u>    </u> Saturation (A3)	<u>    </u> Hydrogen Sulfide Odor (C1)	<u>    </u> Water Marks (B1)	<u>    </u> Oxidized Rhizospheres on Living Roots (C3)	<u>    </u> Sediment Deposits (B2)	<u>    </u> Presence of Reduced Iron (C4)	<u>    </u> Drift Deposits (B3)	<u>    </u> Recent Iron Reduction in Tilled Soils (C6)	<u>    </u> Algal Mat or Crust (B4)	<u>    </u> Thin Muck Surface (C7)	<u>    </u> Iron Deposits (B5)	<u>    </u> Other (Explain in Remarks)	<u>    </u> Inundation Visible on Aerial Imagery (B7)		<u>X</u> Water Stained Leaves (B9)		<p><u>    </u> Surface Soil Cracks (B6)  <u>    </u> Sparsely Vegetated Concave Surface (B8)  <u>    </u> Drainage Patterns (B10)  <u>    </u> Moss Trim Lines (B16)  <u>    </u> Dry-Season Water Table (C2)  <u>    </u> Crayfish Burrows (C8)  <u>    </u> Saturation Visible on Aerial Imagery (C9)  <u>    </u> Geomorphic Position (D2)  <u>    </u> Shallow Aquitard (D3)  <u>    </u> FAC-Neutral Test (D5)  <u>    </u> Sphagnum moss (D*) (<b>LRR T, U</b>)</p>
<u>    </u> Surface Water (A1)	<u>    </u> Aquatic Fauna (B13)																				
<u>    </u> High Water Table (A2)	<u>    </u> Marl Deposits (B15) (LRR U)																				
<u>    </u> Saturation (A3)	<u>    </u> Hydrogen Sulfide Odor (C1)																				
<u>    </u> Water Marks (B1)	<u>    </u> Oxidized Rhizospheres on Living Roots (C3)																				
<u>    </u> Sediment Deposits (B2)	<u>    </u> Presence of Reduced Iron (C4)																				
<u>    </u> Drift Deposits (B3)	<u>    </u> Recent Iron Reduction in Tilled Soils (C6)																				
<u>    </u> Algal Mat or Crust (B4)	<u>    </u> Thin Muck Surface (C7)																				
<u>    </u> Iron Deposits (B5)	<u>    </u> Other (Explain in Remarks)																				
<u>    </u> Inundation Visible on Aerial Imagery (B7)																					
<u>X</u> Water Stained Leaves (B9)																					
<p><b>Field Observations:</b>                  Surface Water Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u>                  Water Table Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u>                  Saturation Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u>                  (includes capillary fringe)</p>	Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>																				
Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:																					
Remarks:																					

Tree Stratum	(Plot size: 30' Radius )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>		60	Y	FAC
2. <i>Liquidambar styraciflua</i>		40	Y	FAC
3.				
4.				
5.				
6.				
7.				
		100 = Total Cover		
50% of total cover: 50		20% of total cover: 20		
Sapling / Shrub Stratum	(Plot size: 30' Radius )			
1. <i>Liquidambar styraciflua</i>		10	Y	FAC
2. <i>Clethra alnifolia</i>		10	Y	FACW
3.				
4.				
5.				
6.				
7.				
8.				
9.				
		20 = Total Cover		
50% of total cover: 10		20% of total cover: 4		
Herb Stratum	(Plot size: 30' Radius )			
1. <i>Woodwardia areolata</i>		80	Y	OBL
2. <i>Liquidambar styraciflua</i>		10	N	FAC
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		90 = Total Cover		
50% of total cover: 45		20% of total cover: 18		
Woody Vine Stratum	(Plot size: 30' Radius )			
1. Stratum Not Present				
2.				
3.				
4.				
5.				
		0 = Total Cover		
50% of total cover: 0		20% of total cover: 0		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

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**Hydrophytic Vegetation Indicators:**

\_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

\_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>

\_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**Definitions of Vegetation Strata:**

**Tree** - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling/Shrub** - Woody plants, excluding woody vines, a less than 3in. DBH and greater than or equal to 3.28 ft (1 m ) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall

**Woody vine** - All woody vines, greater than 3.28 ft. in height.

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**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet).

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 2/1	100					LSa	
14-20	10YR 5/2	100					LSa	

<sup>1</sup>Type: C=concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> (MLRA 153B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Very Shallow Dark Surface (TF12) (LRR T, U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input checked="" type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**WETLAND DETERMINATION DATA FORM-Atlantic and Gulf Coastal Plain Region**

Project/Site: Twin Cedars City/County: Sussex Sampling Date: 17-Jun-19  
 Applicant/Owner: Bay Developers, LLC State: DE Sampling Point: DCP-6  
 Investigator(s): M. Jennette, R. McGehee Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0±  
 Subregion (LLR or MLRA): MLRA 153D Lat: 38.47807 Long: -75.15254 Datum: NAD83  
 Soil Map Unit Name: Mullica-Berryland Complex, 0-2% slopes (MuA) NWI classification: N/A  
 Are climatic/hydrologic conditions on the site are typical for this time of year? Yes X No      (If no, explain in Remarks)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS- Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u> Hydric Soil Present? Yes <u>    </u> No <u>X</u> Wetland Hydrology Present? Yes <u>    </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>    </u> No <u>X</u>
Remarks: This DCP was established within a wooded area north of Wetland 3.	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required, check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D*) (LRR T, U)	
<b>Field Observations:</b> Surface Water Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> Water Table Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> Saturation Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>    </u> No <u>X</u>	
Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			



Tree Stratum	(Plot size: 30' Radius )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>		60	Y	FAC
2. <i>Liquidambar styraciflua</i>		30	Y	FAC
3.				
4.				
5.				
6.				
7.				
		90 = Total Cover		
50% of total cover: 45		20% of total cover: 18		
Sapling / Shrub Stratum	(Plot size: 30' Radius )			
1. <i>Liquidambar styraciflua</i>		25	Y	FAC
2. <i>Ilex opaca</i>		15	Y	FAC
3.				
4.				
5.				
6.				
7.				
8.				
9.				
		40 = Total Cover		
50% of total cover: 20		20% of total cover: 8		
Herb Stratum	(Plot size: 30' Radius )			
1. <i>Osmunda regalis</i>		5	Y	OBL
2. <i>Liquidambar styraciflua</i>		5	Y	FAC
3. <i>Toxicodendron radicans</i>		5	Y	FAC
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		15 = Total Cover		
50% of total cover: 7.5		20% of total cover: 3		
Woody Vine Stratum	(Plot size: 30' Radius )			
1. <i>Smilax rotundifolia</i>		5	Y	FAC
2.				
3.				
4.				
5.				
		5 = Total Cover		
50% of total cover: 2.5		20% of total cover: 1		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

---

**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

---

**Hydrophytic Vegetation Indicators:**

\_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

\_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>

\_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**Definitions of Vegetation Strata:**

**Tree** - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling/Shrub** - Woody plants, excluding woody vines, a less than 3in. DBH and greater than or equal to 3.28 ft (1 m ) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall

**Woody vine** - All woody vines, greater than 3.28 ft. in height.

---

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet).



**WETLAND DETERMINATION DATA FORM-Atlantic and Gulf Coastal Plain Region**

Project/Site: Twin Cedars City/County: Sussex Sampling Date: 17-Jun-19  
 Applicant/Owner: Bay Developers, LLC State: DE Sampling Point: DCP-7  
 Investigator(s): M. Jennette, R. McGehee Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0±  
 Subregion (LLR or MLRA): MLRA 153D Lat: 38.48033 Long: -75.15110 Datum: NAD83  
 Soil Map Unit Name: Mullica-Berryland Complex, 0-2% slopes (MuA) NWI classification: PFO  
 Are climatic/hydrologic conditions on the site are typical for this time of year? Yes X No      (If no, explain in Remarks)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS- Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u>    </u>
Hydric Soil Present? Yes <u>X</u> No <u>    </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>	

Remarks: This DCP was established within Wetland 4.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required, check all that apply)</u>			
<u>X</u> Surface Water (A1)	<u>    </u> Aquatic Fauna (B13)	<u>    </u> Surface Soil Cracks (B6)	
<u>    </u> High Water Table (A2)	<u>    </u> Marl Deposits (B15) (LRR U)	<u>    </u> Sparsely Vegetated Concave Surface (B8)	
<u>    </u> Saturation (A3)	<u>    </u> Hydrogen Sulfide Odor (C1)	<u>    </u> Drainage Patterns (B10)	
<u>    </u> Water Marks (B1)	<u>    </u> Oxidized Rhizospheres on Living Roots (C3)	<u>    </u> Moss Trim Lines (B16)	
<u>    </u> Sediment Deposits (B2)	<u>    </u> Presence of Reduced Iron (C4)	<u>    </u> Dry-Season Water Table (C2)	
<u>    </u> Drift Deposits (B3)	<u>    </u> Recent Iron Reduction in Tilled Soils (C6)	<u>    </u> Crayfish Burrows (C8)	
<u>    </u> Algal Mat or Crust (B4)	<u>    </u> Thin Muck Surface (C7)	<u>    </u> Saturation Visible on Aerial Imagery (C9)	
<u>    </u> Iron Deposits (B5)	<u>    </u> Other (Explain in Remarks)	<u>    </u> Geomorphic Position (D2)	
<u>    </u> Inundation Visible on Aerial Imagery (B7)		<u>    </u> Shallow Aquitard (D3)	
<u>X</u> Water Stained Leaves (B9)		<u>    </u> FAC-Neutral Test (D5)	
		<u>    </u> Sphagnum moss (D*) ( <b>LRR T, U</b> )	

<b>Field Observations:</b>				Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>
Surface Water Present? Yes <u>X</u> No <u>    </u>	Depth (inches): <u>1"</u>			
Water Table Present? Yes <u>    </u> No <u>X</u>	Depth (inches): <u>    </u>			
Saturation Present? Yes <u>    </u> No <u>X</u>	Depth (inches): <u>    </u>			

Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**

Tree Stratum	(Plot size: 30' Radius )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Liquidambar styraciflua</i>		50	Y	FAC
2. <i>Acer rubrum</i>		40	Y	FAC
3. <i>Pinus taeda</i>		5	N	FAC
4.				
5.				
6.				
7.				
		95 = Total Cover		
50% of total cover: 47.5		20% of total cover: 19		
Sapling / Shrub Stratum	(Plot size: 30' Radius )			
1. <i>Acer rubrum</i>		20	Y	FAC
2. <i>Liquidambar styraciflua</i>		20	Y	FAC
3. <i>Platanus occidentalis</i>		5	N	FACW
4.				
5.				
6.				
7.				
8.				
9.				
		45 = Total Cover		
50% of total cover: 22.5		20% of total cover: 9		
Herb Stratum	(Plot size: 30' Radius )			
1. <i>Parthenocissus quinquefolia</i>		10	Y	FACU
2. <i>Campsis radicans</i>		10	Y	FAC
3. <i>Boehmeria cylindrica</i>		10	Y	FACW
4. <i>Toxicodendron radicans</i>		5	N	FAC
5. <i>Cinna arundinacea</i>		5	N	FACW
6. <i>Woodwardia areolata</i>		5	N	OBL
7.				
8.				
9.				
10.				
11.				
12.				
		45 = Total Cover		
50% of total cover: 22.5		20% of total cover: 9		
Woody Vine Stratum	(Plot size: 30' Radius )			
1. <i>Campsis radicans</i>		5	Y	FAC
2. <i>Smilax rotundifolia</i>		5	Y	FAC
3.				
4.				
5.				
		10 = Total Cover		
50% of total cover: 5		20% of total cover: 2		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 89% (A/B)

---

**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

---

**Hydrophytic Vegetation Indicators:**

\_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

\_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>

\_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**Definitions of Vegetation Strata:**

**Tree** - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling/Shrub** - Woody plants, excluding woody vines, a less than 3in. DBH and greater than or equal to 3.28 ft (1 m ) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall

**Woody vine** - All woody vines, greater than 3.28 ft. in height.

---

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet).

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 2/1	100					SaL	
14-20	10YR 5/1	100					LSa	

<sup>1</sup>Type: C=concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> (MLRA 153B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Very Shallow Dark Surface (TF12) (LRR T, U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input checked="" type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
---	--

Remarks:



# **Appendix C:**

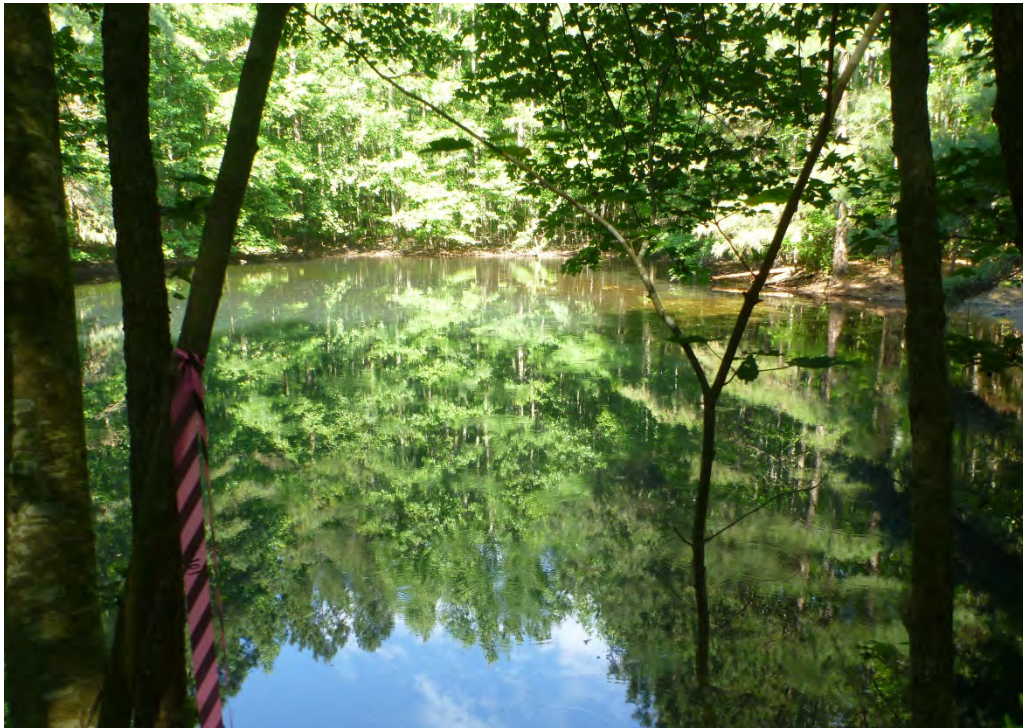
# **Photographs**







**Photograph 1:** View of Wetland 1, facing north.



**Photograph 2:** View of ponded portion of Wetland 1, facing west.



**Photograph 3:** View of Wetland 2, facing west.



**Photograph 4:** View of Wetland 3, facing west.



**Photograph 5:** View of Wetland 4, facing north.



**Photograph 6:** View of Waters A, facing east and upstream.



**Photograph 7:** View of Waters B, facing south and upstream.



**Photograph 8:** View of Waters C, facing east and downstream.



**Photograph 9:** DCP-1, sample location.



**Photograph 10:** DCP-1, soil sample.



**Photograph 11:** DCP-2, sample location.



**Photograph 12:** DCP-2, soil sample.



**Photograph 13:** DCP-3, sample location.



**Photograph 14:** DCP-3, soil sample.



**Photograph 15:** DCP-4, sample location.



**Photograph 16:** DCP-4, soil sample.





**Photograph 17:** DCP-5, sample location.



**Photograph 18:** DCP-5, soil sample.



**Photograph 19:** DCP-6, sample location.



**Photograph 20:** DCP-6, soil sample.



**Photograph 21:** DCP-7, sample location.

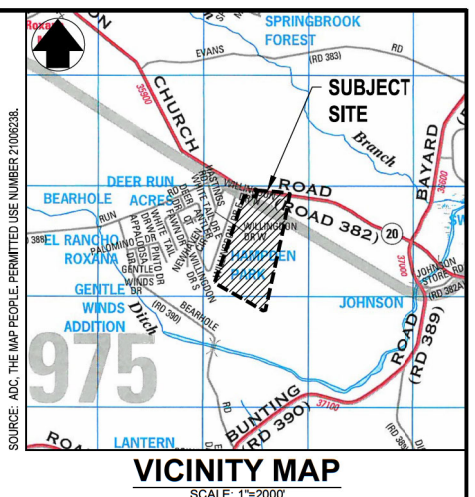
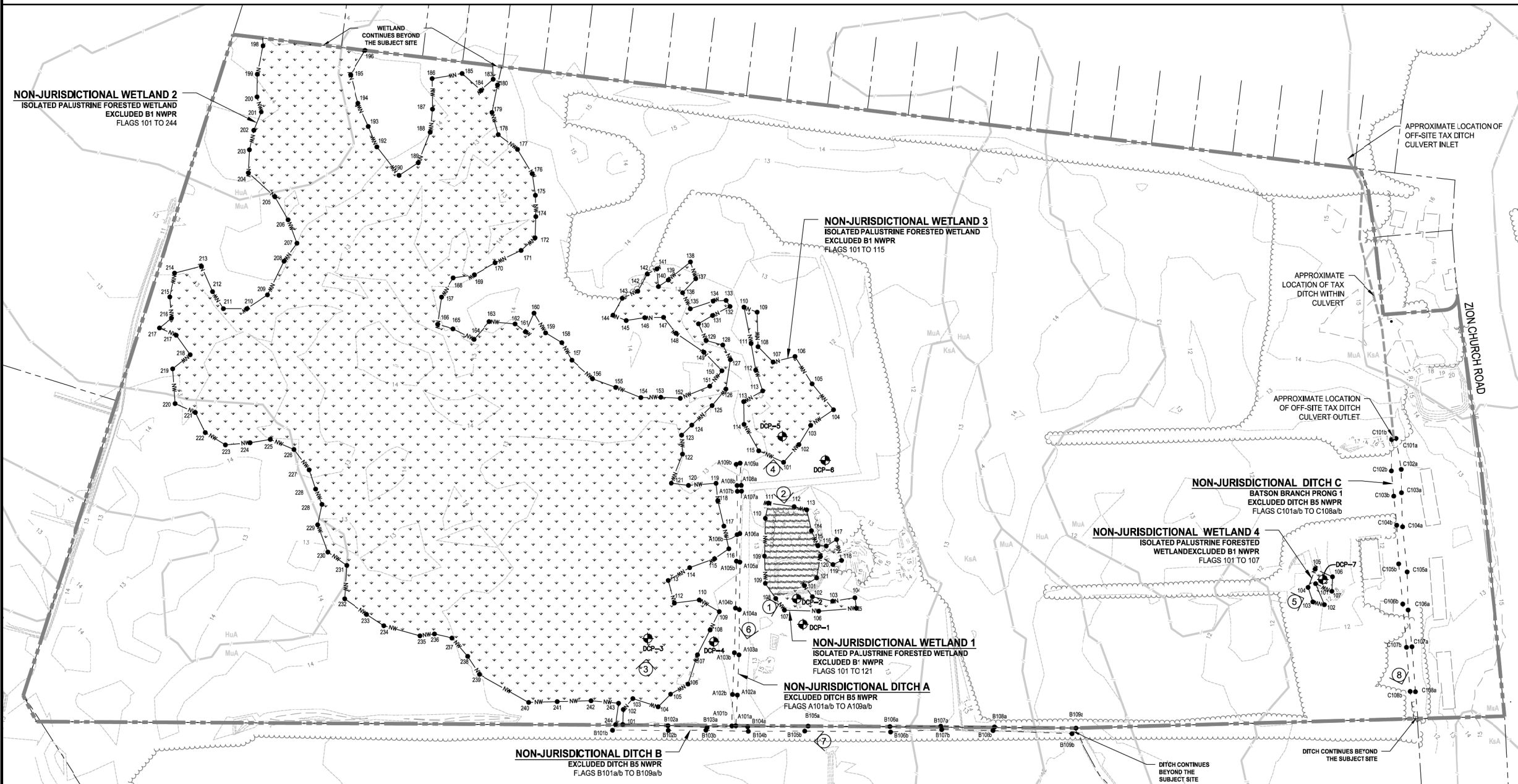


**Photograph 22:** DCP-7, soil sample.



**Appendix D:**  
**Wetland Delineation Plan**





**GENERAL INFORMATION**

- PROJECT LOCATION: SOUTH OF ZION CHURCH ROAD IN THE SELBYVILLE AREA OF SUSSEX COUNTY, DELAWARE.
- PLAN PREPARED FOR: BAY DEVELOPERS, LLC, 680 FOREST STREET, DOVER, DELAWARE 19904, ATTN: MR. HENRY MAST
- PLAN PREPARED BY: GEO-TECHNOLOGY ASSOCIATES, INC. (GTA), 3445-A BOX HILL CORPORATE CENTER DRIVE, ABINGDON, MARYLAND 21008, ATTN: MR. MATTHEW JENNETTE
- AREA OF SUBJECT SITE: APPROXIMATELY 64.34 ACRES
- THE SUBJECT SITE IS IDENTIFIED AS SUSSEX COUNTY TAX PARCEL 5-33-11.00-42.00.
- ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FEDERAL INSURANCE RATE MAP (FIRM) NUMBER 10005C0635K, EFFECTIVE MARCH 16, 2015, THE SUBJECT SITE IS NOT LOCATED WITHIN A 100-YEAR FLOODPLAIN.
- ACCORDING TO THE DELAWARE TAX DITCH MAP PROVIDED BY THE DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL, DELAWARE DRAINAGE PROGRAM (ACCESSED MAY 21, 2019), PORTIONS OF THE APPARENT TAX DITCH ON THE SUBJECT SITE IS LOCATED WITHIN A CULVERT SOUTH OF ZION CHURCH ROAD. THIS TAX DITCH IS IDENTIFIED AS BATSON BRANCH PRONG 1 AND THE LOCATION OF THIS CULVERT WAS APPROXIMATED BASED ON THE DELAWARE TAX DITCH MAP.
- A WETLAND DELINEATION OF THE SUBJECT SITE WAS PERFORMED BY GTA IN JUNE 2019. WETLAND FLAG LOCATIONS WITHIN THE SUBJECT SITE WERE SURVEY LOCATED BY MORRIS & RITCHE ASSOCIATES, INC. (MRA) IN SEPTEMBER 2019.
- AS A RESULT OF THE REVIEW OF THE SITE, IT IS GTA'S PROFESSIONAL OPINION THAT THERE ARE NO JURISDICTIONAL "WATERS OF THE U.S." PRESENT WITHIN THE SUBJECT SITE.
- GTA'S CONCLUSIONS REGARDING THIS SITE HAVE BEEN BASED ON OBSERVATIONS OF EXISTING CONDITIONS, PROFESSIONAL EXPERIENCE, AND GENERALLY ACCEPTED PRACTICES UNDER SIMILAR CIRCUMSTANCES. SEASONAL VEGETATION CYCLES AND FLUCTUATIONS IN PRECIPITATION OR WEATHER CONDITIONS CAN RESULT IN DIFFERENCES IN THE PERCEPTION OF HYDROLOGIC CONDITIONS AND THE PRESENCE OF PREDOMINANTLY HYDROPHYTIC VEGETATION, WHICH CAN ALTER GTA'S EVALUATION OF WETLANDS/WATERWAYS.
- IT IS IMPORTANT TO NOTE THAT THIS EVALUATION IS GTA'S PROFESSIONAL OPINION, ONLY. DECISIONS REGARDING THE OFFICIAL JURISDICTIONAL STATUS OF WETLANDS/WATERWAYS ARE MADE BY FEDERAL, STATE, AND/OR LOCAL REGULATORY AGENCIES.
- THIS PLAN WAS PREPARED BY GTA FOR THE SOLE AND EXCLUSIVE USE OF BAY DEVELOPERS, LLC. ANY REPRODUCTION OF THIS PLAN BY ANY OTHER PERSON WITHOUT THE EXPRESSED WRITTEN PERMISSION OF GTA AND BAY DEVELOPERS, LLC, IS UNAUTHORIZED, AND SUCH USE IS AT SOLE RISK OF THE USER.

**LEGEND**

- SUBJECT SITE
- EXISTING PROPERTY BOUNDARY
- APPROXIMATE TREELINE
- EXISTING 1' CONTOUR
- APPROXIMATE SOIL BOUNDARY
- EX. NONTIDAL WETLAND (WITH NUMBERED FLAG LOCATIONS)
- AREA OF OPEN WATER
- EX. DITCH (WITH NUMBERED FLAG LOCATIONS)
- WETLAND DELINEATION DATA COLLECTION POINT (DCP)
- NUMBERED PHOTOGRAPH LOCATION

**SOILS CHART**

SYMBOL <sup>1</sup>	NAME/DESCRIPTION <sup>1</sup>	HYDRIC SOIL <sup>2</sup>	HYDRIC COMPONENT <sup>2</sup>	PERCENTAGE OF MAPPING UNIT <sup>2</sup>	POSITION IN LANDSCAPE <sup>2</sup>
HuA	HURLLOCK LOAMY SAND, 0-2% SLOPES	YES	HURLLOCK, UNDRAINED	40	DEPRESSIONS, FLATS, SWALES
KsA	KLEJ LOAMY SAND, 0-2% SLOPES	YES	HURLLOCK, DRAINED	40	FLATS, SWALES, DEPRESSIONS
MuA	MULLICA-BERRYLAND COMPLEX, 0-2% SLOPES	YES	BERRYLAND, DRAINED	5	FLATS, DEPRESSIONS, SWALES
			HURLLOCK, DRAINED	5	SWALES, FLATS, DEPRESSIONS
MuA	MULLICA-BERRYLAND COMPLEX, 0-2% SLOPES	YES	BERRYLAND, DRAINED	25	DEPRESSIONS, FLATS, SWALES
			MULLICA, DRAINED	25	FLATS, SWALES, DEPRESSIONS
			MULLICA, UNDRAINED	15	FLATS, DRAINAGEWAYS, SWALES, DEPRESSIONS
			BERRYLAND, UNDRAINED	15	DEPRESSIONS, FLATS, DRAINAGEWAYS, SWALES, ASKECKSY, DRAINED
			ASKECKSY, DRAINED	5	DEPRESSIONS, SWALES, FLATS

1. U. S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY, ON JUNE 13, 2019, AT <HTTP://WWW.NRCS.USDA.GOV/DCN/CALSOILS.HTML>  
 2. HYDRIC SOILS INFORMATION AVAILABLE FROM THE STATE SOIL DATA ACCESS HYDRIC SOILS LIST, AT <HTTP://WWW.NRCS.USDA.GOV/INTERNET/PDF\_DOCUMENTS/NRCS39FD1319618/HTM/RRRPORTREF>, ACCESSED JUNE 13, 2019.

**AREA OF WETLANDS/WATERWAYS WITHIN SUBJECT SITE**

WETLAND	AREA
WETLAND 1	18,817 SF (0.43 AC)
WETLAND 2	676,330 SF (15.53 AC)
WETLAND 3	20,938 SF (0.48 AC)
WETLAND 4	1,586 SF (0.04 AC)
<b>TOTAL WETLAND AREA</b>	<b>717,671 SF (16.47 AC)</b>

WATERWAY	AREA	LENGTH
DITCH A	3,513 SF (0.08 AC)	480 LINEAR FEET
DITCH B	284 SF (0.007 AC)	841 LINEAR FEET
DITCH C	5,899 SF (0.13 AC)	1,022 LINEAR FEET
<b>TOTAL WATERWAYS</b>	<b>9,696 SF (0.22 AC)</b>	<b>2,343 LINEAR FEET</b>

**GEO-TECHNOLOGY ASSOCIATES, INC.**  
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3445-A BOX HILL CORPORATE CENTER DRIVE  
 ABINGDON, MARYLAND 21008  
 410-515-9446  
 FAX: 410-515-4895  
 WWW.GTAENG.COM

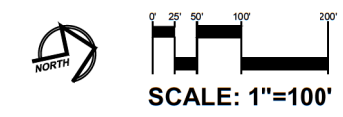
© 2019 GEO-TECHNOLOGY ASSOCIATES, INC.

WETLAND DELINEATION PLAN

**TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

DATE	REVISIONS	JOB NO.	31190731
		SCALE:	1" = 100'
		DATE:	MARCH 31, 2021
		DRAWN BY:	MDP
		DESIGN BY:	MAJ
		REVIEW BY:	TAS
		SHEET:	1 OF 1



I:\SWMC DATA\Map\Shared\Project Files\2021\03\11\02\031 - Twin Cedars\WETLAND\03\11\02\031\_WDIP.dwg





***Appendix 8 – Phase I Environmental Site Assessment***

**Geo-Technology Associates, Inc. – July 11, 2019**





REPORT OF  
PHASE I ENVIRONMENTAL SITE ASSESSMENT

---

**TWIN CEDARS**  
Sussex County, Delaware

July 11, 2019

Prepared for:

**BAY DEVELOPERS, LLC**

680 Forest Street  
Dover, Delaware 19904

Attn: Mr. Henry Mast

---

Prepared by:

**GEO-TECHNOLOGY ASSOCIATES, INC.**

*Geotechnical and Environmental Consultants*

3445-A Box Hill Corporate Center Drive

Abingdon, Maryland 21009

(410) 515-9446

Facsimile (410) 515-4895

*www.gtaeng.com*

GTA Project No: 31190731



**GEO-TECHNOLOGY ASSOCIATES, INC.**

GEOTECHNICAL AND  
ENVIRONMENTAL CONSULTANTS

*A Practicing Geoprofessional Business Association Member Firm*



July 11, 2019

Bay Developers, LLC  
680 Forest Street  
Dover, Delaware 19904

Attn: Mr. Henry Mast

Re: Phase I Environmental Site Assessment  
***Twin Cedars***  
Sussex County, Delaware

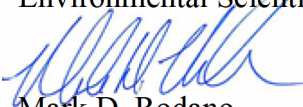
Dear Mr. Mast:

In accordance with our agreement dated March 8, 2019, Geo-Technology Associates, Inc. (GTA) has performed a Phase I Environmental Site Assessment (ESA) of the above referenced property. The subject property comprises approximately 64.34 of land located along the south side of Zion Church Road in the Selbyville area of Sussex County, Delaware. The subject property is identified as Parcel 5-33-11.00-42.00. The subject property currently contains an apparent wastewater treatment structure, open fields, and undeveloped woods. GTA understands that the subject property is planned to be developed with 86 single-family units and 168 apartment units serviced by public water and sewer utilities.

We appreciate the opportunity to be of assistance on this project. Should you have any questions regarding this information, or should you require additional information, please contact the undersigned at your convenience.

Sincerely,  
**GEO-TECHNOLOGY ASSOCIATES, INC.**

  
Samuel A. Geer  
Environmental Scientist

  
Mark D. Rodano  
Vice President

SAG/MDR/cds  
31190731

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## EXECUTIVE SUMMARY

Geo-Technology Associates, Inc. (GTA) has performed a Phase I Environmental Site Assessment (ESA) of Twin Cedars (the “subject property”, “site”). This ESA was performed in general accordance with ASTM International (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (E1527-13)*.

This *Executive Summary* is limited in scope and detail and is presented for the convenience of the reader. Do not rely on this *Executive Summary* for any purpose except that for which it was prepared. Please refer to the full report for details concerning the environmental condition of the subject property, as well as the scope and limitations of this ESA. Rely only on the full report for information about the findings, recommendations, and other concerns.

The subject property comprises approximately 64.34 of land located along the south side of Zion Church Road in the Selbyville area of Sussex County, Delaware. The subject property is identified as Parcel 5-33-11.00-42.00. The subject property currently contains an apparent wastewater treatment structure, open fields, and undeveloped woods. Historically, the majority of the subject property has consisted of open fields and undeveloped woods similar to current conditions. In addition, several apparent structures were present on the northern portion of the subject property, along Zion Church Road, as early as 1938. These structures were no longer present by 1981. By 1992, three additional structures were constructed on the northern portion of the site. A fourth structure was added in 2005. Three of the four structures were razed by 2017. GTA personnel did not observe obvious indications of above-ground storage tanks (ASTs), underground storage tanks (USTs), groundwater monitoring wells, or similar environmental concerns in association with the subject property. The subject property was identified as the site of a groundwater discharge permit for a previous large wastewater system and a basic wetlands application.

The surrounding vicinity currently contains open land, undeveloped woods, and scattered residential developments. Historically, the surrounding vicinity contained open land, undeveloped woods, farms, and scattered residential development. The Hitchens Pit, a construction debris dumping site is located approximately 0.10-mile southeast of the subject property. According to correspondence with the Delaware Department of Natural Resources and Environmental Control (DNREC), the site has been administratively closed since 2017. Additionally, DNREC records indicate that a 1989 investigation of the site determined that no hazardous substances were present and that “no further action was recommended.” A Federal and State environmental regulatory database report identified the former Hitchens Pit and an additional site of environmental concern or regulation in the surrounding vicinity. Based on their locations relative to the subject property and/or their regulatory statuses, the identified regulatory sites are unlikely to have adversely impacted the environmental quality of the subject property.

This Phase I ESA has revealed no evidence of recognized environmental conditions (RECs) in connection with the subject property.





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GBA Publication – “Important Information about This Geoenvironmental Report” (4 pages)

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# PHASE I ENVIRONMENTAL SITE ASSESSMENT

TWIN CEDARS  
SUSSEX COUNTY, DELAWARE  
JULY 11, 2019

## 1.0 INTRODUCTION

### 1.1 Purpose

At the request of Bay Developers, LLC (Client), Geo-Technology Associates, Inc. (GTA) performed the following Phase I Environmental Site Assessment (ESA) to identify recognized environmental conditions (RECs) that may be associated with the subject property, which is described in *Section 2.0* of this Report. The ASTM International (ASTM) has defined a REC and related terms as follows:

- Recognized Environmental Condition (REC): “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.”
- Historical REC (HREC): “a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls.”
- Controlled REC (CREC): “a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.”
- De Minimis: “a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis conditions are not recognized environmental conditions nor controlled recognized environmental conditions.”

This Report was prepared by GTA for the sole and exclusive use of Bay Developers, LLC. Use and reproduction of this Report by any other person without the express written permission of GTA and Bay Developers, LLC is unauthorized, and such use is at the sole risk of the user.

## **1.2 Scope of Services**

This ESA was performed and this Report was prepared in general accordance with applicable standards and with a review of reasonably ascertainable data, as set forth in the ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (E1527-13)*. The scope of services for this Phase I ESA generally included the following:

- Records Review – Review of reasonably ascertainable current and historical records for the subject property and site vicinity, including, but not limited to, a regulatory database report summarizing Federal and State environmental agency records; aerial photography; street directories; *Sanborn® Fire Insurance Maps*; property tax files; chain of title information for the subject property (if provided by the Client or property owner); physical setting documentation; and previous environmental reports.
- Site Reconnaissance – Non-intrusive visual observations of the subject property for indications of hazardous substances, petroleum products, above-ground storage tanks (ASTs), underground storage tanks (USTs), groundwater monitoring wells, polychlorinated biphenyl (PCB)-containing equipment, stained soil, stressed vegetation, pits, ponds, lagoons, structures, utilities, access roads, and similar features of potential environmental concern.
- Interviews – Interviews (in person, via telephone, or via written request) with, but not limited to, relevant regulatory authorities and present and past property owners, operators, or occupants, where relevant.
- Report – Preparation of a Phase I ESA Report summarizing the information collected.

Considerations that were not reviewed as part of this ESA, and that are considered non-scope issues by ASTM and/or otherwise beyond the scope of this assessment, include, but are not limited to, asbestos-containing materials (ACMs), radon, lead-based paint (LBP), lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, biological agents, mold, water potability issues (e.g., nitrates, pH, turbidity, coliforms, etc.),

other substances under naturally occurring conditions (e.g., metals such as arsenic), methane, miscellaneous building components (e.g., mercury-containing switches or bulbs, PCB-containing light ballasts), and high voltage power lines.

### **1.3 Limitations**

GTA's conclusions regarding this site have been based on observations of existing conditions at the time of the site reconnaissance and an interpretation of site history and site usage data. Therefore, conclusions reached regarding the conditions of this site do not represent a warranty that all areas within the site are of a similar quality as may be inferred from observable site conditions and available site history. Please be advised that as stated in the ASTM Standard, no environmental site assessment can wholly eliminate uncertainty regarding the potential for environmental liability in connection with the property. GTA's evaluation and analysis are intended to reduce, but not eliminate, the potential for conditions that result in liability for the Client.

Please be advised that ASTM indicates that a Phase I ESA completed less than 180 days prior to the date of the property transaction is presumed to be valid. To satisfy the ASTM Standard, ESAs completed more than 180 days prior to the date of the property transaction are required to be updated.

The following limitations should be noted with respect to this Phase I ESA. These limitations are not necessarily exceptions to the ASTM Standard.

- No chain of title documentation has been provided to GTA.
- The earliest available historical use information consisted of a 1901 United States Geological Survey (USGS) Map.
- Portions of the subject property were densely vegetated, and the apparent wastewater system structure was locked, limiting GTA's site observations.
- The subject property boundaries were not marked at the time of GTA's site visit. GTA estimated the property boundaries using existing site features, the tax map information described in *Section 2.1*, aerial photographs, and/or site plans, if available.
- GTA provided the Client with a "User" questionnaire regarding the Client's knowledge of environmental concerns associated with the subject property, and a response is pending at this time. If such information is received at a later date and materially alters the findings of this ESA, GTA will submit an addendum to the Client.

- The previous owner of the subject property is deceased. GTA personnel contacted the previous owner's next of kin, who was not familiar with the historic uses of the site.

#### **1.4 Significant Assumptions**

As part of this ESA, GTA has obtained data from various sources (e.g., historical documents, regulatory information, site drawings, interviews with individuals familiar with the site and regulatory representatives). GTA relies on this information in forming a professional opinion and assumes that the information is accurate and correct. GTA shall not be responsible for conditions or consequences arising from incorrect data sources or relevant facts that were concealed, withheld or not fully disclosed at the time this Report was prepared. Unless otherwise noted, GTA assumes that the user has requested this Phase I ESA to qualify for a "landowner liability protection" (LLP) pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

#### **1.5 Data Gaps**

ASTM defines a "data gap" as a lack of or inability to obtain information required by the Phase I ESA standard despite good faith efforts by the Environmental Professional to gather such information. Data gaps may result from incompleteness in any of the activities required by the Phase I ESA, including, but not limited to, the site reconnaissance and interviews. Common data gaps include the inaccessibility of structures and inability to interview key site managers. Significant data gaps are those that affect the ability of the Environmental Professional to identify RECs. Significant data gaps were not identified as part of this ESA.

#### **1.6 Qualifications**

I, Mark D. Rodano, declare that, to the best of my professional knowledge and belief, I meet the definition of an *Environmental Professional* as defined in Part 312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the "All Appropriate Inquiries" in general conformance with the standards and practices set forth in 40 CFR Part 312. The qualifications of the Environmental Professionals who performed this Phase I ESA are available to the Client upon request.

## **2.0 PHYSICAL SETTING**

### **2.1 Site Location**

The subject property comprises approximately 64.34 of land located along the south side of Zion Church Road in the Selbyville area of Sussex County, Delaware. The subject property is identified as Parcel 5-33-11.00-42.00. The subject property currently contains an apparent wastewater treatment structure, open fields, and undeveloped woods. A *Site Location Map* for the subject property is presented as *Figure 1 (Appendix A)*.

According to the records of the Sussex County Property Records Search (SCPRS), the subject property encompasses approximately 64.22 acres, and is identified as Parcel Identification Number 533-11.00-42.00. The SCPRS indicates that the subject parcel is currently owned by Twin Cedars LLC and was acquired from Clark/Howe LLC in 2006. Previous owners of the site include Twin Cedars Apartments LLC, Williams A. Mills, Brasford Service Corp, Millkoenig Grewell Partnership, and David and Betty Long. The SCPRS identifies the subject parcel at 36108 Zion Church Road, with no structures listed. The SCPRS indicates that the land use for the subject parcel is agricultural.

GTA was provided with a copy of *Existing Conditions (Plan)* of Twin Cedars, prepared by Morris & Ritchie Associates, Inc. (MRA), and dated April 2019. The MRA Plan indicates that the subject property encompasses approximately 64.34 acres of land. No structures are depicted on the subject property, and scattered homes are depicted in the site vicinity. The MRA Plan indicates that the subject property is proposed to be developed with 168 apartment units and 86 single-family units. The residential lots will be accessed by a road, which will extend south from Zion Church Road, or by several additional interior roads that will extend from the main ingress-egress road. In addition, the MRA Plan indicates that four stormwater management (SWM) facilities are proposed to be constructed on the northern, eastern, and southeastern portions of the site.

## **2.2 Topography**

The topographic information on the USGS Topographic Quadrangle Map for the site vicinity indicates that the ground surface elevations on the site range from approximately 15 feet above Mean Sea Level (ft MSL) on the southern portion of the subject property, to approximately 10 ft MSL on the northern portion of the subject property. The subject property is depicted sloping downward to the northeast, toward easterly flowing tributaries of the Dirickson Creek that are located approximately 0.25-mile east of the site. Apparent drainage channels are depicted crossing the northern portion of the site. Surficial drainage is collected by these drainage areas and is directed toward the east, subsequently discharging into Dirickson Creek, which is located approximately 0.50-mile east of the site. The topographic information depicted on the MRA Plan is generally consistent with that shown on the USGS Map. A *Topographic Map* for the site and vicinity, based on the USGS Map, is included as *Figure 2*.

## **2.3 Soils**

According to the U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) Web Soil Survey (reviewed on June 7, 2019), the site is underlain by Askecksy loamy sand (AsA), Hammonton loamy sand (HmA), Hurlock loamy sand (HuA), Klej loamy sand (KsA), Mullica-Berryland complex (MuA), Pepperbox loamy sands (PpA and PpB).

## **2.4 Geology and Hydrogeology**

According to the *Geologic Map of the Frankford and Selbyville Quadrangles, Delaware* (2013), the site vicinity is situated in the Coastal Plain Physiographic Province. Specifically, the site is underlain by the Omar Formation which is characterized by light-gray to gray, silty clay to silty, very fine sand with scattered shell beds and a coarse basal sand.

Hydrologically, the Coastal Plain is underlain by both unconfined and confined aquifers of unconsolidated sediments, which overlie consolidated bedrock and dip toward the southeast. Groundwater storage and movement are functions of the primary porosity of the sediments. Larger storage is provided by gravel and sand, with little to no storage provided by clay. Near-surface, unconfined aquifers typically consist of sediments of higher permeability and are



recharged locally, primarily through precipitation that permeates through the unsaturated zone into the aquifer. The water table in unconfined aquifers is therefore highly variable, fluctuating with the seasons and with rates of precipitation. Variations in the groundwater surface and flow generally reflect the topography and relative locations of surface water features. Intermittent confining layers can locally alter the water table conditions. The deeper, confined aquifers are bound by confining layers above and below, creating an artesian system. Confined aquifers are recharged in areas where the formation crops out, generally in more remote areas to the west.

The groundwater flow direction in the site vicinity is assumed to mirror surficial topography. Accordingly, the groundwater flow direction is assumed to be generally toward the northeast in the immediate site vicinity.

### **3.0 SITE AND VICINITY DESCRIPTION**

#### **3.1 Site Conditions**

GTA personnel performed a site reconnaissance on June 25, 2019. GTA personnel were unaccompanied at the time. The weather was sunny with temperatures in the mid-80's. Portions of the subject property were densely vegetated, and the apparent wastewater treatment structure was locked, limiting GTA's site observations. A *Site Sketch* is included as *Figure 3*. Photographs taken during GTA's site reconnaissance are presented as *Appendix B*.

##### **3.1.1 Site Description**

The subject property currently contains an apparent wastewater treatment structure. The remainder of the subject property contains open fields and woods. An unimproved driveway, which originates from Zion Church Road, provides access to these structures.

Surface water drainage on the subject property is conveyed via overland flow into the easterly flowing unnamed tributaries of Dirickson Creek, which are located approximately 0.25-mile east of the subject property.

### **3.1.2 Structures**

A 1-story apparent wastewater treatment structure is located on the northcentral portion of the subject property. The wastewater treatment structure is of metal frame construction, and did not appear to be heated.

GTA personnel observed the remains of three previous structures on the northcentral portion of the subject property. Concrete blocks and other debris was present in the general location of the previous structures. As referenced in *Sections 3.3* and *4.1*, these former structures are the apparent remains of three apartment buildings previously located on the subject property.

### **3.1.3 Storage Tanks**

GTA personnel observed four manhole covers near the former structures on the northcentral portion of the subject property. These covers were marked as pertaining to an on-site wastewater treatment system.

GTA personnel did not observe other obvious indications of ASTs or surface features that would be indicative of USTs (e.g., fill pipes, vent pipes, manholes) on the subject property.

### **3.1.4 Petroleum Compounds/Hazardous Substances**

Aside from the wastewater treatment tanks referenced in *Section 3.1.3*, GTA personnel did not observe indications of the use, storage, or disposal of petroleum compounds or hazardous substances on the subject property.

Several pole-mounted transformers are located on and near the subject property. GTA personnel did not observe obvious signs of leaks or spills in the vicinity of the transformers.

### **3.1.5 Solid Waste**

GTA personnel did not observe obvious indications of landfilling or buried waste on the subject property.

### **3.1.6 Utilities**

Overhead electrical and telephone lines extend across the northern border of the subject property along Zion Church Road. As referenced in *Sections 3.1.3* and *3.1.4*, four manhole covers were observed near the former structures on the northcentral portion of the site. An additional manhole cover marked as “Sanitary Sewer” was observed along the access road to the fields on the central portion of the site. No other obvious indications of utility services were observed on the subject property.

### **3.1.7 Other Site Information**

Various areas of minor nuisance dumping were observed on the subject property, primarily within wooded areas on the central portion of the site. The majority of the debris included scrap metal and discarded household refuse. A pond is located within a wooded area on the central portion of the subject property. Several apparent irrigation channels were present on the northern and central portion of the subject property. GTA personnel did not observe other obvious indications of stained soil, stressed vegetation, monitoring wells, pits, ponds, or lagoons on the subject property.

## **3.2 Surrounding Land Uses**

The subject property is bordered to the north by Zion Church Road followed by a personal storage facility and woods; to the east by woods followed by residential development; to the west by open fields and woods followed by residential development; and, to the south by the former Hitchens Pit site, a mobile home community, open fields, and woods

In general, land uses in the site vicinity consist of residential development, open fields, undeveloped woods, and scattered commercial developments. The former Hitchens Pit, as described in *Section 5.2*, is located adjacently southeast of the subject property. According to Delaware Department of Natural Resources and Environmental Control (DNREC) records, the site has been administratively closed since 2017. GTA personnel did not observe other indications of gasoline stations, dry cleaners, landfills, industrial areas, or similar sites of known environmental concern within an approximate ¼-mile radius of the subject property.

Locally, surficial drainage is collected by the easterly flowing unnamed tributaries of Dirickson Creek located 0.25-mile east of the subject property. The subject property appears to receive some surficial drainage from residential areas located south of the subject property. Accordingly, surficial drainage from upgradient sources is unlikely to have adversely affected the environmental condition of the subject property.

### **3.3 Interviews**

On June 25, 2019, GTA personnel interviewed Mr. Ned Howe, the son of the previous owner of the subject property. Mr. Howe indicated that his father had previously owned the subject property and is now deceased. Mr. Howe understood that there had previously been apartment structures on the northern portion of the site and along Zion Church Road, but he was not familiar with the remainder of the subject property. Mr. Howe indicated that he was not aware of environmental issues associated with the site.

GTA provided the Client with a User questionnaire regarding Bayside Developers LLC's knowledge of environmental concerns associated with the subject property. A response from Bayside Developers LLC is pending at this time. If such information is received at a later date and materially alters the findings of this ESA, GTA will submit an addendum to the Client. A copy of GTA's User questionnaire is included in *Appendix C*.

## **4.0 SITE HISTORY**

### **4.1 Aerial Photographs**

In an effort to assess historical land use practices on the site and in the vicinity, GTA reviewed aerial photographs dated 1937, 1953, 1954, 1961, 1963, 1968, 1981, 1992, 2002, 2005, 2006, 2007, 2009, 2010, 2011, 2015, and 2017 maintained by the Delaware Environmental Monitoring and Analysis Center, Nationwide Environmental Title Research, and Google. Copies of the 1954 and 2017 aerial photographs are included as *Figures 4* and *5*, respectively. A summary of GTA's interpretation of the aerial photographs follows. The aerials were reviewed chronologically, and significant land use changes that were observed are described below.

The 1937 aerial photograph indicates that the majority of the subject property consisted of open land, which appeared to have been used for agricultural purposes, with areas of woodlands located on the southern portion of the site. In addition, several apparent structures were present on the northern portion of the site along Zion Church Road. The site vicinity contained open land, undeveloped woods, farms, and scattered residences. No indications of large-scale industrial or commercial land uses were observed near the subject property.

The 1953 and 1954 (*Figure 4*) aerial photographs indicate that an apparent farm complex was located on the northern portion of the site along Zion Church Road. The remaining land uses on the site were generally consistent with the 1937 aerial photograph. Land uses in the site vicinity included an increase in apparent farms and scattered residences.

The 1961, 1963, and 1968 aerial photographs indicate conditions generally consistent with the 1954 aerial photograph. Due to the poor quality of the 1961 and 1968 aerial photographs, GTA personnel's observations were limited.

The 1981 aerial photograph indicates that the structures on the northern portion of the site were no longer present. An apparent increase in residential development was observed west of the subject property. An area of disturbed land southeast of the subject property, in the approximate location of the Hitchens Pit, was observed.

The 1992 and 2002 aerial photograph indicates that three structures and associated parking areas were located on the northern portion of the site along Zion Church Road. These structures were consistent with the described location of the former apartment structures referenced in *Sections 3.1.3* and *3.3*. An area of disturbed land was present within the wooded area on the southern portion of the site. In addition, an apparent pond was present in the approximate location of the disturbance by the 1992 aerial photograph. An area of apparently disturbed land was observed in the approximate location of the Hitchens Pit. Remaining land uses in the site vicinity included a gradual increase in residential development.

The 2005, 2006, and 2007 aerial photographs indicate that a fourth structure was present within a lightly wooded area on the northern portion of the subject property. An area of stressed vegetation was observed near the pond on the southern portion of the subject property. Apparent residential development was observed south of the subject property off of Bear Hole Road.

The 2009 aerial photograph indicates that an area of stressed vegetation was located in an open field on the northeastern portion of the subject property. Wooded land west of the subject property was cleared. The remaining conditions on the site and in the site vicinity were generally consistent with the 2007 aerial photograph.

The 2010, 2011, 2015, and 2017 (*Figure 5*) aerial photographs indicate that three of the four structures on the northern portion of the site were razed by the 2017 aerial photograph. The remaining site conditions were generally consistent with the 2009 aerial photograph. Land uses in the site vicinity included a gradual increase in apparent residential development.

#### **4.2 Historical Maps**

On GTA's behalf, Environmental Data Resources, Inc. (EDR) conducted a search for *Sanborn Fire Insurance Maps* for the site and vicinity. According to EDR, no *Sanborn Fire Insurance Maps* were found in its collection that provided coverage for the subject property or vicinity. A copy of the EDR "Sanborn Map Report" page is included in *Appendix C*.

GTA reviewed previous editions of the USGS Topographic Quadrangle Maps, dated 1901, 1910, 1921, 1938, 1942, 1943, 1946, 1961, 1962, 1969, 1973, 1982, 1983, 1992, 2014, and 2016 maintained by Nationwide Environmental Title Research. The 1901, 1910, and 1921 USGS Maps did not identify the ground cover on the subject property or in the site vicinity. Two structures are depicted on the northern and central portions of the site as early as the 1901 USGS Map. Two additional apparent structures are depicted on the southern portion of the site on the 1973 USGS Map but not on additional maps. A stream is also depicted leading through the southern portion of the site in a west to east orientation, on the 1901-1961 USGS Maps. Multiple apparent drainage channels are present on the northern portion of the subject property as early as the 1969 aerial photograph. A gravel pit is depicted in the approximate location of the

Hitchens Pit on the 1992 USGS Map. Land uses in the site vicinity included a gradual increase in apparent residential and commercial manufacturing development, especially to the north, south, and west. Remaining land uses on the subject property and in the site vicinity appeared generally consistent with those observed on the aerial photographs.

#### **4.3 Other Sources**

GTA was not supplied with chain of title documentation concerning the subject property. Based on the availability of other historical resources summarized herein, no city directories were reviewed as part of this ESA.

#### **4.4 Previous Reports**

GTA requested copies of previous ESAs or other environmental investigations from the Client. The Client indicated that they were not aware of other ESAs or other environmental investigations of the site. Due to aforementioned limitations with the property owner interview, GTA was unable to request copies of previous ESAs or other environmental investigations from the previous property owner.

#### **4.5 Historical Summary**

Based on a review of historical information, an apparent farm complex had been located on the northern portion of the subject property since at least 1901. The majority of the site historically consisted of agricultural fields, with areas of woodlands located on the southern portion of the site. The apparent farm complex was razed from the site prior to 1981. Three additional structures were present on the northern portion of the site by 1992, and a fourth structure was present on the northern portion of the site by 2005. Three of these structures were razed from the site by 2017. Two additional structures were depicted on the 1973 USGS Map. Obvious indications of these structures are not depicted on additional USGS maps or other aerial photographs. Land uses in the site vicinity have historically included open land, woods, farms, and scattered residences. The Hitchens Pit dumping site is located adjacently southeast of the subject property. According to DNREC, the Hitchens Pit was formerly a site of environmental regulation, but the regulatory site was closed as of January 11, 2017.

## **5.0 REGULATORY INFORMATION**

### **5.1 Local Regulatory Review**

GTA submitted written inquiries, dated May 21, 2019, to the DNREC concerning potential environmental issues associated with the subject property. Responses from the Emergency Prevention and Response, Solid and Hazardous Waste Management Branch, Site Investigation and Restoration Branch, Environmental Crimes Unit, Air Quality Management, and Tank Management Branch divisions indicated that no associated files were available in regards to the subject property. Copies of GTA's written inquiries and the DNREC responses are included in *Appendix C*.

In addition, GTA personnel reviewed the DNREC Environmental Navigator on June 14, 2019. The Environmental Navigator indicates that the subject property is not identified as a site of environmental concern or regulation. The Environmental Navigator identified the Hitchens Pit 0.10-mile southeast of the subject property. According to DNREC records, the Hitchens Pit was identified as an Investigation and Restoration Section (SIRS) site and was used as a demolition debris disposal site. DNREC records indicate that the site was recommended to the Solid Waste Branch for further investigation, but do not contain additional regulatory information. The Hitchens Pit site is further discussed in *Section 5.2*.

### **5.2 Federal and State Agency Database Review**

GTA retained EDR to perform an ASTM Standard search of Federal and State environmental regulatory agency databases for the subject property and vicinity. The EDR Radius Map™ Report, dated May 21, 2019, is included as *Appendix D*. In some cases, GTA may have requested that EDR increase the ASTM Standard search distances due to the size or shape of the subject property. The EDR Report also includes a list of "Non-Geocoded" sites, which EDR indicates could not be plotted on its part due to insufficient address and/or geographic coordinate information.

GTA attempted to field-verify the locations of the EDR-identified regulatory sites. GTA also reviewed the list of Non-Geocoded sites and based on the descriptions provided, attempted to verify if any are located within the specified search radii. Therefore, the sites discussed in this



section may be a subset of those contained in the EDR Report. The two tables below summarize the regulatory databases that were searched, followed by GTA's summary of the results.

<b>FEDERAL DATABASES SEARCHED BY EDR</b>		
<b>Database</b>	<b>Description</b>	<b>ASTM Search Distance</b>
NPL	National Priority List. Subset of CERCLIS. Sites for priority cleanup under the Superfund program.	1-mile
Delisted NPL	Delisted National Priority List sites	½-mile
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System. Sites that are proposed for or on the NPL, or in the screening or assessment phase for possible inclusion on the NPL.	½-mile
CERCLIS-NFRAP	Archived CERCLIS sites with a status of No Further Remedial Action Planned (NFRAP), denoting sites where, following an initial investigation, either no contamination was found, contamination was removed quickly without need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. The NFRAP status does not necessarily indicate that no environmental concerns are present.	½-mile
RCRA COR	Hazardous waste handlers with Resource Conservation and Recovery Act (RCRA) corrective action activity.	1-mile
RCRA TSD	Resource Conservation and Recovery Information System, hazardous waste Treatment, Storage, and Disposal Facilities.	½-mile
RCRIS LQG	RCRIS sites that are hazardous waste large-quantity generators.	Subject property and adjoining properties
RCRIS SQG	RCRIS sites that are hazardous waste small-quantity generators.	Subject property and adjoining properties
IC/EC	Institutional Controls or Engineering Controls maintained for the purpose of tracking sites that may contain residual contamination and activity and use limitations.	Subject property
ERNS	Emergency Response Notification System. Information on releases of oil and hazardous substances.	Subject property

<b>STATE &amp; TRIBAL DATABASES SEARCHED BY EDR</b>		
<b>Database</b>	<b>Description</b>	<b>ASTM Search Distance</b>
NPL	Equivalent of Federal NPL sites.	1-mile
STATE SITES	State Hazardous Waste Sites, which is the state equivalent to CERCLIS.	½-mile
SWL	Solid Waste Acceptance Facilities/Landfills, which may include active or inactive facilities, landfills, or open dumps.	½-mile
UST/AST	Registered underground and above-ground storage tank sites.	Subject property and adjoining properties
LUST	Leaking underground storage tanks (LUST) or similar cases, such as other below ground releases, leaking above-ground storage tanks (LASTs), spills, and inspections.	½-mile
Brownfields	DNREC/EPA Voluntary Cleanup Program	½-mile
IC/EC	Equivalent to Federal IC/EC Registries.	Subject property

The EDR Report identified one site that appear to correspond to the subject property. The EDR Report identified the following regulatory sites located within the previously identified search distances.

EDR RESULTS SUMMARY			
Site Description	Database	Details	Approximate Distance/Direction from Subject Property
Twin Cedars Zion Church Road	FINDS	Details: Permits for Groundwater Discharge-Large Wastewater Systems and Basic Wetlands Application; on-site wastewater differentiable treatment system tanks remaining on subject property as of 2017	Subject Property
Hitchens Pit RD 390 A	SEMS-ARCHIVE	DNREC Status: Closed Closure Date: 1-11-2017	0.10-mile / Southeast
	SHWS	NPL Status: Not on the NPL Non NPL Status: NFRAP – Site does not qualify for the NPL based on existing information Site Type: Debris Disposal Area	
Savage Residence 37024 Johnson Road	LUST	Status: Inactive Date Closed: 3-21-19	0.30-mile / East

Based on this information, the subject property has an open permit for a large wastewater system that was previously active. According to a 2017 DNREC inspection, the buildings for the wastewater system were razed. Based on GTA personnel’s site observations, at least one structure apparently associated with the wastewater system is still present on the site. The DNREC records indicate that the associated on-site wastewater treatment disposal system tanks remained on the subject property. DNREC records additionally indicate that a basic wetlands application is on file for the subject property for the Charles Black Company, LLC. Based on this information, it is unlikely that these EDR-identified environmental conditions have adversely impacted the subject property.

Based on this information, the Hitchens Pit is located 0.10-mile southeast of the subject property. GTA personnel contacted DNREC for additional information on the Hitchens Pit and were supplied with a DNREC *Memorandum*, dated January 11, 2017. The *Memorandum* states that DNREC’s SIRS administratively closed the site based on there no longer being evidence of construction debris present. The *Memorandum* also cites a preliminary assessment performed in

November of 1989 that determined that no hazardous substances were present and that “no further action was recommended by DNREC SIRS.” Based on this information, it is unlikely that the EDR-identified site has adversely impacted the subject property. A copy of GTA’s inquiry regarding the Hitchens Pit and the DNREC *Memorandum* is included in *Appendix C*.

Based on the distances from the remaining surrounding regulatory site to the subject property and its regulatory statuses, it is unlikely that the EDR-identified regulatory site has adversely impacted the subject property. Additionally, the regulatory records and surrounding land uses do not indicate that a vapor migration concern at the subject property is likely. Additional regulatory sites and several non-ASTM scope databases were also identified by EDR that are not displayed above. This information is available within *Appendix D*.

## **6.0 FINDINGS**

### **6.1 Summary**

The subject property comprises approximately 64.34 of land located along the south side of Zion Church Road in the Selbyville area of Sussex County, Delaware. The subject property is identified as Parcel 5-33-11.00-42.00. The subject property currently contains an apparent wastewater treatment structure, open fields, and undeveloped woods. Historically, the majority of the subject property has consisted of open fields and undeveloped woods similar to current conditions. In addition, several apparent structures were present on the northern portion of the subject property, along Zion Church Road, as early as 1938. These structures were no longer present by 1981. By 1992, three additional structures were constructed on the northern portion of the site. A fourth structure was added in 2005. Three of the four structures were razed by 2017. GTA personnel did not observe obvious indications of ASTs, USTs, groundwater monitoring wells, or similar environmental concerns in association with the subject property. The subject property was identified as the site of a groundwater discharge permit for a previous large wastewater system and a basic wetlands application.

The surrounding vicinity currently contains open land, undeveloped woods, and scattered residential developments. Historically, the surrounding vicinity contained open land, undeveloped woods, farms, and scattered residential development. The Hitchens Pit, a

construction debris dumping site is located approximately 0.10-mile southeast of the subject property. According to correspondence with the DNREC, the site has been administratively closed since 2017. Additionally, DNREC records indicate that a 1989 investigation of the site determined that no hazardous substances were present and that “no further action was recommended.” A Federal and State environmental regulatory database report identified the former Hitchens Pit and an additional site of environmental concern or regulation in the surrounding vicinity. Based on their locations relative to the subject property and/or their regulatory statuses, the identified regulatory sites are unlikely to have adversely impacted the environmental quality of the subject property.

## **6.2 Conclusions**

GTA has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM Practice E1527-13 of the subject property (Twin Cedars), as described herein. Any exceptions to, or deletions from, this practice are described in *Section 1.3* of this Report. This assessment has revealed no evidence of RECs in connection with the subject property.

**\*\*\*\*\* END OF REPORT \*\*\*\*\***

# Important Information about This

# Geoenvironmental Report

Geoenvironmental studies are commissioned to gain information about environmental conditions on and beneath the surface of a site. The more comprehensive the study, the more reliable the assessment is likely to be. But remember: Any such assessment is to a greater or lesser extent based on professional opinions about conditions that cannot be seen or tested. Accordingly, no matter how many data are developed, risks created by unanticipated conditions will always remain. *Have realistic expectations.* Work with your geoenvironmental consultant to manage known and unknown risks. Part of that process should already have been accomplished, through the risk allocation provisions you and your geoenvironmental professional discussed and included in your contract's general terms and conditions. This document is intended to explain some of the concepts that may be included in your agreement, and to pass along information and suggestions to help you manage your risk.

## **Beware of Change; Keep Your Geoenvironmental Professional Advised**

The design of a geoenvironmental study considers a variety of factors that are subject to change. Changes can undermine the applicability of a report's findings, conclusions, and recommendations. *Advise your geoenvironmental professional about any changes you become aware of.* Geoenvironmental professionals cannot accept responsibility or liability for problems that occur because a report fails to consider conditions that did not exist when the study was designed. Ask your geoenvironmental professional about the types of changes you should be particularly alert to. Some of the most common include:

- modification of the proposed development or ownership group,
- sale or other property transfer,
- replacement of or additions to the financing entity,

- amendment of existing regulations or introduction of new ones, or
- changes in the use or condition of adjacent property.

Should you become aware of any change, *do not rely on a geoenvironmental report.* Advise your geoenvironmental professional immediately; follow the professional's advice.

## **Recognize the Impact of Time**

A geoenvironmental professional's findings, recommendations, and conclusions cannot remain valid indefinitely. The more time that passes, the more likely it is that important latent changes will occur. *Do not rely on a geoenvironmental report if too much time has elapsed since it was completed.* Ask your environmental professional to define "too much time." In the case of Phase I Environmental Site Assessments (ESAs), for example, more than 180 days after submission is generally considered "too much."

## **Prepare To Deal with Unanticipated Conditions**

The findings, recommendations, and conclusions of a Phase I ESA report typically are based on a review of historical information, interviews, a site "walkover," and other forms of noninvasive research. When site subsurface conditions are not sampled in any way, the risk of unanticipated conditions is higher than it would otherwise be.

While borings, installation of monitoring wells, and similar invasive test methods can help reduce the risk of unanticipated conditions, *do not overvalue the effectiveness of testing.* Testing provides information about actual conditions only at the precise locations where samples are taken, and only when they are taken. Your geoenvironmental

professional has applied that specific information to develop a general opinion about environmental conditions. *Actual conditions in areas not sampled may differ (sometimes sharply) from those predicted in a report.* For example, a site may contain an unregistered underground storage tank that shows no surface trace of its existence. *Even conditions in areas that were tested can change, sometimes suddenly, due to any number of events, not the least of which include occurrences at adjacent sites.* Recognize, too, that *even some conditions in tested areas may go undiscovered*, because the tests or analytical methods used were designed to detect only those conditions assumed to exist.

Manage your risks by retaining your geoenvironmental professional to work with you as the project proceeds. Establish a contingency fund or other means to enable your geoenvironmental professional to respond rapidly, in order to limit the impact of unforeseen conditions. And to help prevent any misunderstanding, identify those empowered to authorize changes and the administrative procedures that should be followed.

### **Do Not Permit Any Other Party To Rely on the Report**

Geoenvironmental professionals design their studies and prepare their reports to meet the specific needs of the clients who retain them, in light of the risk management methods that the client and geoenvironmental professional agree to, and the statutory, regulatory, or other requirements that apply. The study designed for a developer may differ sharply from one designed for a lender, insurer, public agency...or even another developer. *Unless the report specifically states otherwise, it was developed for you and only you.* Do not unilaterally permit any other party to rely on it. The report and the study underlying it may not be adequate for another party's needs, and you could be held liable for shortcomings your geoenvironmental professional was powerless to prevent or anticipate. Inform your geoenvironmental professional when you know or expect that someone else—a third-party—will want to use or rely on the report. *Do not permit third-party use or reliance until you first confer with the geoenvironmental professional who prepared the report.* Additional testing, analysis, or study may be required and, in any event, appropriate terms and conditions should be agreed to so both you and your geoenvironmental professional are protected from third-party risks. *Any party who relies on a geoenvironmental report without the express written permission of the professional who prepared it and the client for whom it was prepared may be solely liable for any problems that arise.*

### **Avoid Misinterpretation of the Report**

Design professionals and other parties may want to rely on the report in developing plans and specifications. They need to be advised, in writing, that their needs may not have been considered when the study's scope was developed, and, even if their needs were considered, they might misinterpret geoenvironmental findings, conclusions, and recommendations. *Commission your geoenvironmental professional to explain pertinent elements of the report to others who are permitted to rely on it, and to review any plans, specifications or other instruments of professional service that incorporate any of the report's findings, conclusions, or recommendations.* Your geoenvironmental professional has the best understanding of the issues involved, including the fundamental assumptions that underpinned the study's scope.

### **Give Contractors Access to the Report**

Reduce the risk of delays, claims, and disputes by giving contractors access to the full report, *providing that it is accompanied by a letter of transmittal that can protect you* by making it unquestionably clear that: 1) the study was not conducted and the report was not prepared for purposes of bid development, and 2) the findings, conclusions, and recommendations included in the report are based on a variety of opinions, inferences, and assumptions and are subject to interpretation. Use the letter to also advise contractors to consult with your geoenvironmental professional to obtain clarifications, interpretations, and guidance (a fee may be required for this service), and that—in any event—they should conduct additional studies to obtain the specific type and extent of information each prefers for preparing a bid or cost estimate. Providing access to the full report, with the appropriate caveats, helps prevent formation of adversarial attitudes and claims of concealed or differing conditions. If a contractor elects to ignore the warnings and advice in the letter of transmittal, it would do so at its own risk. Your geoenvironmental professional should be able to help you prepare an effective letter.

### **Do Not Separate Documentation from the Report**

Geoenvironmental reports often include supplemental documentation, such as maps and copies of regulatory files, permits, registrations, citations, and correspondence with regulatory agencies. If subsurface explorations were performed, the report may contain final boring logs and copies of laboratory data. If remediation activities occurred on site, the report may include: copies of daily field reports; waste manifests; and information about the disturbance of subsurface materials, the type and thickness of any fill placed on site, and fill placement practices, among other types of documentation. *Do not separate supplemental documentation from the report. Do not, and do not permit any other party to redraw or modify any of the supplemental documentation for incorporation into other professionals' instruments of service.*

### **Understand the Role of Standards**

Unless they are incorporated into statutes or regulations, standard practices and standard guides developed by the American Society for Testing and Materials (ASTM) and other recognized standards-developing organizations (SDOs) are little more than aspirational methods agreed to by a consensus of a committee. The committees that develop standards may not comprise those best-qualified to establish methods and, no matter what, no standard method can possibly consider the infinite client- and project-specific variables that fly in the face of the theoretical "standard conditions" to which standard practices and standard guides apply. In fact, these variables can be so pronounced that geoenvironmental professionals who comply with every directive of an ASTM or other standard procedure could run afoul of local custom and practice, thus violating the standard of care. Accordingly, when geoenvironmental professionals indicate in their reports that they have performed a service "in general compliance" with one standard or another, it means they have applied professional judgement in creating and implementing a scope of service designed for the specific client and project involved, and which follows some of the general precepts laid out in the referenced standard. To the extent that a report indicates "general compliance" with a standard, you may wish to speak with your geoenvironmental professional to learn more about what was and was not done. *Do not assume a given standard was followed to the letter.* Research indicates that that seldom is the case.

### **Realize That Recommendations May Not Be Final**

The technical recommendations included in a geoenvironmental report are based on assumptions about actual conditions, and so are preliminary or tentative. Final recommendations can be prepared only by observing actual conditions as they are exposed. For that reason, you should retain the geoenvironmental professional of record to observe construction and/or remediation activities on site, to permit rapid response to unanticipated conditions. *The geoenvironmental professional who prepared the report cannot assume responsibility or liability for the report's recommendations if that professional is not retained to observe relevant site operations.*

### **Understand That Geotechnical Issues Have Not Been Addressed**

Unless geotechnical engineering was specifically included in the scope of professional service, a report is not likely to relate any findings, conclusions, or recommendations about the suitability of subsurface materials for construction purposes, especially when site remediation has been accomplished through the removal, replacement, encapsulation, or chemical treatment of on-site soils. The equipment, techniques, and testing used by geotechnical engineers differ markedly from those used by geoenvironmental professionals; their education, training, and experience are also significantly different. If you plan to build on the subject site, but have not yet had a geotechnical engineering study conducted, your geoenvironmental professional should be able to provide guidance about the next steps you should take. The same firm may provide the services you need.

### **Read Responsibility Provisions Closely**

Geoenvironmental studies cannot be exact; they are based on professional judgement and opinion. Nonetheless, some clients, contractors, and others assume geoenvironmental reports are or certainly should be unerringly precise. Such assumptions have created unrealistic expectations that have led to wholly unwarranted claims and disputes. To help prevent such problems, geoenvironmental professionals have developed a number of report provisions and contract terms that explain who is responsible for what, and how risks are to be allocated. Some people mistake these for “exculpatory clauses,” that is, provisions whose purpose is to transfer one party’s rightful responsibilities and liabilities to someone else. Read the responsibility provisions included in a report and in the contract you and your geoenvironmental professional agreed to. *Responsibility provisions are not “boilerplate.”* They are important.

### **Rely on Your Geoenvironmental Professional for Additional Assistance**

Membership in the Geoprofessional Business Association exposes geoenvironmental professionals to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a geoenvironmental project. Confer with your GBA-member geoenvironmental professional for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910  
Telephone: 301/565-2733 Facsimile: 301/589-2017  
e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)

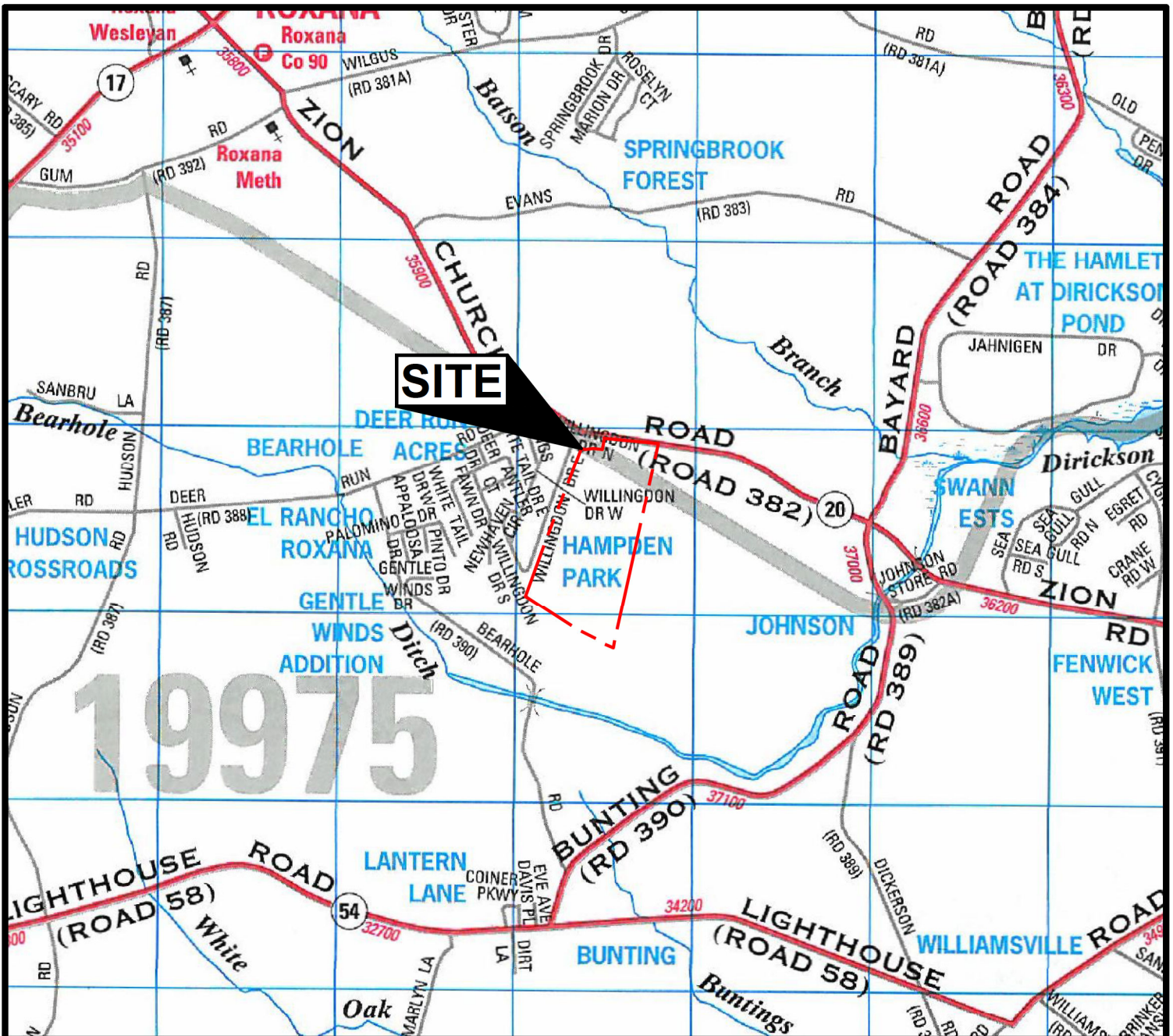
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**APPENDIX A**

**FIGURES**

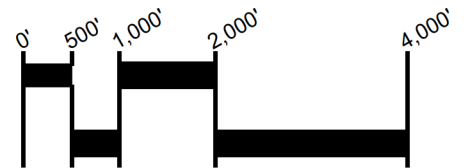




SOURCE: MAP ADAPTED FROM A STREET MAP OF SUSSEX COUNTY, DELAWARE PRODUCED AND MAINTAINED BY ADC MAPS, COPYRIGHT ADC THE MAP PEOPLE BY PERMISSION PERMITTED USE NUMBER 21006238

**LEGEND**

--- SUBJECT PROPERTY



**SCALE: 1"=2,000'**



**GEO-TECHNOLOGY ASSOCIATES, INC.**

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

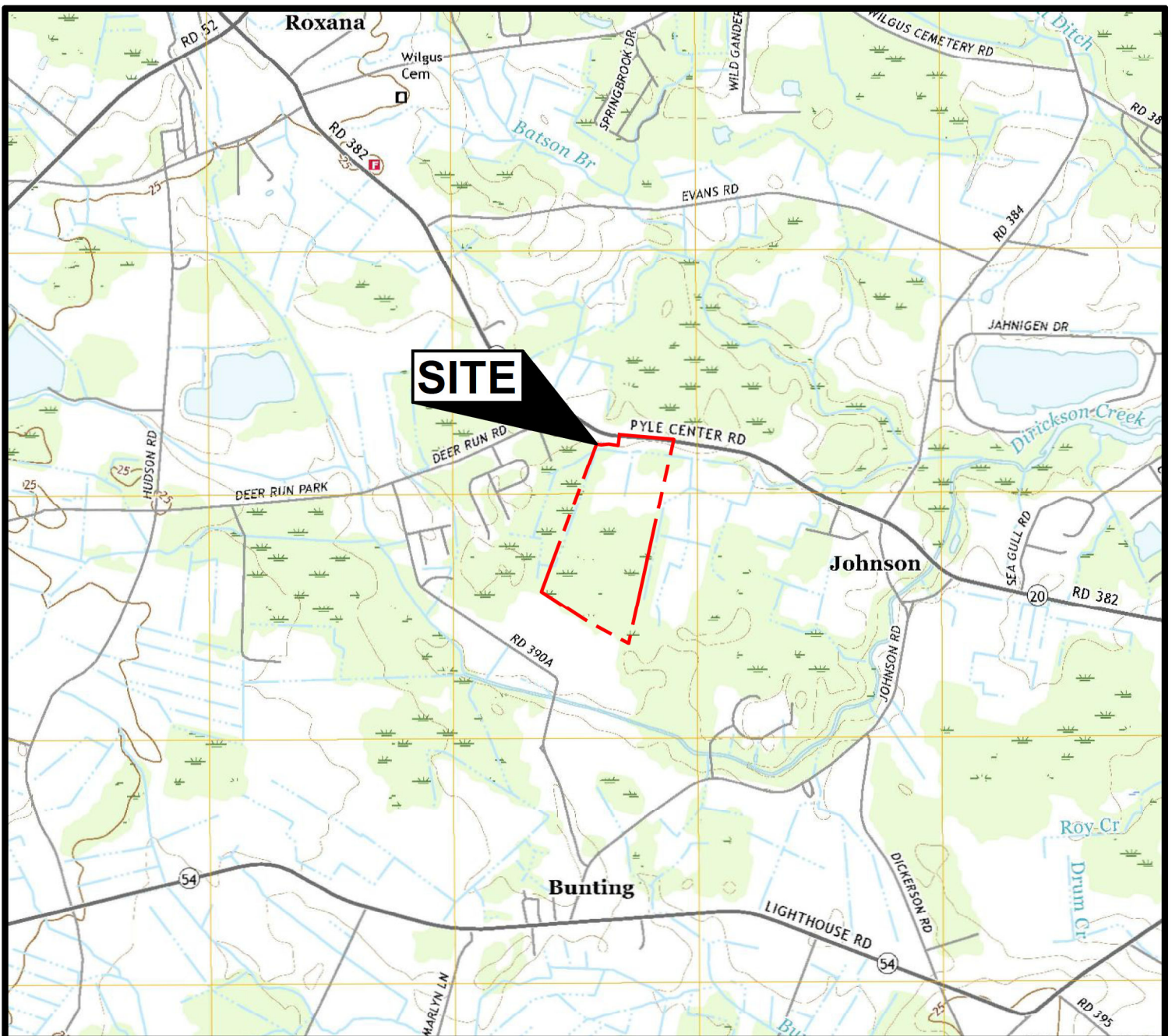
3445-A BOX HILL CORPORATE CENTER DRIVE  
 ABINGDON, MARYLAND 21009  
 410-515-9446  
 FAX: 410-515-4895  
 WWW.GTAENG.COM

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**SITE LOCATION MAP  
 TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

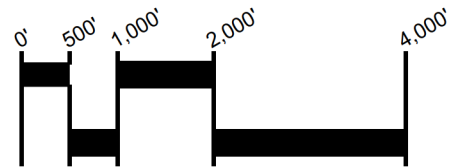
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SOURCE: MAP ADAPTED FROM THE 2016 USGS TOPOGRAPHIC QUADRANGLE OF SELBYVILLE, DELAWARE

**LEGEND**

 SUBJECT PROPERTY



**SCALE: 1"=2,000'**



**GEO-TECHNOLOGY ASSOCIATES, INC.**

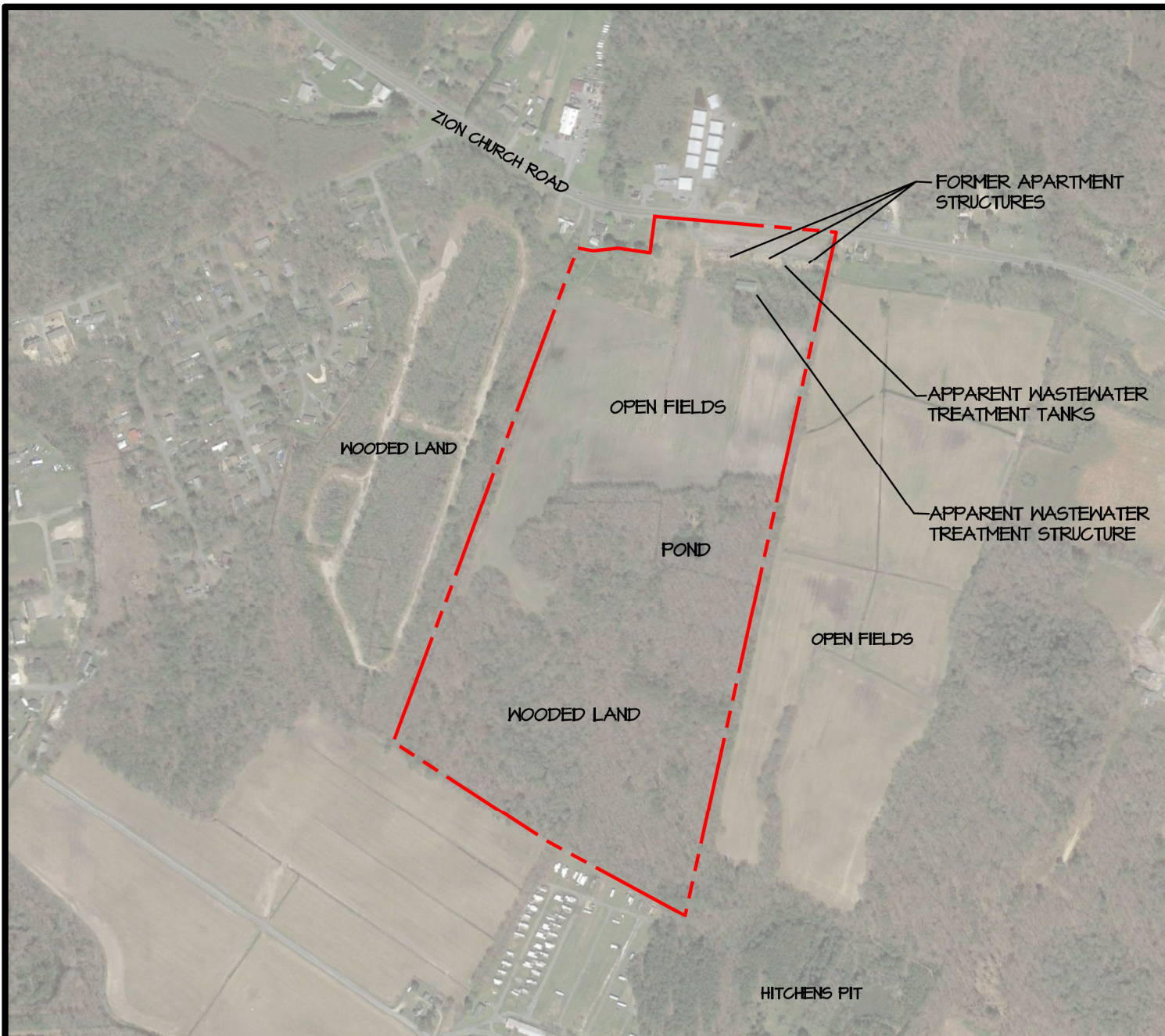
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**TOPOGRAPHIC MAP  
 TWIN CEDARS**

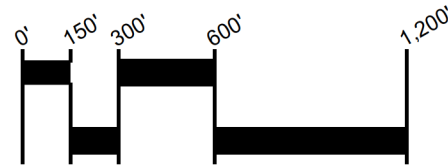
SUSSEX COUNTY, DELAWARE



SOURCE: MAP ADAPTED FROM 2017 AERIAL IMAGERY OF SUSSEX COUNTY, DELAWARE, PRODUCED AND MAINTAINED BY GOOGLE EARTH <WWW.EARTH.GOOGLE.COM>

**LEGEND**

--- SUBJECT PROPERTY



**SCALE: 1"=600'**



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**SITE SKETCH  
 TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

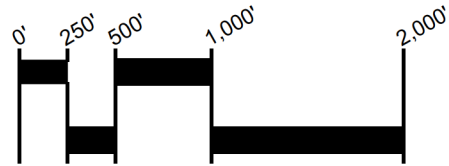
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SOURCE: MAP ADAPTED FROM A 1954 AERIAL PHOTOGRAPH MAINTAINED BY DELAWARE ENVIRONMENTAL MONITORING AND ANALYSIS CENTER <WWW.DEMAC.UDEL.EDU/DATA/AERIAL-PHOTOGRAPHY/>

**LEGEND**

--- SUBJECT PROPERTY



**SCALE: 1"=1,000'**



**GEO-TECHNOLOGY ASSOCIATES, INC.**

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

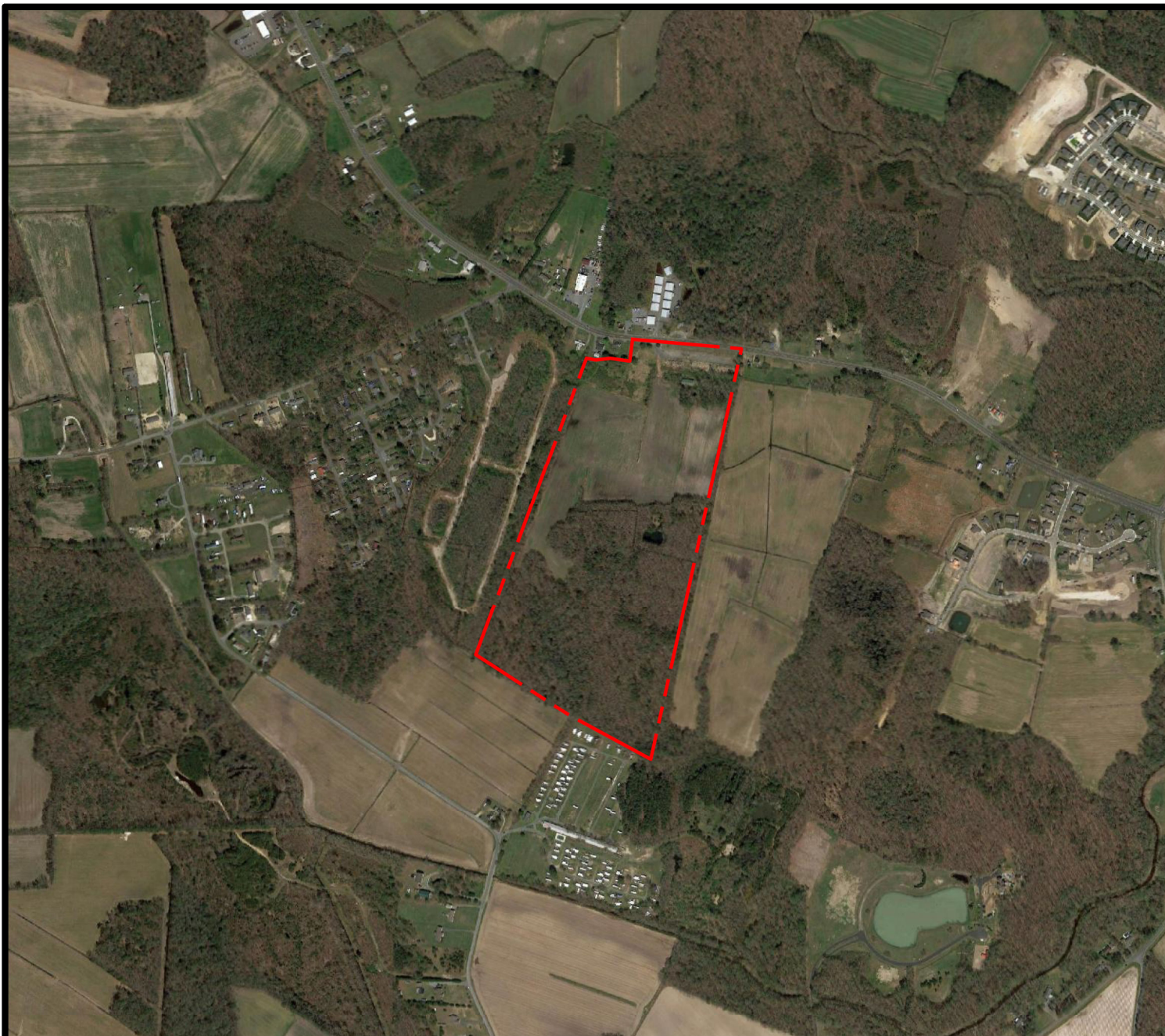
3445-A BOX HILL CORPORATE CENTER DRIVE  
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1954 AERIAL PHOTOGRAPH  
**TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

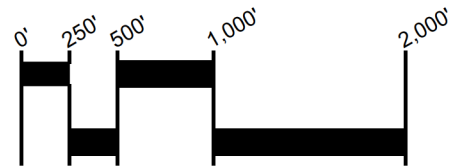
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SOURCE: MAP ADAPTED FROM 2017 AERIAL IMAGERY OF SUSSEX COUNTY, DELAWARE, PRODUCED AND MAINTAINED BY GOOGLE EARTH <WWW.EARTH.GOOGLE.COM>

**LEGEND**

— — — — — SUBJECT PROPERTY



**SCALE: 1"=1,000'**



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2017 AERIAL PHOTOGRAPH  
**TWIN CEDARS**

SUSSEX COUNTY, DELAWARE

JOB NO.	31190731	SCALE:	1"=1000'	DATE:	MAY 2019	DRAWN BY:	KMT	REVIEW BY:	SAG	FIGURE:	5
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**APPENDIX B**  
**SITE PHOTOGRAPHS**



**PROJECT NAME:** Twin Cedars

**DATE PHOTOGRAPHED:** June 27, 2019

**GTA PROJECT NUMBER:** 31190731

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**PHOTOGRAPH 1:** Northern portion of the site facing east along Zion Church Road.



**PHOTOGRAPH 2:** Northern portion of the site facing west along Zion Church Road.



**PHOTOGRAPH 3:** Debris associated with apparent former apartment structures on the northern portion of the site.



**PHOTOGRAPH 4:** Apparent tanks associated with wastewater treatment system on the northern portion of the site.

**PROJECT NAME:** Twin Cedars

**DATE PHOTOGRAPHED:** June 27, 2019

**GTA PROJECT NUMBER:** 31190731

---



**PHOTOGRAPH 5:** Apparent wastewater treatment structure on the northcentral portion of the site.



**PHOTOGRAPH 6:** Pond on the central portion of the subject property.



**PHOTOGRAPH 7:** Central portion of the site facing northwest.



**PHOTOGRAPH 8:** Wooded land on the southern portion of the subject property.

**APPENDIX C**  
**CORRESPONDENCE**





## FOIA Request Form

**Request Date:** Tuesday, May 21, 2019

**Public Body**

Natural Resources and Environmental Control

**Name**

Keelyn Thornton

**Mailing Address**

3445 Box Hill Corporate Center Drive Suite A

**Mailing Address (optional)**

Address 2 (optional)

**Mailing Address (optional)**

Address 3 (optional)

**City**

Abingdon

**State**

Maryland

**Zip**

21009

**Phone**

4105159446

**E-mail**

kthornton@staeng.com

**Records Requested**

Be as specific as you can, describing types of records, dates, parties to correspondence, subject matter, etc. The public body will make every reasonable effort to assist you in identifying the records being sought.

**Note:** Requests for voluminous records may be delayed.

This request is in reference to a property called Twin Cedars. The property has no listed address; however, it is located along the south side of Zion Church Road in the Selbyville area of Sussex County, Delaware. The site is Parcel 5-83-11.00-42.00 and is 64.34 acres. GTA is requesting records of any environmental spills, incidents, releases, or cleanups; open, closed, or proposed landfills or dump sites; hazardous waste facilities; leaking underground storage tanks; or similar types of records regarding the environmental condition of the property. The purpose of this is for a Phase I Environmental Site Assessment. Thank you.

There may be costs involved in responding to your request. The public body can require you to examine the records at the office of the public body. Refer to the public body's policy or regulation for information about costs and access to records.

**Please contact me if costs will be greater than**

1.00



Hagley Museum was originally the du Pont black powder manufactory, estate, and gardens.

### What's Trending

- Attorney General
- State Treasurer
- Motor Vehicles
- Labor
- Corporations
- Education
- Governor
- Health





**From:** [Sobocinski, Lee \(DNREC\)](#)  
**To:** [Thornton, Kaelyn](#)  
**Cc:** [FOIA, DNREC \(MailBox Resources\)](#)  
**Subject:** FOIA Request 442 Response  
**Date:** Thursday, May 30, 2019 2:49:21 PM

---

Dear Ms. Thornton:

This email is in response to your Freedom of Information Act (FOIA) request on May 21, 2019. You requested:

*“This request is in reference to a property called Twin Cedars. The property has no listed address; however, it is located along the south side of Zion Church Road in the Selbyville area of Sussex County, Delaware. The site is Parcel 5-33-11.00-42.00 and is 64.34 acres. GTA is requesting records of any environmental spills, incidents, releases, or cleanups; open, closed, or proposed landfills or dump sites; hazardous waste facilities; leaking underground storage tanks ; or similar types of records regarding the environmental condition of the property. The purpose of this is for a Phase I Environmental Site Assessment. Thank you.”*

A records search by the Division of Air Quality, the Division of Waste and Hazardous Substances, and the Division of Community Affairs (ECU) returned no records responsive to your inquiry.

Thank you for your FOIA inquiry. DNREC considers your request closed at this time.

S. Lee Sobocinski  
DNREC FOIA Coordinator  
Department of Natural Resources and  
Environmental Control  
89 Kings Highway  
Dover, DE 19901  
(P) 302-739-9365  
(F) 302-739-6242

[lee.sobocinski@delaware.gov](mailto:lee.sobocinski@delaware.gov)

**Effective January 25, 2019, my email address changed to [lee.sobocinski@delaware.gov](mailto:lee.sobocinski@delaware.gov). Please update your contact information accordingly.**



**From:** [FOIATrac](#)  
**To:** [Thornton, Kaelyn](#)  
**Subject:** FOIA Request Info  
**Date:** Tuesday, May 21, 2019 1:13:36 PM

---

DELAWARE DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL  
CONTROL

DIVISION OF WASTE AND HAZARDOUS SUBSTANCES

INTERNET ADDRESS: [www.awm.delaware.gov](http://www.awm.delaware.gov)

FREEDOM OF INFORMATION ACT RESPONSE FORM

Date:  
From:

Solid & Hazardous Waste Management Branch

89 Kings Highway

Dover, DE 19901

302-739-9000

[Lee.Sobocinski@state.de.us](mailto:Lee.Sobocinski@state.de.us)

To:

Kaelyn Thornton

GTA

3445-A Box Hill Corporate Center Drive

Abingdon, MD 21009

Facility/Site(s): Twin Cedars

Request Disposition:

No records have been found in this branch pursuant to the above referenced request.

Comments:

Should you have any questions, please do not hesitate to call the DNREC FOIA Coordinator.

PLEASE NOTE THE FOLLOWING:

Your request may have been distributed to other Branches applicable. Those Branches will respond individually to your request.



**From:** [FOIATrac](#)  
**To:** [Thornton, Kaelyn](#)  
**Subject:** FOIA Request Info  
**Date:** Tuesday, May 21, 2019 2:26:33 PM

---

DELAWARE DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL  
CONTROL

DIVISION OF WASTE AND HAZARDOUS SUBSTANCES

INTERNET ADDRESS: [www.awm.delaware.gov](http://www.awm.delaware.gov)

FREEDOM OF INFORMATION ACT RESPONSE FORM

Date:  
From:

Site Investigation and Restoration Branch

391 Lukens Drive

New Castle , DE 19720

302-739-9000

[Lee.Sobocinski@state.de.us](mailto:Lee.Sobocinski@state.de.us)

To:

Kaelyn Thornton

GTA

3445-A Box Hill Corporate Center Drive

Abingdon, MD 21009

Facility/Site(s): Twin Cedars

Request Disposition:

No records have been found in this branch pursuant to the above referenced request.

Comments:

Hitchens Pit (DE-0240)

Road 390, Selbyville, DE 19975

<http://www.nav.dnrec.delaware.gov/DEN3/Detail/FacilityDetail.aspx?id=10056272&piid=27067>

### **Accessing Delaware Environmental Navigator**

Best to use Google Chrome or Internet Explorer

Search for: [www.nav.dnrec.delaware.gov/DEN3/](http://www.nav.dnrec.delaware.gov/DEN3/)

Below are two options for site document searching:

#### **Search Programs Option:**

1. On the left side of the page under the NAVIGATION heading,
2. Click the Search Programs link,
  - a. Enter the Site ID (DE-####) if known; or a specific site name (Ex.: GM Automotive Plant),
  - b. Under the program option, select the drop-down menu and scroll to Site Investigation and Restoration Site (SIRS).
3. Click Search.
4. The Site ID and Name should appear,
  - a. Click on the highlighted DE# (Site ID),
5. To the left of the page there will be a NAVIGATION and DETAILS listing,
6. Under DETAILS scroll down to Documents (# of documents),
7. Click on the documents link.
  - a. A listing of all documents for this site will appear.

#### **Search by Maps Option:**

1. Under NAVIGATION on the left side of the page,
2. Click the Search by Maps option,
3. Select the Environmental Control button and Launch Map.
4. To the left under the Main Box,
  - a. Select the Address Search box.
  - b. Type address – (Street #/Name, City) and click the search address button.
  - c. The map of Delaware should narrow down to your searched address.
  - d. Use the (-) sign to scroll out to view site locations within the area.  
Site locations are marked by a red triangle.
5. Click on the red triangle – an information box will appear.
6. Click on View link next to Navigator in the information box.
7. To the left of the screen under Navigator/Details – scroll down to the Documents (# of Docs) link under the Details section.
8. Click the documents button.

9. Listing of all documents should appear.

**Note:** If when you click on the Documents link and it does not pull up the listing of site documents click on the “Click here to remove this filter and view all facility data” link at the top of the page under the Site Name information. This should remove the filter and allow access to the documents.

Should you have any questions, please do not hesitate to call the DNREC FOIA Coordinator.

PLEASE NOTE THE FOLLOWING:

Your request may have been distributed to other Branches applicable. Those Branches will respond individually to your request.



**From:** [FOIATrac](#)  
**To:** [Thornton, Kaelyn](#)  
**Subject:** FOIA Request Info  
**Date:** Thursday, May 30, 2019 9:08:35 AM

---

DELAWARE DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL  
CONTROL

DIVISION OF WASTE AND HAZARDOUS SUBSTANCES

INTERNET ADDRESS: [www.awm.delaware.gov](http://www.awm.delaware.gov)

FREEDOM OF INFORMATION ACT RESPONSE FORM

Date:  
From:

Tank Management Branch

391 Lukens Drive

New Castle, DE 19720

302-739-9000

[Lee.Sobocinski@state.de.us](mailto:Lee.Sobocinski@state.de.us)

To:

Kaelyn Thornton

GTA

3445-A Box Hill Corporate Center Drive

Abingdon, MD 21009

Facility/Site(s): Twin Cedars

Request Disposition:

No records have been found in this branch pursuant to the above referenced request.

Comments:

Tank Management Section does not have any underground or aboveground storage tank site facility file for your requested site.

Twin Cedars

If you have any questions, please contact DNREC- TMS Melina Lounsbury at 302-395-2500.

Should you have any questions, please do not hesitate to call the DNREC FOIA Coordinator.

PLEASE NOTE THE FOLLOWING:

Your request may have been distributed to other Branches applicable. Those Branches will respond individually to your request.

**From:** [FOIATrac](#)  
**To:** [Thornton, Kaelyn](#)  
**Subject:** FOIA Request Info  
**Date:** Wednesday, May 22, 2019 7:21:45 AM

---

DELAWARE DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL  
CONTROL

DIVISION OF WASTE AND HAZARDOUS SUBSTANCES

INTERNET ADDRESS: [www.awm.delaware.gov](http://www.awm.delaware.gov)

FREEDOM OF INFORMATION ACT RESPONSE FORM

Date:  
From:

Emergency Prevention and Response

89 Kings Highway

Dover, DE 19901

302-739-9000

[Lee.Sobocinski@state.de.us](mailto:Lee.Sobocinski@state.de.us)

To:

Kaelyn Thornton

GTA

3445-A Box Hill Corporate Center Drive

Abingdon, MD 21009

Facility/Site(s): Twin Cedars

Request Disposition:

No records have been found in this branch pursuant to the above referenced request.

Comments:

Without a physical address, not able to search database. not able to search by parcel numbers.

Should you have any questions, please do not hesitate to call the DNREC FOIA Coordinator.

PLEASE NOTE THE FOLLOWING:

Your request may have been distributed to other Branches applicable. Those Branches will respond individually to your request.

**From:** [Chiger, Mariya \(DNREC\)](#)  
**To:** [Geer, Samuel](#)  
**Cc:** [Salahuddin, Qazi \(DNREC\)](#)  
**Subject:** Hitchens Pit Inquiry  
**Date:** Friday, June 14, 2019 12:14:34 PM  
**Attachments:** [DE-0240 Closure Memo.pdf](#)

---

Good Morning Sam,

Hitchens Pit Site (DE-0240) was administratively closed on January 11, 2017 based on a site visit and [Preliminary Assessment](#). Please see attached Closure Memo. The Preliminary Assessment recommended to refer the site to SHWMS, however after the site visit on May 22, 2015, DNREC-SIRS determined to close the site.

Please let me know if you have any other questions,  
-Mariya.

*Mariya Chiger*  
Environmental Scientist  
Dept. of Natural Resource and Environmental Control  
Site Investigation and Restoration Section (SIRS)  
Phone: 302-395-2618  
Fax: 302-395-2601  
Email: [mariya.chiger@delaware.gov](mailto:mariya.chiger@delaware.gov)



**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL  
DIVISION OF WASTE AND HAZARDOUS SUBSTANCES  
SITE INVESTIGATION & RESTORATION SECTION**

**MEMORANDUM**

**To:** Hitchens Pit (DE-0240)

**Through:** Paul Will, Program Manager I, SIRS  
Qazi Salahuddin, Program Manager I, SIRS

**CC:** Sandra Kimbel, Administrative Specialist II, SIRS

**From:** Eileen Capitoli, Environmental Scientist I, SIRS

**Date:** January 11, 2017

**RE:** Administratively Closed Site (DE-0240)

*SW 1/11/17*

*SK 1/11/17*  
*EC 1/11/17*

---

DNREC-SIRS has designated the Hitchens Pit (DE-0240) as administratively closed based on a Site visit on May 22, 2015 that showed that the property is now an RV Park and is there is no longer evidence of disposal of construction debris. Also, a preliminary Assessment was performed on November 21, 1989 that determined no hazardous substances were present and that no further action was recommended by DNREC-SIRS. Based on this information it was determined that there is no reason to believe that a release has occurred at the Site that requires actions under the Hazardous Substance Cleanup Act (HSCA).

Details of the investigation and other pertinent information are included in the attached fact sheet for the site. A map for the site showing the site boundary is included. All the documents related to the site are archived and are available for reference. The site polygon will be maintained in the Delaware Environmental Navigator (DEN).

EJC:EJC  
EJC17003.doc  
DE 0240 II I 4





# Site Investigation & Restoration



Department of Natural Resources and Environmental Control (DNREC) • Site Investigation and Restoration Section (SIRS)

## SITE FACT SHEET

Hitchens Pit (DE-0240)

### SITE DESCRIPTION

The former sand and gravel pit was used as a dumping area for construction and demolition debris in 1989.

### SITE LOCATION

The site is located at 37421 Bearhole Road, West Fenwick Island, Selbyville, DE at "Lost Lands RV Park". The former pit is located in the forested area to the west of the RV Park.

### CURRENT STATUS

A preliminary assessment (PA) was conducted on the property on November 21, 1989. Construction and demolition debris was noted in the pit, and the PA recommended that the site be referred to the DNREC Solid Waste Branch for further investigation. Because hazardous substances were not documented, no further action was taken by DNREC-SIRS. The former property owner was contacted on June 2, 2009. According to him, the property was sold approximately 15 years ago, and a RV Park was built on the property.

Visited site on May 22, 2015. The site is now a RV Park. Administratively closed.

LAST UPDATED 1/4/2017 1:02:59 PM by Eileen.Capitoli

### CONTACT

Eileen Capitoli 302-395-2600

### SITE OPERATION HISTORY

The site area was excavated for sand and gravel from 1961 to 1964. The sand and gravel was used in the construction of roadways. The site was inactive from 1964 to 1988. In 1989, the property owner (Darrel Hitchins of Hitchins Construction Company) began using the borrow pit for disposal of construction and demolition debris. The debris reportedly consisted of lumber, bricks, concrete, and other rubble.

### ENVIRONMENTAL INVESTIGATIONS AND ACTIONS

A PA was conducted at the site in November 1989. The PA recommended that the site be referred to the DNREC Solid and Hazardous Waste Management Section (SHWMS) for further investigation. Contacted the SHWMS in 2015, they have no record of handling the site. Because hazardous substances were not documented, no further action was taken by DNREC-SIRS.

### CONTAMINANTS OF POTENTIAL CONCERN (COPC)

There are no contaminants of potential concern associated with the site.

### CLEANUP STAGE

No Further Action.

# Site Investigation & Restoration



Department of Natural Resources and Environmental Control (DNREC) • Site Investigation and Restoration Section (SIRS)

## SITE FACT SHEET

### Hitchens Pit (DE-0240)

#### SITE IMAGES



#### TITLE

Site Location

#### DATE

02/02/2015

#### DESCRIPTION

Aerial View from GoogleEarth.  
Approximate site Location at an RV  
Park.



#### TITLE

Hitchens Pit

#### DATE

05/22/2015

#### DESCRIPTION

Site Visit. The site is now an RV  
Park.

# Site Investigation & Restoration

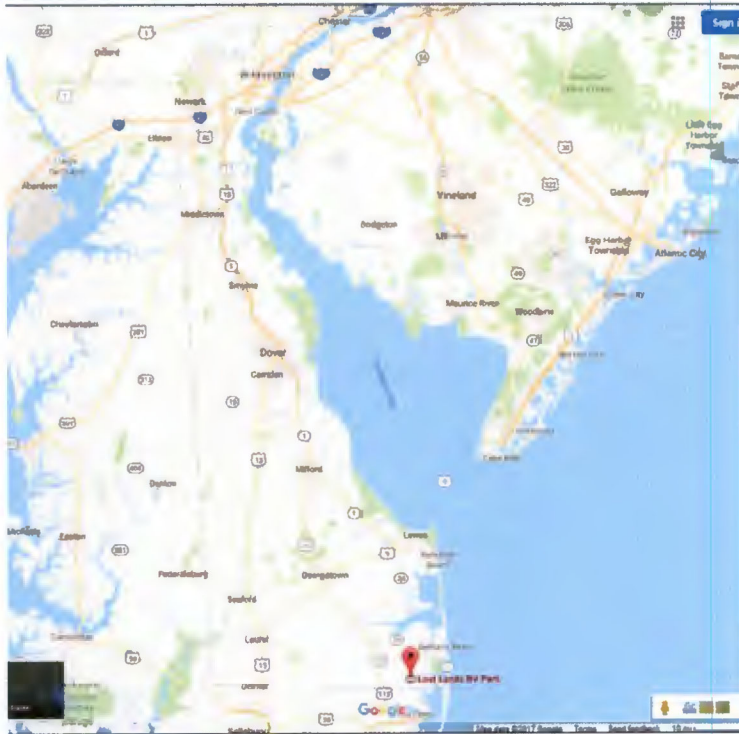


Department of Natural Resources and Environmental Control (DNREC) • Site Investigation and Restoration Section (SIRS)

## SITE FACT SHEET

Hitchens Pit (DE-0240)

### SITE MAPS



#### TITLE

Site Location

#### DATE

02/02/2015

#### DESCRIPTION

Site Location Map



# PHASE I ENVIRONMENTAL SITE ASSESSMENT CLIENT INTERVIEW QUESTIONNAIRE

**To:** Mr. Henry Mast, Bayside Developers, LLC

**From:** Sam Geer, Geo-Technology Associates, Inc.

**Date:** June 21, 2019



At your request, Geo-Technology Associates, Inc. (GTA) has started a Phase I Environmental Site Assessment (ESA) of **Twin Cedars** in **Sussex County, Delaware**. As you probably know, we use the Phase I ESA to evaluate the likelihood that the subject property may have been impacted with petroleum or hazardous substances (i.e., we identify Recognized Environmental Conditions [RECs]).

Based on the ASTM Standard (E1527-13), we need to ask you (as our client and the "User" of the report) several questions about the subject property. You've asked us to develop a professional opinion about the subject property's environmental condition. But in order to prepare an ASTM-compliant Phase I ESA, we also need to use any relevant knowledge that you may have.

Please review the questions below and provide your responses (to the best of your knowledge), explaining any "yes" answers at the bottom of the page. Please either return the completed form, or call me to discuss with verbal responses.

<b>1.</b>	Do you know of any environmental cleanup liens against the subject property (filed under federal, tribal, state, or local law)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are you aware of any "activity and use limitations" (AULs), such as engineering controls, land use restrictions, institutional controls, that are in place at the subject property? (e.g., deed notice, capped soil, groundwater use restrictions, residential prohibition, etc.)	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>3.</b>	Do you have any specialized knowledge or experience related to the environmental condition of the subject property or nearby properties? (e.g., familiarity with a particular business activity or land use on or near the site)	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>4.</b>	Do you have reason to believe that the purchase price of the subject property has been lowered because contamination is known or believed to be present?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>5.</b>	Are you aware of information about the subject property that would help identify conditions indicative of releases or threatened releases? (e.g., past uses, above or below ground storage tanks, chemical storage, spills, cleanups, etc.)	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>6.</b>	Do you know of any obvious indicators that point to the presence or likely presence of contamination at the subject property?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Please explain any "yes" answers: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name \_\_\_\_\_

Company \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_



Twin Cedars  
Zion Church Road  
Selbyville, DE 19975

Inquiry Number: 5658753.5

May 21, 2019

## Certified Sanborn® Map Report



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

# Certified Sanborn® Map Report

05/21/19

**Site Name:**

Twin Cedars  
Zion Church Road  
Selbyville, DE 19975  
EDR Inquiry # 5658753.5

**Client Name:**

Geo-Technology Associates Inc.  
3445-A Box Hill Corporate  
Abingdon, MD 21009  
Contact: Kaelyn Thornton



The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Geo-Technology Associates Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting [www.edrnet.com/sanborn](http://www.edrnet.com/sanborn).

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

## Certified Sanborn Results:

**Certification #** D864-4E94-B228  
**PO #** 31190731  
**Project** Twin Cedars

### UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.



Sanborn® Library search results

Certification #: D864-4E94-B228

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- Library of Congress
- University Publications of America
- EDR Private Collection

*The Sanborn Library LLC Since 1866™*

### Limited Permission To Make Copies

Geo-Technology Associates Inc. (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

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## **APPENDIX D**

# **EDR RADIUS MAP™ REPORT**





**Twin Cedars**

Zion Church Road  
Selbyville, DE 19975

Inquiry Number: 5658753.2s  
May 21, 2019

# The EDR Radius Map™ Report



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)



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Orphan Summary.....	11
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## GEOCHECK ADDENDUM

GeoCheck - Not Requested

*Thank you for your business.*  
Please contact EDR at 1-800-352-0050  
with any questions or comments.

### **Disclaimer - Copyright and Trademark Notice**

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## EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

### TARGET PROPERTY INFORMATION

#### ADDRESS

ZION CHURCH ROAD  
SELBYVILLE, DE 19975

#### COORDINATES

Latitude (North): 38.4777480 - 38° 28' 39.89"  
Longitude (West): 75.1529160 - 75° 9' 10.49"  
Universal Transverse Mercator: Zone 18  
UTM X (Meters): 486661.6  
UTM Y (Meters): 4258628.5  
Elevation: 15 ft. above sea level

### USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map: 6051100 SELBYVILLE, DE  
Version Date: 2014

### AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from: 20150801  
Source: USDA

MAPPED SITES SUMMARY

Target Property Address:  
ZION CHURCH ROAD  
SELBYVILLE, DE 19975

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
<a href="#">1</a>	HITCHENS PIT	RD 390 A	SEMS-ARCHIVE, SHWS	Lower	896, 0.170, South



# EXECUTIVE SUMMARY

## TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

## DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

## STANDARD ENVIRONMENTAL RECORDS

### ***Federal NPL site list***

NPL..... National Priority List  
Proposed NPL..... Proposed National Priority List Sites  
NPL LIENS..... Federal Superfund Liens

### ***Federal Delisted NPL site list***

Delisted NPL..... National Priority List Deletions

### ***Federal CERCLIS list***

FEDERAL FACILITY..... Federal Facility Site Information listing  
SEMS..... Superfund Enterprise Management System

### ***Federal RCRA CORRACTS facilities list***

CORRACTS..... Corrective Action Report

### ***Federal RCRA non-CORRACTS TSD facilities list***

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

### ***Federal RCRA generators list***

RCRA-LQG..... RCRA - Large Quantity Generators  
RCRA-SQG..... RCRA - Small Quantity Generators  
RCRA-CESQG..... RCRA - Conditionally Exempt Small Quantity Generator

### ***Federal institutional controls / engineering controls registries***

LUCIS..... Land Use Control Information System  
US ENG CONTROLS..... Engineering Controls Sites List  
US INST CONTROL..... Sites with Institutional Controls

### ***Federal ERNS list***

ERNS..... Emergency Response Notification System

# EXECUTIVE SUMMARY

## ***State and tribal landfill and/or solid waste disposal site lists***

SWF/LF..... Solid Waste Facilities

## ***State and tribal leaking storage tank lists***

LUST..... Leaking Underground Storage Tank Project Listing  
LAST..... Leaking Aboveground Storage Tank Sites  
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

## ***State and tribal registered storage tank lists***

FEMA UST..... Underground Storage Tank Listing  
UST..... Underground Storage Tank Database  
AST..... Aboveground Storage Tank Sites  
INDIAN UST..... Underground Storage Tanks on Indian Land

## ***State and tribal institutional control / engineering control registries***

INST CONTROL..... All Sites with Deed Restrictions

## ***State and tribal voluntary cleanup sites***

VCP..... Voluntary Cleanup Program Sites  
INDIAN VCP..... Voluntary Cleanup Priority Listing

## ***State and tribal Brownfields sites***

BROWNFIELDS..... Certified Brownfields

## **ADDITIONAL ENVIRONMENTAL RECORDS**

### ***Local Brownfield lists***

US BROWNFIELDS..... A Listing of Brownfields Sites

### ***Local Lists of Landfill / Solid Waste Disposal Sites***

SWRCY..... Recyclers Directory  
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands  
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations  
ODI..... Open Dump Inventory  
IHS OPEN DUMPS..... Open Dumps on Indian Land

### ***Local Lists of Hazardous waste / Contaminated Sites***

US HIST CDL..... Delisted National Clandestine Laboratory Register  
US CDL..... National Clandestine Laboratory Register

### ***Local Land Records***

LIENS 2..... CERCLA Lien Information

### ***Records of Emergency Release Reports***

HMIRS..... Hazardous Materials Information Reporting System

## EXECUTIVE SUMMARY

SPILLS..... Environmental Release Notification System

### ***Other Ascertainable Records***

RCRA NonGen / NLR..... RCRA - Non Generators / No Longer Regulated  
FUDS..... Formerly Used Defense Sites  
DOD..... Department of Defense Sites  
SCRD DRYCLEANERS..... State Coalition for Remediation of Drycleaners Listing  
US FIN ASSUR..... Financial Assurance Information  
EPA WATCH LIST..... EPA WATCH LIST  
2020 COR ACTION..... 2020 Corrective Action Program List  
TSCA..... Toxic Substances Control Act  
TRIS..... Toxic Chemical Release Inventory System  
SSTS..... Section 7 Tracking Systems  
ROD..... Records Of Decision  
RMP..... Risk Management Plans  
RAATS..... RCRA Administrative Action Tracking System  
PRP..... Potentially Responsible Parties  
PADS..... PCB Activity Database System  
ICIS..... Integrated Compliance Information System  
FTTS..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)  
MLTS..... Material Licensing Tracking System  
COAL ASH DOE..... Steam-Electric Plant Operation Data  
COAL ASH EPA..... Coal Combustion Residues Surface Impoundments List  
PCB TRANSFORMER..... PCB Transformer Registration Database  
RADINFO..... Radiation Information Database  
HIST FTTS..... FIFRA/TSCA Tracking System Administrative Case Listing  
DOT OPS..... Incident and Accident Data  
CONSENT..... Superfund (CERCLA) Consent Decrees  
INDIAN RESERV..... Indian Reservations  
FUSRAP..... Formerly Utilized Sites Remedial Action Program  
UMTRA..... Uranium Mill Tailings Sites  
LEAD SMELTERS..... Lead Smelter Sites  
US AIRS..... Aerometric Information Retrieval System Facility Subsystem  
US MINES..... Mines Master Index File  
ABANDONED MINES..... Abandoned Mines  
FINDS..... Facility Index System/Facility Registry System  
UXO..... Unexploded Ordnance Sites  
ECHO..... Enforcement & Compliance History Information  
DOCKET HWC..... Hazardous Waste Compliance Docket Listing  
FUELS PROGRAM..... EPA Fuels Program Registered Listing  
AIRS..... Air Emissions Listing  
DRYCLEANERS..... Drycleaner Facility Listing  
ENF..... Notice of Violations  
Financial Assurance..... Financial Assurance Information Listing  
NPDES..... Wastewater Permit Listing  
TIER 2..... Tier 2 Facility Listing  
UIC..... Underground Injection Wells Inventory Listing

### **EDR HIGH RISK HISTORICAL RECORDS**

#### ***EDR Exclusive Records***

EDR MGP..... EDR Proprietary Manufactured Gas Plants

## EXECUTIVE SUMMARY

EDR Hist Auto..... EDR Exclusive Historical Auto Stations  
EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

### EDR RECOVERED GOVERNMENT ARCHIVES

#### ***Exclusive Recovered Govt. Archives***

RGA HWS..... Recovered Government Archive State Hazardous Waste Facilities List  
RGA LF..... Recovered Government Archive Solid Waste Facilities List

### SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

### STANDARD ENVIRONMENTAL RECORDS

#### ***Federal CERCLIS NFRAP site list***

SEMS-ARCHIVE: SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be potential NPL site.

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 03/11/2019 has revealed that there is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the target property.

<u>Lower Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
<b><i>HITCHENS PIT</i></b> Site ID: 0303899 EPA Id: DED984066886	<b><i>RD 390 A</i></b>	<b><i>S 1/8 - 1/4 (0.170 mi.)</i></b>	<b><i>1</i></b>	<b><i>8</i></b>

## EXECUTIVE SUMMARY

### **State- and tribal - equivalent CERCLIS**

SHWS: Hazardous Substance Release Sites.

A review of the SHWS list, as provided by EDR, and dated 02/11/2019 has revealed that there is 1 SHWS site within approximately 1 mile of the target property.

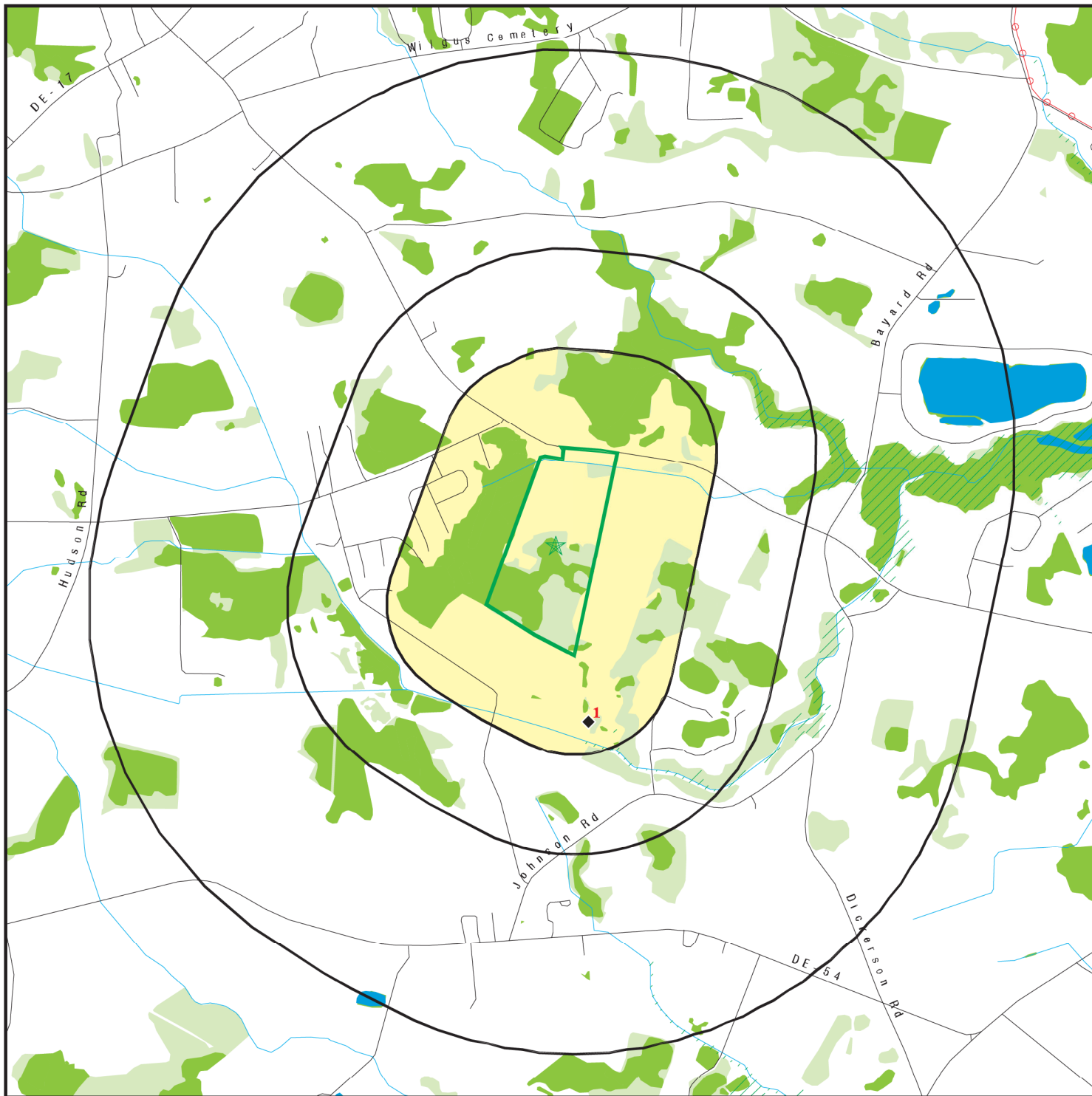
<u>Lower Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
<b>HITCHENS PIT</b> Facility Id: 10056272 Prog ID: DE-0240	<b>RD 390 A</b>	<b>S 1/8 - 1/4 (0.170 mi.)</b>	<b>1</b>	<b>8</b>













## EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 2 records.

<u>Site Name</u>	<u>Database(s)</u>
SAVAGE RESIDENCE	LUST
TWIN CEDARS - ZION CHURCH RD, FRAN	FINDS

# OVERVIEW MAP - 5658753.2S



-  Target Property
-  Sites at elevations higher than or equal to the target property
-  Sites at elevations lower than the target property
-  Manufactured Gas Plants
-  National Priority List Sites
-  Dept. Defense Sites
-  Indian Reservations BIA
-  Power transmission lines
-  100-year flood zone
-  500-year flood zone
-  National Wetland Inventory
-  State Wetlands








This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.






SITE NAME: Twin Cedars  
 ADDRESS: Zion Church Road  
 Selbyville DE 19975  
 LAT/LONG: 38.477748 / 75.152916

CLIENT: Geo-Technology Associates Inc.  
 CONTACT: Kaelyn Thornton  
 INQUIRY #: 5658753.2s  
 DATE: May 21, 2019 11:17 am

# DETAIL MAP - 5658753.2S



-  Target Property
-  Sites at elevations higher than or equal to the target property
-  Sites at elevations lower than the target property
-  Manufactured Gas Plants
-  Sensitive Receptors
-  National Priority List Sites
-  Dept. Defense Sites

-  Indian Reservations BIA
-  100-year flood zone
-  500-year flood zone
-  National Wetland Inventory
-  State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Twin Cedars  
 ADDRESS: Zion Church Road  
 Selbyville DE 19975  
 LAT/LONG: 38.477748 / 75.152916

CLIENT: Geo-Technology Associates Inc.  
 CONTACT: Kaelyn Thornton  
 INQUIRY #: 5658753.2s  
 DATE: May 21, 2019 11:18 am



## MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
<b>STANDARD ENVIRONMENTAL RECORDS</b>								
<b><i>Federal NPL site list</i></b>								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
<b><i>Federal Delisted NPL site list</i></b>								
Delisted NPL	1.000		0	0	0	0	NR	0
<b><i>Federal CERCLIS list</i></b>								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
<b><i>Federal CERCLIS NFRAP site list</i></b>								
SEMS-ARCHIVE	0.500		0	1	0	NR	NR	1
<b><i>Federal RCRA CORRACTS facilities list</i></b>								
CORRACTS	1.000		0	0	0	0	NR	0
<b><i>Federal RCRA non-CORRACTS TSD facilities list</i></b>								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
<b><i>Federal RCRA generators list</i></b>								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
<b><i>Federal institutional controls / engineering controls registries</i></b>								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
<b><i>Federal ERNS list</i></b>								
ERNS	TP		NR	NR	NR	NR	NR	0
<b><i>State- and tribal - equivalent CERCLIS</i></b>								
SHWS	1.000		0	1	0	0	NR	1
<b><i>State and tribal landfill and/or solid waste disposal site lists</i></b>								
SWF/LF	0.500		0	0	0	NR	NR	0
<b><i>State and tribal leaking storage tank lists</i></b>								
LUST	0.500		0	0	0	NR	NR	0
LAST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
<b><i>State and tribal registered storage tank lists</i></b>								
FEMA UST	0.250		0	0	NR	NR	NR	0

## MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
<b><i>State and tribal institutional control / engineering control registries</i></b>								
INST CONTROL	0.500		0	0	0	NR	NR	0
<b><i>State and tribal voluntary cleanup sites</i></b>								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
<b><i>State and tribal Brownfields sites</i></b>								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
<b><u>ADDITIONAL ENVIRONMENTAL RECORDS</u></b>								
<b><i>Local Brownfield lists</i></b>								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
<b><i>Local Lists of Landfill / Solid Waste Disposal Sites</i></b>								
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
<b><i>Local Lists of Hazardous waste / Contaminated Sites</i></b>								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
<b><i>Local Land Records</i></b>								
LIENS 2	TP		NR	NR	NR	NR	NR	0
<b><i>Records of Emergency Release Reports</i></b>								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
<b><i>Other Ascertainable Records</i></b>								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0



## MAP FINDINGS SUMMARY

<u>Database</u>	<u>Search Distance (Miles)</u>	<u>Target Property</u>	<u>&lt; 1/8</u>	<u>1/8 - 1/4</u>	<u>1/4 - 1/2</u>	<u>1/2 - 1</u>	<u>&gt; 1</u>	<u>Total Plotted</u>
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NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

1  
South  
1/8-1/4  
0.170 mi.  
896 ft.

HITCHENS PIT  
RD 390 A  
BUNTING, DE 19975

SEMS-ARCHIVE 1003866740  
SHWS DED984066886

Relative:  
Lower  
Actual:  
13 ft.

SEMS Archive:  
Site ID: 0303899  
EPA ID: DED984066886  
Cong District: 01  
FIPS Code: 10005  
FF: N  
NPL: Not on the NPL  
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

SEMS Archive Detail:

Region: 03  
Site ID: 0303899  
EPA ID: DED984066886  
Site Name: HITCHENS PIT  
NPL: N  
FF: N  
OU: 00  
Action Code: VS  
Action Name: ARCH SITE  
SEQ: 1  
Start Date: Not reported  
Finish Date: 1990-05-31 04:00:00  
Qual: Not reported  
Current Action Lead: EPA Perf In-Hse

Region: 03  
Site ID: 0303899  
EPA ID: DED984066886  
Site Name: HITCHENS PIT  
NPL: N  
FF: N  
OU: 00  
Action Code: DS  
Action Name: DISCVRY  
SEQ: 1  
Start Date: 1990-04-03 04:00:00  
Finish Date: 1990-04-03 04:00:00  
Qual: Not reported  
Current Action Lead: St Perf

Region: 03  
Site ID: 0303899  
EPA ID: DED984066886  
Site Name: HITCHENS PIT  
NPL: N  
FF: N  
OU: 00  
Action Code: PA  
Action Name: PA  
SEQ: 1  
Start Date: Not reported  
Finish Date: 1990-05-31 04:00:00  
Qual: N  
Current Action Lead: St Perf

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

HITCHENS PIT (Continued)

1003866740

SHWS:

Facility ID: 10056272  
Site Type: Debris Disposal Area  
Care Of: Not reported  
PI ID: 27067  
Prog ID: DE-0240  
Additional Info: HSCA  
Reference Pt: Facility/Interest Center  
Horizontal Method: Photo Interpolation-2002 Orthophoto  
Loc Type: P  
XCoordinate NAD83 Meters: 223240.16  
YCoordinate NAD83 Meters: 52335.53  
Latitude Dec: 38.471389  
Longitude Dec: -75.15139  
Latitude Degrees: 38  
Latitude Minutes: 28  
Latitude Seconds: 17.0004  
Longitude Degrees: -75  
Longitude Minutes: 9  
Longitude Seconds: 5.004  
PO Name: Selbyville  
Tax ID: Not reported  
Sewer District: Not reported  
Floodplain Zone Code: Not reported  
Flood Plain Zone: Not reported  
Basin: Inland Bays/Atlantic Ocean  
Watershed: Little Assawoman  
DRBC\_Basin: N  
Quad: SELBYVILLE  
Senate District: 20  
Senator: Senator Gerald W. Hocker  
House District: 38  
Representative: Representative Ronald E. Gray  
School District: Milford  
GMZ Name: Not reported  
AG Pres District: Not reported  
Water District: Not reported  
Mod Grid: 202-052

Facility ID: 10056272  
Site Type: Debris Disposal Area  
Care Of: Not reported  
PI ID: 27067  
Prog ID: DE-0240  
Additional Info: Pre Remedial (PA/SI)  
Reference Pt: Facility/Interest Center  
Horizontal Method: Photo Interpolation-2002 Orthophoto  
Loc Type: P  
XCoordinate NAD83 Meters: 223240.16  
YCoordinate NAD83 Meters: 52335.53  
Latitude Dec: 38.471389  
Longitude Dec: -75.15139  
Latitude Degrees: 38  
Latitude Minutes: 28  
Latitude Seconds: 17.0004  
Longitude Degrees: -75  
Longitude Minutes: 9

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HITCHENS PIT (Continued)**

**1003866740**

Longitude Seconds:	5.004
PO Name:	Selbyville
Tax ID:	Not reported
Sewer District:	Not reported
Floodplain Zone Code:	Not reported
Flood Plain Zone:	Not reported
Basin:	Inland Bays/Atlantic Ocean
Watershed:	Little Assawoman
DRBC_Basin:	N
Quad:	SELBYVILLE
Senate District:	20
Senator:	Senator Gerald W. Hocker
House District:	38
Representative:	Representative Ronald E. Gray
School District:	Milford
GMZ Name:	Not reported
AG Pres District:	Not reported
Water District:	Not reported
Mod Grid:	202-052

Count: 2 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
FRANKFORD	S122881183	SAVAGE RESIDENCE	37024 JOHNSON ROAD	19945	LUST
SUSSEX COUNTY	1015890394	TWIN CEDARS - ZION CHURCH RD, FRAN	ZION CHURCH ROAD		FINDS



# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

**Number of Days to Update:** Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

## STANDARD ENVIRONMENTAL RECORDS

### ***Federal NPL site list***

#### **NPL: National Priority List**

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/11/2019	Source: EPA
Date Data Arrived at EDR: 04/18/2019	Telephone: N/A
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 04/18/2019
Number of Days to Update: 26	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

#### **NPL Site Boundaries**

##### **Sources:**

EPA's Environmental Photographic Interpretation Center (EPIC)  
Telephone: 202-564-7333

EPA Region 1  
Telephone 617-918-1143

EPA Region 6  
Telephone: 214-655-6659

EPA Region 3  
Telephone 215-814-5418

EPA Region 7  
Telephone: 913-551-7247

EPA Region 4  
Telephone 404-562-8033

EPA Region 8  
Telephone: 303-312-6774

EPA Region 5  
Telephone 312-886-6686

EPA Region 9  
Telephone: 415-947-4246

EPA Region 10  
Telephone 206-553-8665

#### **Proposed NPL: Proposed National Priority List Sites**

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/11/2019	Source: EPA
Date Data Arrived at EDR: 04/18/2019	Telephone: N/A
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 04/18/2019
Number of Days to Update: 26	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

#### **NPL LIENS: Federal Superfund Liens**

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/15/1991  
Date Data Arrived at EDR: 02/02/1994  
Date Made Active in Reports: 03/30/1994  
Number of Days to Update: 56

Source: EPA  
Telephone: 202-564-4267  
Last EDR Contact: 08/15/2011  
Next Scheduled EDR Contact: 11/28/2011  
Data Release Frequency: No Update Planned

## ***Federal Delisted NPL site list***

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/11/2019  
Date Data Arrived at EDR: 04/18/2019  
Date Made Active in Reports: 05/14/2019  
Number of Days to Update: 26

Source: EPA  
Telephone: N/A  
Last EDR Contact: 04/18/2019  
Next Scheduled EDR Contact: 07/15/2019  
Data Release Frequency: Quarterly

## ***Federal CERCLIS list***

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019  
Date Data Arrived at EDR: 04/05/2019  
Date Made Active in Reports: 05/14/2019  
Number of Days to Update: 39

Source: Environmental Protection Agency  
Telephone: 703-603-8704  
Last EDR Contact: 04/05/2019  
Next Scheduled EDR Contact: 07/15/2019  
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 03/11/2019  
Date Data Arrived at EDR: 03/14/2019  
Date Made Active in Reports: 04/17/2019  
Number of Days to Update: 34

Source: EPA  
Telephone: 800-424-9346  
Last EDR Contact: 04/18/2019  
Next Scheduled EDR Contact: 07/29/2019  
Data Release Frequency: Quarterly

## ***Federal CERCLIS NFRAP site list***

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 03/11/2019	Source: EPA
Date Data Arrived at EDR: 03/14/2019	Telephone: 800-424-9346
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 04/18/2019
Number of Days to Update: 34	Next Scheduled EDR Contact: 07/29/2019
	Data Release Frequency: Quarterly

## ***Federal RCRA CORRACTS facilities list***

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2019	Source: EPA
Date Data Arrived at EDR: 03/27/2019	Telephone: 800-424-9346
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

## ***Federal RCRA non-CORRACTS TSD facilities list***

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: 800-438-2474
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

## ***Federal RCRA generators list***

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: 800-438-2474
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: 800-438-2474
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

## RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: 800-438-2474
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

## ***Federal institutional controls / engineering controls registries***

### LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/22/2019	Source: Department of the Navy
Date Data Arrived at EDR: 03/07/2019	Telephone: 843-820-7326
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 05/10/2019
Number of Days to Update: 41	Next Scheduled EDR Contact: 08/26/2019
	Data Release Frequency: Varies

### US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/31/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/04/2019	Telephone: 703-603-0695
Date Made Active in Reports: 03/08/2019	Last EDR Contact: 02/04/2019
Number of Days to Update: 32	Next Scheduled EDR Contact: 06/10/2019
	Data Release Frequency: Varies

### US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/31/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/04/2019	Telephone: 703-603-0695
Date Made Active in Reports: 03/08/2019	Last EDR Contact: 02/04/2019
Number of Days to Update: 32	Next Scheduled EDR Contact: 06/10/2019
	Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## ***Federal ERNS list***

### **ERNS: Emergency Response Notification System**

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/25/2019  
Date Data Arrived at EDR: 03/26/2019  
Date Made Active in Reports: 05/01/2019  
Number of Days to Update: 36

Source: National Response Center, United States Coast Guard  
Telephone: 202-267-2180  
Last EDR Contact: 03/26/2019  
Next Scheduled EDR Contact: 07/08/2019  
Data Release Frequency: Quarterly

## ***State- and tribal - equivalent CERCLIS***

### **SHWS: Hazardous Substance Release Sites**

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 02/11/2019  
Date Data Arrived at EDR: 02/12/2019  
Date Made Active in Reports: 04/10/2019  
Number of Days to Update: 57

Source: Department of Natural Resources and Environmental Control  
Telephone: 302-395-2600  
Last EDR Contact: 05/17/2019  
Next Scheduled EDR Contact: 08/26/2019  
Data Release Frequency: Annually

## ***State and tribal landfill and/or solid waste disposal site lists***

### **SWF/LF: Solid Waste Facilities**

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 01/02/2019  
Date Data Arrived at EDR: 01/02/2019  
Date Made Active in Reports: 02/14/2019  
Number of Days to Update: 43

Source: Department of Natural Resources and Environmental Control  
Telephone: 302-739-3820  
Last EDR Contact: 04/02/2019  
Next Scheduled EDR Contact: 07/15/2019  
Data Release Frequency: Quarterly

## ***State and tribal leaking storage tank lists***

### **LAST: Leaking Aboveground Storage Tank Sites**

Leaking aboveground storage tank site locations.

Date of Government Version: 04/15/2019  
Date Data Arrived at EDR: 04/16/2019  
Date Made Active in Reports: 04/18/2019  
Number of Days to Update: 2

Source: Department of Natural Resources & Control  
Telephone: 302-395-2500  
Last EDR Contact: 04/16/2019  
Next Scheduled EDR Contact: 07/29/2019  
Data Release Frequency: Quarterly

### **LUST: Leaking Underground Storage Tank Project Listing**

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 01/14/2019  
Date Data Arrived at EDR: 01/15/2019  
Date Made Active in Reports: 02/14/2019  
Number of Days to Update: 30

Source: Department of Natural Resources and Environmental Control  
Telephone: 302-395-2500  
Last EDR Contact: 04/16/2019  
Next Scheduled EDR Contact: 07/29/2019  
Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/12/2018	Source: EPA, Region 5
Date Data Arrived at EDR: 03/07/2019	Telephone: 312-886-7439
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/24/2018	Source: EPA Region 4
Date Data Arrived at EDR: 03/12/2019	Telephone: 404-562-8677
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 50	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/17/2018	Source: EPA Region 10
Date Data Arrived at EDR: 03/07/2019	Telephone: 206-553-2857
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/10/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/08/2019	Telephone: 415-972-3372
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 54	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/16/2018	Source: EPA Region 8
Date Data Arrived at EDR: 03/07/2019	Telephone: 303-312-6271
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/19/2019	Source: EPA Region 7
Date Data Arrived at EDR: 03/07/2019	Telephone: 913-551-7003
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 11/01/2018	Source: EPA Region 6
Date Data Arrived at EDR: 03/07/2019	Telephone: 214-665-6597
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/13/2018	Source: EPA Region 1
Date Data Arrived at EDR: 03/07/2019	Telephone: 617-918-1313
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## **State and tribal registered storage tank lists**

### FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017	Source: FEMA
Date Data Arrived at EDR: 05/30/2017	Telephone: 202-646-5797
Date Made Active in Reports: 10/13/2017	Last EDR Contact: 04/25/2019
Number of Days to Update: 136	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Varies

### UST: Underground Storage Tank Database

Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 01/14/2019	Source: Department of Natural Resources and Environmental Control
Date Data Arrived at EDR: 01/15/2019	Telephone: 302-395-2500
Date Made Active in Reports: 02/15/2019	Last EDR Contact: 04/16/2019
Number of Days to Update: 31	Next Scheduled EDR Contact: 07/29/2019
	Data Release Frequency: Quarterly

### AST: Aboveground Storage Tank Sites

Facilities with aboveground storage tanks.

Date of Government Version: 04/01/2019	Source: Department of Natural Resources and Environmental Control
Date Data Arrived at EDR: 04/02/2019	Telephone: 302-739-4764
Date Made Active in Reports: 04/18/2019	Last EDR Contact: 04/02/2019
Number of Days to Update: 16	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

### INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/10/2018	Source: EPA Region 9
Date Data Arrived at EDR: 03/08/2019	Telephone: 415-972-3368
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 54	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

### INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/17/2018	Source: EPA Region 10
Date Data Arrived at EDR: 03/07/2019	Telephone: 206-553-2857
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/16/2018	Source: EPA Region 8
Date Data Arrived at EDR: 03/07/2019	Telephone: 303-312-6137
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/07/2018	Source: EPA Region 7
Date Data Arrived at EDR: 03/07/2019	Telephone: 913-551-7003
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 11/01/2018	Source: EPA Region 6
Date Data Arrived at EDR: 03/07/2019	Telephone: 214-665-7591
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/12/2018	Source: EPA Region 5
Date Data Arrived at EDR: 03/07/2019	Telephone: 312-886-6136
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/03/2018	Source: EPA, Region 1
Date Data Arrived at EDR: 03/07/2019	Telephone: 617-918-1313
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/24/2018	Source: EPA Region 4
Date Data Arrived at EDR: 03/12/2019	Telephone: 404-562-9424
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 50	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies



# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## ***State and tribal institutional control / engineering control registries***

### **Inst Control: All Sites with Deed Restrictions**

Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/11/2019	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 02/12/2019	Telephone: 302-395-2600
Date Made Active in Reports: 04/10/2019	Last EDR Contact: 05/17/2019
Number of Days to Update: 57	Next Scheduled EDR Contact: 08/26/2019
	Data Release Frequency: Quarterly

## ***State and tribal voluntary cleanup sites***

### **VCP: Voluntary Cleanup Program Sites**

When a property is contaminated with hazardous substances there are liabilities associated with the cleanup of the site under Federal and State Superfund laws, regardless of who caused the contamination and when it was caused. Because of this liability, old industrial sites (with contamination) located close to well developed infrastructure do not attract developers or buyers. These individuals prefer to purchase pristine property without contamination known as "greenfield." Under the Voluntary Cleanup Program (VCP) developers and buyers performing the cleanup of contaminated properties would be provided the much needed protection from potential liabilities for past contamination. Thus, they can proceed with the purchase or development of the property with the assurance that they will not be held liable for environmental problems that were a result of past practices at the site.

Date of Government Version: 02/11/2019	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 02/12/2019	Telephone: 302-395-2600
Date Made Active in Reports: 04/10/2019	Last EDR Contact: 05/17/2019
Number of Days to Update: 57	Next Scheduled EDR Contact: 08/26/2019
	Data Release Frequency: Annually

### **INDIAN VCP R1: Voluntary Cleanup Priority Listing**

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015	Source: EPA, Region 1
Date Data Arrived at EDR: 09/29/2015	Telephone: 617-918-1102
Date Made Active in Reports: 02/18/2016	Last EDR Contact: 03/25/2019
Number of Days to Update: 142	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Varies

### **INDIAN VCP R7: Voluntary Cleanup Priority Listing**

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008	Source: EPA, Region 7
Date Data Arrived at EDR: 04/22/2008	Telephone: 913-551-7365
Date Made Active in Reports: 05/19/2008	Last EDR Contact: 04/20/2009
Number of Days to Update: 27	Next Scheduled EDR Contact: 07/20/2009
	Data Release Frequency: Varies

## ***State and tribal Brownfields sites***

### **BROWNFIELDS: Certified Brownfields**

Sites that have requested brownfields certification from the Secretary of DNREC.

Date of Government Version: 10/30/2018	Source: Dept. of Natural Resources & Environmental Control
Date Data Arrived at EDR: 02/07/2019	Telephone: 302-739-4764
Date Made Active in Reports: 04/10/2019	Last EDR Contact: 05/06/2019
Number of Days to Update: 62	Next Scheduled EDR Contact: 08/19/2019
	Data Release Frequency: Semi-Annually

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## ADDITIONAL ENVIRONMENTAL RECORDS

### **Local Brownfield lists**

#### US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/17/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/18/2018	Telephone: 202-566-2777
Date Made Active in Reports: 01/11/2019	Last EDR Contact: 03/19/2019
Number of Days to Update: 24	Next Scheduled EDR Contact: 07/01/2019
	Data Release Frequency: Semi-Annually

### **Local Lists of Landfill / Solid Waste Disposal Sites**

#### SWRCY: Recyclers Directory

A listing of recycling facilities.

Date of Government Version: 03/21/2019	Source: Delaware Economic Development Office
Date Data Arrived at EDR: 03/22/2019	Telephone: 302-739-4271
Date Made Active in Reports: 04/10/2019	Last EDR Contact: 03/22/2019
Number of Days to Update: 19	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Varies

#### INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/03/2007	Telephone: 703-308-8245
Date Made Active in Reports: 01/24/2008	Last EDR Contact: 04/26/2019
Number of Days to Update: 52	Next Scheduled EDR Contact: 08/12/2019
	Data Release Frequency: Varies

#### ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/09/2004	Telephone: 800-424-9346
Date Made Active in Reports: 09/17/2004	Last EDR Contact: 06/09/2004
Number of Days to Update: 39	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

#### DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009	Source: EPA, Region 9
Date Data Arrived at EDR: 05/07/2009	Telephone: 415-947-4219
Date Made Active in Reports: 09/21/2009	Last EDR Contact: 04/22/2019
Number of Days to Update: 137	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: No Update Planned

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014	Source: Department of Health & Human Services, Indian Health Service
Date Data Arrived at EDR: 08/06/2014	Telephone: 301-443-1452
Date Made Active in Reports: 01/29/2015	Last EDR Contact: 04/23/2019
Number of Days to Update: 176	Next Scheduled EDR Contact: 08/12/2019
	Data Release Frequency: Varies

## Local Lists of Hazardous waste / Contaminated Sites

### US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/24/2019	Source: Drug Enforcement Administration
Date Data Arrived at EDR: 02/26/2019	Telephone: 202-307-1000
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 02/21/2019
Number of Days to Update: 50	Next Scheduled EDR Contact: 06/10/2019
	Data Release Frequency: No Update Planned

### US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/24/2019	Source: Drug Enforcement Administration
Date Data Arrived at EDR: 02/26/2019	Telephone: 202-307-1000
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 02/21/2019
Number of Days to Update: 50	Next Scheduled EDR Contact: 06/10/2019
	Data Release Frequency: Quarterly

## Local Land Records

### LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 03/11/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/14/2019	Telephone: 202-564-6023
Date Made Active in Reports: 03/21/2019	Last EDR Contact: 04/18/2019
Number of Days to Update: 7	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Semi-Annually

## Records of Emergency Release Reports

### HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/25/2019	Source: U.S. Department of Transportation
Date Data Arrived at EDR: 03/26/2019	Telephone: 202-366-4555
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 03/26/2019
Number of Days to Update: 49	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## SPILLS: Environmental Release Notification System

The Department of Natural Resources and Environmental Control (DNREC) developed this system to allow Delawareans to learn promptly of releases or discharges of contaminants or pollutants that meet or exceed certain thresholds in their neighborhoods or throughout the state.

Date of Government Version: 01/22/2019	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 01/23/2019	Telephone: 302-739-9902
Date Made Active in Reports: 02/15/2019	Last EDR Contact: 04/09/2019
Number of Days to Update: 23	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Semi-Annually

## Other Ascertainable Records

### RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: 800-438-2474
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

### FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015	Source: U.S. Army Corps of Engineers
Date Data Arrived at EDR: 07/08/2015	Telephone: 202-528-4285
Date Made Active in Reports: 10/13/2015	Last EDR Contact: 04/03/2019
Number of Days to Update: 97	Next Scheduled EDR Contact: 06/03/2019
	Data Release Frequency: Varies

### DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005	Source: USGS
Date Data Arrived at EDR: 11/10/2006	Telephone: 888-275-8747
Date Made Active in Reports: 01/11/2007	Last EDR Contact: 04/12/2019
Number of Days to Update: 62	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Semi-Annually

### FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005	Source: U.S. Geological Survey
Date Data Arrived at EDR: 02/06/2006	Telephone: 888-275-8747
Date Made Active in Reports: 01/11/2007	Last EDR Contact: 04/12/2019
Number of Days to Update: 339	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: N/A

### SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 01/01/2017  
Date Data Arrived at EDR: 02/03/2017  
Date Made Active in Reports: 04/07/2017  
Number of Days to Update: 63

Source: Environmental Protection Agency  
Telephone: 615-532-8599  
Last EDR Contact: 05/13/2019  
Next Scheduled EDR Contact: 08/26/2019  
Data Release Frequency: Varies

## US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/25/2019  
Date Data Arrived at EDR: 03/26/2019  
Date Made Active in Reports: 05/07/2019  
Number of Days to Update: 42

Source: Environmental Protection Agency  
Telephone: 202-566-1917  
Last EDR Contact: 03/26/2019  
Next Scheduled EDR Contact: 07/08/2019  
Data Release Frequency: Quarterly

## EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013  
Date Data Arrived at EDR: 03/21/2014  
Date Made Active in Reports: 06/17/2014  
Number of Days to Update: 88

Source: Environmental Protection Agency  
Telephone: 617-520-3000  
Last EDR Contact: 05/06/2019  
Next Scheduled EDR Contact: 08/19/2019  
Data Release Frequency: Quarterly

## 2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017  
Date Data Arrived at EDR: 05/08/2018  
Date Made Active in Reports: 07/20/2018  
Number of Days to Update: 73

Source: Environmental Protection Agency  
Telephone: 703-308-4044  
Last EDR Contact: 05/10/2019  
Next Scheduled EDR Contact: 08/19/2019  
Data Release Frequency: Varies

## TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016  
Date Data Arrived at EDR: 06/21/2017  
Date Made Active in Reports: 01/05/2018  
Number of Days to Update: 198

Source: EPA  
Telephone: 202-260-5521  
Last EDR Contact: 03/22/2019  
Next Scheduled EDR Contact: 07/01/2019  
Data Release Frequency: Every 4 Years

## TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/31/2016  
Date Data Arrived at EDR: 01/10/2018  
Date Made Active in Reports: 01/12/2018  
Number of Days to Update: 2

Source: EPA  
Telephone: 202-566-0250  
Last EDR Contact: 02/20/2019  
Next Scheduled EDR Contact: 06/03/2019  
Data Release Frequency: Annually

## SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009  
Date Data Arrived at EDR: 12/10/2010  
Date Made Active in Reports: 02/25/2011  
Number of Days to Update: 77

Source: EPA  
Telephone: 202-564-4203  
Last EDR Contact: 04/24/2019  
Next Scheduled EDR Contact: 08/05/2019  
Data Release Frequency: Annually

## ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 03/11/2019  
Date Data Arrived at EDR: 03/14/2019  
Date Made Active in Reports: 04/01/2019  
Number of Days to Update: 18

Source: EPA  
Telephone: 703-416-0223  
Last EDR Contact: 04/18/2019  
Next Scheduled EDR Contact: 06/17/2019  
Data Release Frequency: Annually

## RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2019  
Date Data Arrived at EDR: 02/14/2019  
Date Made Active in Reports: 03/21/2019  
Number of Days to Update: 35

Source: Environmental Protection Agency  
Telephone: 202-564-8600  
Last EDR Contact: 04/22/2019  
Next Scheduled EDR Contact: 08/05/2019  
Data Release Frequency: Varies

## RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995  
Date Data Arrived at EDR: 07/03/1995  
Date Made Active in Reports: 08/07/1995  
Number of Days to Update: 35

Source: EPA  
Telephone: 202-564-4104  
Last EDR Contact: 06/02/2008  
Next Scheduled EDR Contact: 09/01/2008  
Data Release Frequency: No Update Planned

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 03/11/2019	Source: EPA
Date Data Arrived at EDR: 03/14/2019	Telephone: 202-564-6023
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 05/10/2019
Number of Days to Update: 34	Next Scheduled EDR Contact: 08/19/2019
	Data Release Frequency: Quarterly

## PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2019	Source: EPA
Date Data Arrived at EDR: 04/10/2019	Telephone: 202-566-0500
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 04/10/2019
Number of Days to Update: 34	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Annually

## ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016	Source: Environmental Protection Agency
Date Data Arrived at EDR: 11/23/2016	Telephone: 202-564-2501
Date Made Active in Reports: 02/10/2017	Last EDR Contact: 04/08/2019
Number of Days to Update: 79	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Quarterly

## FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009	Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Date Data Arrived at EDR: 04/16/2009	Telephone: 202-566-1667
Date Made Active in Reports: 05/11/2009	Last EDR Contact: 08/18/2017
Number of Days to Update: 25	Next Scheduled EDR Contact: 12/04/2017
	Data Release Frequency: Quarterly

## FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009	Source: EPA
Date Data Arrived at EDR: 04/16/2009	Telephone: 202-566-1667
Date Made Active in Reports: 05/11/2009	Last EDR Contact: 08/18/2017
Number of Days to Update: 25	Next Scheduled EDR Contact: 12/04/2017
	Data Release Frequency: Quarterly

## MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016	Source: Nuclear Regulatory Commission
Date Data Arrived at EDR: 09/08/2016	Telephone: 301-415-7169
Date Made Active in Reports: 10/21/2016	Last EDR Contact: 04/22/2019
Number of Days to Update: 43	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005	Source: Department of Energy
Date Data Arrived at EDR: 08/07/2009	Telephone: 202-586-8719
Date Made Active in Reports: 10/22/2009	Last EDR Contact: 03/07/2019
Number of Days to Update: 76	Next Scheduled EDR Contact: 06/17/2019
	Data Release Frequency: Varies

## COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014	Source: Environmental Protection Agency
Date Data Arrived at EDR: 09/10/2014	Telephone: N/A
Date Made Active in Reports: 10/20/2014	Last EDR Contact: 03/05/2019
Number of Days to Update: 40	Next Scheduled EDR Contact: 06/17/2019
	Data Release Frequency: Varies

## PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017	Source: Environmental Protection Agency
Date Data Arrived at EDR: 11/30/2017	Telephone: 202-566-0517
Date Made Active in Reports: 12/15/2017	Last EDR Contact: 04/26/2019
Number of Days to Update: 15	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

## RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/02/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 04/02/2019	Telephone: 202-343-9775
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 04/02/2019
Number of Days to Update: 42	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

## HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/01/2007	Telephone: 202-564-2501
Date Made Active in Reports: 04/10/2007	Last EDR Contact: 12/17/2007
Number of Days to Update: 40	Next Scheduled EDR Contact: 03/17/2008
	Data Release Frequency: No Update Planned

## HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.



# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/19/2006  
Date Data Arrived at EDR: 03/01/2007  
Date Made Active in Reports: 04/10/2007  
Number of Days to Update: 40

Source: Environmental Protection Agency  
Telephone: 202-564-2501  
Last EDR Contact: 12/17/2008  
Next Scheduled EDR Contact: 03/17/2008  
Data Release Frequency: No Update Planned

## DOT OPS: Incident and Accident Data

Department of Transportation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 12/03/2018  
Date Data Arrived at EDR: 01/29/2019  
Date Made Active in Reports: 03/21/2019  
Number of Days to Update: 51

Source: Department of Transportation, Office of Pipeline Safety  
Telephone: 202-366-4595  
Last EDR Contact: 04/30/2019  
Next Scheduled EDR Contact: 08/12/2019  
Data Release Frequency: Quarterly

## CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2018  
Date Data Arrived at EDR: 02/11/2019  
Date Made Active in Reports: 03/21/2019  
Number of Days to Update: 38

Source: Department of Justice, Consent Decree Library  
Telephone: Varies  
Last EDR Contact: 04/05/2019  
Next Scheduled EDR Contact: 07/22/2019  
Data Release Frequency: Varies

## BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015  
Date Data Arrived at EDR: 02/22/2017  
Date Made Active in Reports: 09/28/2017  
Number of Days to Update: 218

Source: EPA/NTIS  
Telephone: 800-424-9346  
Last EDR Contact: 02/13/2019  
Next Scheduled EDR Contact: 06/03/2019  
Data Release Frequency: Biennially

## INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014  
Date Data Arrived at EDR: 07/14/2015  
Date Made Active in Reports: 01/10/2017  
Number of Days to Update: 546

Source: USGS  
Telephone: 202-208-3710  
Last EDR Contact: 04/11/2019  
Next Scheduled EDR Contact: 07/22/2019  
Data Release Frequency: Semi-Annually

## FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017  
Date Data Arrived at EDR: 09/11/2018  
Date Made Active in Reports: 09/14/2018  
Number of Days to Update: 3

Source: Department of Energy  
Telephone: 202-586-3559  
Last EDR Contact: 05/02/2019  
Next Scheduled EDR Contact: 08/19/2019  
Data Release Frequency: Varies

## UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 06/23/2017  
Date Data Arrived at EDR: 10/11/2017  
Date Made Active in Reports: 11/03/2017  
Number of Days to Update: 23

Source: Department of Energy  
Telephone: 505-845-0011  
Last EDR Contact: 02/22/2019  
Next Scheduled EDR Contact: 06/03/2019  
Data Release Frequency: Varies

## LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 04/11/2019  
Date Data Arrived at EDR: 04/18/2019  
Date Made Active in Reports: 05/14/2019  
Number of Days to Update: 26

Source: Environmental Protection Agency  
Telephone: 703-603-8787  
Last EDR Contact: 04/18/2019  
Next Scheduled EDR Contact: 07/15/2019  
Data Release Frequency: Varies

## LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931 and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001  
Date Data Arrived at EDR: 10/27/2010  
Date Made Active in Reports: 12/02/2010  
Number of Days to Update: 36

Source: American Journal of Public Health  
Telephone: 703-305-6451  
Last EDR Contact: 12/02/2009  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

## US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016  
Date Data Arrived at EDR: 10/26/2016  
Date Made Active in Reports: 02/03/2017  
Number of Days to Update: 100

Source: EPA  
Telephone: 202-564-2496  
Last EDR Contact: 09/26/2017  
Next Scheduled EDR Contact: 01/08/2018  
Data Release Frequency: Annually

## US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016  
Date Data Arrived at EDR: 10/26/2016  
Date Made Active in Reports: 02/03/2017  
Number of Days to Update: 100

Source: EPA  
Telephone: 202-564-2496  
Last EDR Contact: 09/26/2017  
Next Scheduled EDR Contact: 01/08/2018  
Data Release Frequency: Annually

## US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/27/2018  
Date Data Arrived at EDR: 02/27/2019  
Date Made Active in Reports: 04/01/2019  
Number of Days to Update: 33

Source: Department of Labor, Mine Safety and Health Administration  
Telephone: 303-231-5959  
Last EDR Contact: 02/27/2019  
Next Scheduled EDR Contact: 06/10/2019  
Data Release Frequency: Semi-Annually

## US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/05/2005  
Date Data Arrived at EDR: 02/29/2008  
Date Made Active in Reports: 04/18/2008  
Number of Days to Update: 49

Source: USGS  
Telephone: 703-648-7709  
Last EDR Contact: 03/01/2019  
Next Scheduled EDR Contact: 06/10/2019  
Data Release Frequency: Varies

## US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011  
Date Data Arrived at EDR: 06/08/2011  
Date Made Active in Reports: 09/13/2011  
Number of Days to Update: 97

Source: USGS  
Telephone: 703-648-7709  
Last EDR Contact: 03/01/2019  
Next Scheduled EDR Contact: 06/10/2019  
Data Release Frequency: Varies

## ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/27/2019  
Date Data Arrived at EDR: 03/28/2019  
Date Made Active in Reports: 05/01/2019  
Number of Days to Update: 34

Source: Department of Interior  
Telephone: 202-208-2609  
Last EDR Contact: 03/21/2019  
Next Scheduled EDR Contact: 06/24/2019  
Data Release Frequency: Quarterly

## FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/15/2019  
Date Data Arrived at EDR: 03/05/2019  
Date Made Active in Reports: 03/15/2019  
Number of Days to Update: 10

Source: EPA  
Telephone: (215) 814-5000  
Last EDR Contact: 03/05/2019  
Next Scheduled EDR Contact: 06/17/2019  
Data Release Frequency: Quarterly

## DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018  
Date Data Arrived at EDR: 07/26/2018  
Date Made Active in Reports: 10/05/2018  
Number of Days to Update: 71

Source: Environmental Protection Agency  
Telephone: 202-564-0527  
Last EDR Contact: 03/01/2019  
Next Scheduled EDR Contact: 06/10/2019  
Data Release Frequency: Varies

## UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017  
Date Data Arrived at EDR: 01/17/2019  
Date Made Active in Reports: 04/01/2019  
Number of Days to Update: 74

Source: Department of Defense  
Telephone: 703-704-1564  
Last EDR Contact: 04/15/2019  
Next Scheduled EDR Contact: 07/29/2019  
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/03/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/05/2019	Telephone: 202-564-2280
Date Made Active in Reports: 04/01/2019	Last EDR Contact: 04/09/2019
Number of Days to Update: 27	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Quarterly

## FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/19/2019	Source: EPA
Date Data Arrived at EDR: 02/21/2019	Telephone: 800-385-6164
Date Made Active in Reports: 04/01/2019	Last EDR Contact: 02/21/2019
Number of Days to Update: 39	Next Scheduled EDR Contact: 06/03/2019
	Data Release Frequency: Quarterly

## AIRS: Air Emissions Listing

A listing of facilities with air emissions.

Date of Government Version: 04/01/2019	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 04/02/2019	Telephone: 302-323-4542
Date Made Active in Reports: 04/18/2019	Last EDR Contact: 04/02/2019
Number of Days to Update: 16	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

## DRYCLEANERS: DRYCLEANERS

A listing of drycleaner facility locations.

Date of Government Version: 01/18/2019	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 01/24/2019	Telephone: 302-739-9400
Date Made Active in Reports: 02/14/2019	Last EDR Contact: 02/26/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 06/10/2019
	Data Release Frequency: Varies

## ENFORCEMENT: Notice of Violations

Notice of violations are based on the observations of, and information submitted to, DNREC personnel. They only represent preliminary findings of the Department and are subject to further technical and legal review. These notices may or may not result in an enforcement action. Divisions included are Water Resources Air & Waste Management

Date of Government Version: 01/22/2019	Source: Department of Natural Resources & Conservation
Date Data Arrived at EDR: 01/24/2019	Telephone: 302-738-9401
Date Made Active in Reports: 02/14/2019	Last EDR Contact: 04/25/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 08/12/2019
	Data Release Frequency: Semi-Annually

## Financial Assurance 1: Financial Assurance Information Listing

Financial assurance information for hazardous waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay

Date of Government Version: 01/10/2018	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 01/11/2018	Telephone: 302-739-9403
Date Made Active in Reports: 01/16/2018	Last EDR Contact: 04/05/2019
Number of Days to Update: 5	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## Financial Assurance 2: Financial Assurance Information Listing

Financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay

Date of Government Version: 01/10/2018	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 01/11/2018	Telephone: 302-739-9403
Date Made Active in Reports: 02/21/2018	Last EDR Contact: 04/05/2019
Number of Days to Update: 41	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Varies

## Financial Assurance 3: Financial Assurance Information Listing

Underground storage tank financial assurance information.

Date of Government Version: 01/14/2019	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 01/15/2019	Telephone: 302-395-2500
Date Made Active in Reports: 02/15/2019	Last EDR Contact: 04/16/2019
Number of Days to Update: 31	Next Scheduled EDR Contact: 07/29/2019
	Data Release Frequency: Quarterly

## NPDES: Wasterwater Permit Listing

A listing of wastewater permits.

Date of Government Version: 04/01/2019	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 04/02/2019	Telephone: 302-739-9946
Date Made Active in Reports: 04/18/2019	Last EDR Contact: 04/02/2019
Number of Days to Update: 16	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

## TIER 2: Tier 2 Facility Listing

A listing of facilities which store or manufacture hazardous materials that submit a chemical inventory report.

Date of Government Version: 12/31/2016	Source: Department of Natural Resources & Environmental Control
Date Data Arrived at EDR: 11/27/2017	Telephone: 302-739-9405
Date Made Active in Reports: 01/19/2018	Last EDR Contact: 04/25/2019
Number of Days to Update: 53	Next Scheduled EDR Contact: 08/12/2019
	Data Release Frequency: Annually

## UIC: Underground Injection Wells Inventory Listing

A listing of underground injection well locations.

Date of Government Version: 01/16/2019	Source: DNREC
Date Data Arrived at EDR: 01/25/2019	Telephone: 302-739-9948
Date Made Active in Reports: 02/15/2019	Last EDR Contact: 04/22/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Semi-Annually

## **EDR HIGH RISK HISTORICAL RECORDS**

### ***EDR Exclusive Records***

#### EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: N/A  
Date Data Arrived at EDR: N/A  
Date Made Active in Reports: N/A  
Number of Days to Update: N/A

Source: EDR, Inc.  
Telephone: N/A  
Last EDR Contact: N/A  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

## EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A  
Date Data Arrived at EDR: N/A  
Date Made Active in Reports: N/A  
Number of Days to Update: N/A

Source: EDR, Inc.  
Telephone: N/A  
Last EDR Contact: N/A  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: Varies

## EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A  
Date Data Arrived at EDR: N/A  
Date Made Active in Reports: N/A  
Number of Days to Update: N/A

Source: EDR, Inc.  
Telephone: N/A  
Last EDR Contact: N/A  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: Varies

## EDR RECOVERED GOVERNMENT ARCHIVES

### *Exclusive Recovered Govt. Archives*

#### RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Natural Resources and Environmental Control in Delaware.

Date of Government Version: N/A  
Date Data Arrived at EDR: 07/01/2013  
Date Made Active in Reports: 01/15/2014  
Number of Days to Update: 198

Source: Department of Natural Resources and Environmental Control  
Telephone: N/A  
Last EDR Contact: 06/01/2012  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: Varies

#### RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Natural Resources and Environmental Control in Delaware.

Date of Government Version: N/A  
Date Data Arrived at EDR: 07/01/2013  
Date Made Active in Reports: 01/17/2014  
Number of Days to Update: 200

Source: Department of Natural Resources and Environmental Control  
Telephone: N/A  
Last EDR Contact: 06/01/2012  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

### CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/11/2019	Source: Department of Energy & Environmental Protection
Date Data Arrived at EDR: 02/12/2019	Telephone: 860-424-3375
Date Made Active in Reports: 03/04/2019	Last EDR Contact: 05/14/2019
Number of Days to Update: 20	Next Scheduled EDR Contact: 08/26/2019
	Data Release Frequency: No Update Planned

### NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2018	Source: Department of Environmental Protection
Date Data Arrived at EDR: 04/10/2019	Telephone: N/A
Date Made Active in Reports: 05/16/2019	Last EDR Contact: 04/10/2019
Number of Days to Update: 36	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Annually

### NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 01/30/2019	Telephone: 518-402-8651
Date Made Active in Reports: 02/14/2019	Last EDR Contact: 05/01/2019
Number of Days to Update: 15	Next Scheduled EDR Contact: 08/12/2019
	Data Release Frequency: Quarterly

### PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017	Source: Department of Environmental Protection
Date Data Arrived at EDR: 10/23/2018	Telephone: 717-783-8990
Date Made Active in Reports: 11/27/2018	Last EDR Contact: 04/15/2019
Number of Days to Update: 35	Next Scheduled EDR Contact: 07/29/2019
	Data Release Frequency: Annually

### RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2017	Source: Department of Environmental Management
Date Data Arrived at EDR: 02/23/2018	Telephone: 401-222-2797
Date Made Active in Reports: 04/09/2018	Last EDR Contact: 05/17/2019
Number of Days to Update: 45	Next Scheduled EDR Contact: 09/02/2019
	Data Release Frequency: Annually

### WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017	Source: Department of Natural Resources
Date Data Arrived at EDR: 06/15/2018	Telephone: N/A
Date Made Active in Reports: 07/09/2018	Last EDR Contact: 03/11/2019
Number of Days to Update: 24	Next Scheduled EDR Contact: 06/24/2019
	Data Release Frequency: Annually

### Oil/Gas Pipelines

Source: PennWell Corporation

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### Electric Power Transmission Line Data

Source: PennWell Corporation

This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

**Sensitive Receptors:** There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

### AHA Hospitals:

Source: American Hospital Association, Inc.

Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

### Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services

Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

### Nursing Homes

Source: National Institutes of Health

Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

### Public Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

### Private Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

### Daycare Centers: Child Care Facility List

Source: Department of Services for Children

Telephone: 302-633-2500

**Flood Zone Data:** This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA

Telephone: 877-336-2627

Date of Government Version: 2003, 2015

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

### State Wetlands Data: Statewide Wetlands Mapping Project

Source: Dept. of Natural Resources & Environmental Conservation

Telephone: 302-739-4691

### Current USGS 7.5 Minute Topographic Map

Source: U.S. Geological Survey



# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## STREET AND ADDRESS INFORMATION

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***Appendix 9 – Traffic Analysis***

**Service Level Evaluation, DeIDOT, November 13, 2019**

**TIS Approval Letter – Twin Cedars, DeIDOT, July 13, 2020**





STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. Box 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

November 13, 2019

Ms. Janelle Cornwell, Director  
Sussex County Planning & Zoning  
P.O. Box 417  
Georgetown, DE 19947

Dear Ms. Cornwell:

The Department has completed its review of a Service Level Evaluation Request for the **Bay Developers, LLC (Mr. Henry Mast)** rezoning application, which we received on October 17, 2019. This application is for an approximately 64.22-acre parcel (Tax Parcel: 533-11.00-42.00). The subject land is located on the south side Zion Church Road (Sussex Road 382), approximately 800 feet east of the intersection of Zion Church Road (Sussex Road 382) and Deer Run Road (Sussex Road 388). The subject land is currently split-zoned as CR-1 (Commercial Residential) and GR (General Residential), and the applicant is seeking a residential planned community (RPC) overlay approval for the GR portion to develop 44 single-family detached houses, 44 townhouses, and 168 apartment units.

Per the 2018 Delaware Vehicle Volume Summary, the annual average and summer average daily traffic volumes along the segment of Zion Church Road where the subject land is located, which is from Bayard Road (Sussex Road 384) to Frankford School Road (Sussex Road 92), are 5,305 and 6,628 vehicles per day, respectively.

Based on our review, we estimate that the proposed land use would generate more than 50 vehicle trips in any hour or 500 vehicle trips per day, and would be considered to have a Major impact to the local area roadways. In this instance, the Department considers a Major impact to be when a proposed land use would generate more than 200 vehicle trips in any hour of the week and / or 2,000 vehicle trips per day. According to the Institute of Transportation Engineers (ITE) Trip Generation Manual, the proposed development would generate 2,051 vehicle trips per day, 133 vehicle trips during the morning peak hour, and 161 vehicle trips during the afternoon peak hour. Because of this impact, we recommend that the applicant be required to perform a Traffic Impact Study (TIS) for the subject application.



Ms. Janelle M. Cornwell  
Page 2 of 3  
November 13, 2019

If the County approves this application, the applicant should be reminded that DelDOT requires compliance with State regulations regarding plan approvals and entrance permits, whether or not a TIS is required.

Please contact Mr. Claudy Joinville, at (302) 760-2124, if you have questions concerning this correspondence.

Sincerely,

T. William Brockenbrough, Jr.  
County Coordinator  
Development Coordination

TWB:cjm

cc: Constance C. Holland, Coordinator, Cabinet Committee on State Planning Issues  
Bay Developers, LLC (Mr. Henry Mast), Applicant  
J. Marc Coté, Assistant Director, Development Coordination  
Gemez Norwood, South District Public Works Manager, Maintenance and Operations  
Susanne Laws, Sussex County Subdivision Coordinator, Development Coordination  
Derek Sapp, Subdivision Manager, Development Coordination  
Kevin Hickman, Subdivision Manager, Development Coordination  
Brian Yates, Subdivision Manager, Development Coordination  
John Andrescavage, Subdivision Manager, Development Coordination  
Troy Brestel, Project Engineer, Development Coordination  
Claudy Joinville, Project Engineer, Development Coordination



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

July 13, 2020

Mr. Joe Caloggero  
The Traffic Group, Inc.  
9900 Franklin Square Drive  
Suite H  
Baltimore, MD 21236

Dear Mr. Caloggero:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Twin Cedars** (Protocol Tax Parcel 533-11.00-42.00) development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

Troy Brestel  
Project Engineer

TEB:km

Enclosures

cc with enclosures: Ms. Constance C. Holland, Office of State Planning Coordination  
Mr. Jamie Whitehouse, Sussex County Planning and Zoning  
Mr. Andrew Parker, McCormick Taylor, Inc.  
Mr. Kevin Hickman, Johnson, Mirmiran & Thompson, Inc.  
DelDOT Distribution

## DelDOT Distribution

Brad Eaby, Deputy Attorney General  
J. Marc Coté, Director, Planning  
Shanté Hastings, Director, Transportation Solutions (DOTS)  
Mark Luszcz, Deputy Director, DOTS  
Michael Simmons, Assistant Director, Project Development South, DOTS  
Todd Sammons, Assistant Director, Development Coordination  
T. William Brockenbrough, Jr., County Coordinator, Development Coordination  
Peter Haag, Chief Traffic Engineer, Traffic, DOTS  
Chris Sylvester, Traffic Studies Manager, Traffic, DOTS  
Alistair Probert, South District Engineer, South District  
Gemez Norwood, South District Public Works Supervisor, South District  
Jared Kaufmann, Service Development Planner, Delaware Transit Corporation  
Tremica Cherry, Service Development Planner, Delaware Transit Corporation  
Susanne Laws, Sussex Review Coordinator, Development Coordination  
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning  
James Argo, Sussex Plan Reviewer, South District  
Mark Galipo, Traffic Engineer, Traffic, DOTS  
Claudy Joinville, Project Engineer, Development Coordination





July 10, 2020

Mr. Troy E. Brestel  
Project Engineer  
DelDOT Division of Planning  
P.O. Box 778  
Dover, DE 19903

RE: Agreement No. 1946F  
Traffic Impact Study Services  
**Task No. 1A Subtask 01A – Twin Cedars**

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Twin Cedars residential development prepared by The Traffic Group, Inc. dated March 9, 2020. The Traffic Group prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed Twin Cedars residential development, proposed to be located along Delaware Route 20 (Zion Church Road / Sussex Road 382) between Deer Run Road (Sussex Road 388) and Bayard Road (Sussex Road 384) / Johnson Road (Sussex Road 382A) in Sussex County, Delaware. The proposed development would consist of 44 single-family detached houses, 44 townhouses, and 168 apartments. One full-access driveway is proposed on Delaware Route 20. Construction is expected to be complete by 2026.

The subject land is located on an approximately 64.22-acre parcel. The land is currently split zoned as C-1 (General Commercial) and GR (General Residential), and the developer is seeking a residential planned community (RPC) overlay for the GR portion in Sussex County.

Currently, there is one active DelDOT project within the study area. The project involves planned improvements at the intersection of Delaware Route 20 and Bayard Road/Johnson Road. In late 2018 and early 2019, DelDOT's Traffic Studies Section conducted a traffic study and solicited public input to evaluate possible safety improvements at this unsignalized two-way stop-controlled intersection. Through this process, DelDOT determined that a traffic signal is recommended for this intersection. This recommendation and the associated documentation has been sent to DelDOT's Traffic Design Section to start programming the design work. The construction date is to be determined.

Based on our review, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Delaware 20 and Bayard Road / Johnson Road	Unsignalized	2019 Existing summer Saturday (Case 1); 2026 without Twin Cedars summer Saturday (Case 2); 2026 with Twin Cedars summer Saturday (Case 3)

Delaware Route 20 and Bayard Road / Johnson Road

This unsignalized intersection experiences LOS deficiencies in the Saturday midday peak hour for 2019 existing conditions, 2026 conditions without Twin Cedars, and 2026 conditions with Twin Cedars. DelDOT has evaluated various improvement options for this intersection and determined that a traffic signal is recommended; to this end, the developer should make an equitable share contribution toward the installation of a traffic signal, as described below in Item No. 2.

Should the County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should construct the full-movement site access on Delaware Route 20. The proposed configuration is shown in the table below. This proposed site driveway should be constructed directly across from the existing Bayside Mini Storage driveway.

<b>Approach</b>	<b>Existing Configuration</b>	<b>Proposed Configuration</b>
Eastbound Delaware Route 20	One shared left-turn/through lane	One left-turn lane, one through lane, and one right-turn lane
Westbound Delaware Route 20	One shared through/right-turn lane	One left-turn lane and one shared through/right-turn lane
Northbound Site Access	Approach does not exist	One shared left-turn/through lane and one right-turn lane
Southbound Bayside Mini Storage driveway	One shared left/right-turn lane	One shared left/through/right-turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT’s Development Coordination Section to determine final turn-lane lengths during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Delaware Route 20	50 feet *	290 feet **
Westbound Delaware Route 20	210 feet **	N/A
Northbound Site Access	N/A	50 feet ***
Southbound Bayside Mini Storage driveway	N/A	N/A

- \* Turn lane is not warranted per DelDOT’s *Auxiliary Lane Worksheet*, but is recommended for safety to shadow the required westbound left-turn lane.
- \*\* Initial turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*.
- \*\*\* Initial turn-lane length based on storage length per queuing analysis, with 50-foot minimum

2. The developer should coordinate with DelDOT regarding an equitable share contribution toward a DelDOT project to install a traffic signal at the intersection of Delaware Route 20 and Bayard Road / Johnson Road. The amount of the contribution should be determined through coordination with DelDOT’s Development Coordination Section. At least one other developer is required to contribute to this improvement as well.
3. The following bicycle and pedestrian improvements should be included:
  - a. Adjacent to the proposed right-turn lane on eastbound Delaware Route 20 at the proposed site entrance, a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel
  - b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
  - c. Utility covers should be made flush with the pavement.
  - d. If clubhouses or other community facilities are constructed as shown on the site plan, bicycle parking should be provided near building entrances. Where building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.
  - e. A minimum 15-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontage along Delaware Route 20.

- f. Within the easement along the Delaware Route 20 site frontage, a minimum of a ten-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed. The shared-use path should meet AASHTO and ADA standards and should have a minimum of a five-foot buffer from the roadway. At the property boundaries, the shared-use path should connect to the adjacent property or to the shoulder in accordance with DelDOT's *Shared-Use Path and/or Sidewalk Termination Reference Guide* dated August 1, 2018. The developer should coordinate with DelDOT's Development Coordination Section to determine the details of the shared-use path connections at the property boundaries.
- g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- h. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. Internal sidewalks in the development should connect to the proposed shared-use path along Delaware Route 20.
- i. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.

Improvements in this TIS may be considered "significant" under DelDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT's website at [http://deldot.gov/Publications/manuals/de\\_mutcd/index.shtml](http://deldot.gov/Publications/manuals/de_mutcd/index.shtml).

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DelDOT's site plan review process.

Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at [ajparker@mccormicktaylor.com](mailto:ajparker@mccormicktaylor.com) if you have any questions concerning this review.

Sincerely,

**McCormick Taylor, Inc.**

A handwritten signature in black ink, appearing to read "Andrew J. Parker".

Andrew J. Parker, PE, PTOE  
Project Manager

Enclosure

## **General Information**

**Report date:** March 9, 2020

**Prepared by:** The Traffic Group, Inc.

**Prepared for:** Bay Developers, LLC

**Tax parcel:** 533-11.00-42.00

**Generally consistent with DelDOT's Development Coordination Manual:** Yes

## **Project Description and Background**

**Description:** The proposed Twin Cedars development consists of 44 single-family detached houses, 44 townhouses, and 168 apartments.

**Location:** The site is located along Delaware Route 20 (Zion Church Road / Sussex Road 382) between Deer Run Road (Sussex Road 388) and Bayard Road (Sussex Road 384) / Johnson Road (Sussex Road 382A) in unincorporated Sussex County. A site location map is included on page 6.

**Amount of land to be developed:** approximately 64.22 acre parcel

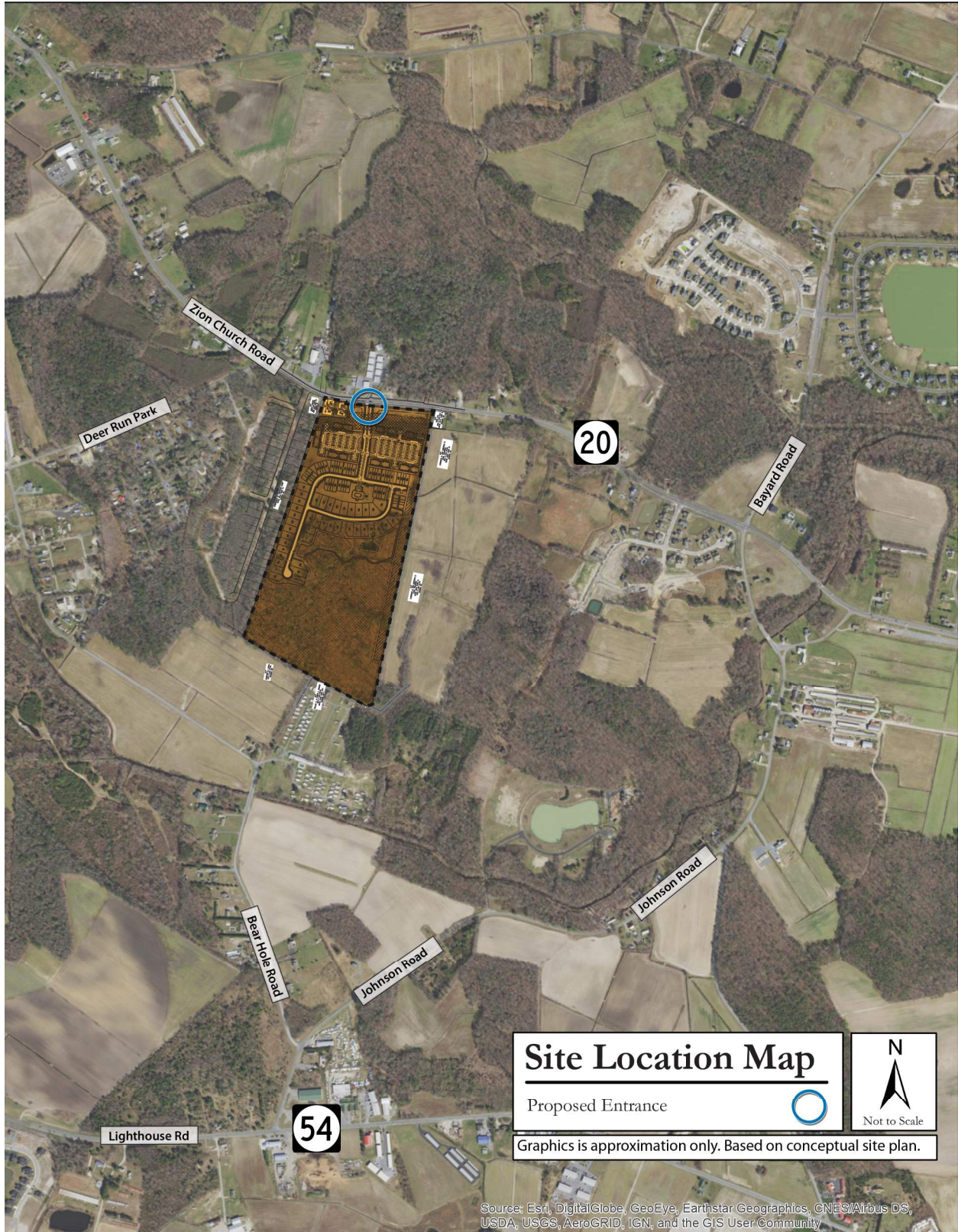
**Land use approval(s) needed:** Subdivision approval. The land is currently split zoned as C-1 (General Commercial) and GR (General Residential), and the developer is seeking a residential planned community (RPC) overlay for the GR portion in Sussex County.

**Proposed completion year:** 2026

**Proposed access locations:** One full-access driveway is proposed on Delaware Route 20.

**Daily Traffic Volumes (per DelDOT Traffic Summary 2019):**

- 2019 Average Annual Daily Traffic on Delaware Route 20: 6,635 vehicles/day



## **2015 Delaware Strategies for State Policies and Spending**

### **Location with respect to the Strategies for State Policies and Spending Map of Delaware:**

The proposed Twin Cedars residential development is located within Investment Level 3.

#### *Investment Level 3*

Investment Level 3 reflects areas where growth is anticipated by local, county, and state plans in the longer-term future. Investment Level 3 areas generally fall into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities, but where development is not necessary to accommodate expected short-term population growth. The second category includes lands that are adjacent to fast-growing Investment Level 1 and 2 areas but are often impacted by environmentally sensitive features, agricultural-preservation issues, or other infrastructure issues. In these instances, development and growth may be appropriate in the near term, but the resources on the site and in the surrounding area should be carefully considered and accommodated by state Agencies and local governments with land-use authority.

Generally, Investment Level 3 areas should not be developed until surrounding Investment Level 1 and 2 areas are substantially built out. From a housing perspective, Investment Level 3 areas are characterized by low density and rural homes. New housing developments in the short term would, in most cases, represent leap-frog development, which is undesirable. Higher density housing in Investment Level 3 areas is more appropriate once Level 2 areas are built out and utilities are available.

### **Proposed Development's Compatibility with Strategies for State Policies and Spending:**

The proposed Twin Cedars residential development includes 44 single-family detached houses, 44 townhouses, and 168 apartments located within an Investment Level 3 area. Investment Level 3 reflects areas where growth is anticipated by the county in the long-term. Given that the location is in a Growth Area as defined by Sussex County and that the anticipated opening date for this development is three years out, the proposed development generally appears to comply with the guidelines of Investment Level 3 areas as described in the 2015 "Strategies for State Policies and Spending."

## **Comprehensive Plan**

### **Sussex County Comprehensive Plan:**

*(Source: Sussex County Comprehensive Plan, March 2019)*

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed development parcel is within a Coastal Area (categorized as a Growth Area).

Growth Areas, including the Coastal Area, are designed to accommodate concentrated levels of development. Sussex County has designated the areas around Rehoboth Bay, Indian River Bay, and Little Assawoman Bay (the inland bays) as Coastal Areas. Coastal Areas generally encompass areas on the south-eastern side of Sussex County within what was previously referred to as the Environmentally Sensitive Developing Areas of prior Comprehensive Plans. The updated name more accurately reflects the function of this land use classification. While the Coastal Area is a

Growth Area, additional considerations should be taken into account in this Area that may not apply in other Growth Areas.

The Coastal Area designation is intended to recognize two characteristics. First, this region is among the most desirable locations in Sussex County for new housing, as is reflected in new construction data and real estate prices. Second, this region contains ecologically important and sensitive characteristics as well as other coastal lands which help to absorb floodwaters and provide extensive habitat for native flora and fauna. This area also has significant impact upon water quality within the adjacent bays and inlets as well as upon natural the region's various habitats. And, these factors are themselves part of the reason that this Area is so desirable-making the protection of them important to both the environment and the economy.

The County has significant initiatives to extend public sewer service to replace inadequate on-site systems. Careful control of stormwater runoff is also an important concern in keeping sediment and other pollutants out of the Inland Bays.

The challenge in this region is to safeguard genuine natural areas and mitigate roadway congestion without stifling the tourism and real estate markets which: a) provide many jobs; b) create business for local entrepreneurs; and c) help keep local tax rates low.

The following guidelines should apply to future growth in Coastal Areas:

*Permitted Uses* – Coastal Areas are areas that can accommodate development provided special environmental concerns are addressed. A range of housing types should be permitted in Coastal Areas, including single-family homes, townhouses, and multi-family units. Retail and office uses are appropriate but larger shopping centers and office parks should be confined to selected locations with access along arterial roads. Appropriate mixed-use development should also be allowed. In doing so, careful mixtures of homes with light commercial, office and institutional uses can be appropriate to provide for convenient services and to allow people to work close to home. Major new industrial uses are not proposed in these areas.

*Densities* – Sussex County's base density of 2 units per acre is appropriate throughout this classification; however, medium and higher density (4-12 units per acre) can be appropriate in certain locations. Medium and higher density could be supported in areas: where there is central water and sewer; near sufficient commercial uses and employment centers; where it is in keeping with the character of the area; where it is along a main road or at/or near a major intersection; where there is adequate Level of Service; or where other considerations exist that are relevant to the requested project and density. A clustering option permitting smaller lots and additional flexibility in dimensional standards is encouraged on tracts of a certain minimum size, provided significant permanent common open space is preserved and the development is connected to central water and sewer service. The preservation of natural resources or open space is strongly encouraged in this land use classification. The County should revisit environmental protection in the Coastal Areas.

Specific regulations governing cluster developments are designated by zoning district. There currently is an option where density can be increased with optional density bonuses for certain



zoning districts. Those optional bonuses may involve payment of fees that fund permanent land preservation elsewhere in the County, or other options. RPC's are encouraged to allow for a mix of housing types and to preserve open space and natural areas/resources. Cluster development that allows for smaller lots and flexibility in dimensional standards is encouraged if the developer uses a cluster option that results in permanent preservation of a substantial percentage of the tract and/or natural areas/resources. Master planning should be encouraged especially for large-scale developments on large parcels or groups of parcels, higher density and mixed-use developments to provide flexibility in site design.

All applicants for developments of a minimum size (as specified in zoning) should continue to be required to provide information that analyzes the development's potential environmental impacts, including effects on stormwater runoff, nitrogen and phosphorous loading, wetlands, woodlands, wastewater treatment, water systems, and other matters that affect the ecological sensitivity of the inland bays.

*Infrastructure* – Central water and sewer facilities are strongly encouraged. If central utilities are not possible, permitted densities should be limited to two units per acre provided a septic permit can be approved.

**Proposed Development's Compatibility with Comprehensive Plan:** The proposed Twin Cedars residential development includes 44 single-family detached houses, 44 townhouses, and 168 apartments on a 64.22-acre parcel (a gross density of just under 4 units per acre). The land is currently split zoned as C-1 (General Commercial) and GR (General Residential), and the developer is seeking a residential planned community (RPC) overlay for the GR portion in Sussex County. The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed development parcel is within the Coastal Area (categorized as a Growth Area). The proposed development appears to comply with the characteristics and *Permitted Uses* for the Coastal Area. However, due to the some small lot sizes and overall density greater than 2 units per acre, along with the potential RPC overlay, this development raises questions regarding consistency with Sussex County regulations; therefore additional discussion may be required.

### **Relevant Projects in the DelDOT Capital Transportation Program**

Currently, there is one active DelDOT project within the study area. The project involves planned improvements at the intersection of Delaware Route 20 and Bayard Road/Johnson Road. In late 2018 and early 2019, DelDOT's Traffic Studies Section conducted a traffic study and solicited public input to evaluate possible safety improvements at this unsignalized two-way stop-controlled intersection. Through this process, DelDOT determined that a traffic signal is recommended for this intersection. This recommendation and the associated documentation has been sent to DelDOT's Traffic Design Section to start programming the design work. The construction date is to be determined.

## **Trip Generation**

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Tenth Edition, published by the Institute of Transportation Engineers (ITE). The following land use was utilized to estimate the amount of new traffic generated for this development:

- 44 Single-Family Detached Homes (ITE Land Use Code 210)
- 44 Multi-Family Housing Units, Low-Rise (ITE Land Use Code 220)
- 168 Multi-Family Housing Units, Mid-Rise (ITE Land Use Code 221)

Table 1  
TWIN CEDARS PEAK HOUR TRIP GENERATION

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
44 Single-Family Detached	9	27	36	29	17	46	30	25	55
44 Multi-Family Housing, Low-Rise	5	17	22	18	10	28	8	6	14
168 Multi-Family Housing, Mid-Rise	15	42	57	45	28	73	38	39	77
<b>TOTAL TRIPS</b>	29	86	115	92	55	147	76	70	146

## **Overview of TIS**

### **Intersections examined:**

- 1) Delaware Route 20 & Site Access
- 2) Delaware Route 20 & Deer Run Road
- 3) Delaware Route 20 & Bayard Road / Johnson Road

### **Conditions examined:**

- 1) 2019 existing (Case 1)
- 2) 2026 without Twin Cedars (Case 2)
- 3) 2026 with Twin Cedars (Case 3)

**Peak hours evaluated:** Weekday morning and evening and Saturday mid-day peak hours

### **Committed developments considered:**

- 1) Orr Property (a.k.a. Miller Creek) (135 single-family detached houses)
- 2) Estuary (284 single-family detached houses)
- 3) Fox Haven I (76 single-family detached houses; 4 unbuilt)
- 4) Fox Haven II (99 single-family detached houses)

## **Intersection Descriptions**

### **1) Delaware Route 20 & Site Access**

**Type of Control:** proposed one-way stop (T-intersection)

**Eastbound Approach:** (Delaware Route 20) existing one through lane; proposed one through lane and one right-turn lane

**Westbound Approach:** (Delaware Route 20) existing one through lane; proposed one left-turn lane and one through lane

**Northbound Approach:** (Site Access) proposed one shared left-turn/right-turn lane, stop control

### **2) Delaware Route 20 & Deer Run Road**

**Type of Control:** unsignalized

**Eastbound Approach:** (Delaware Route 20) one shared through/right-turn lane

**Westbound Approach:** (Delaware Route 20) one left-turn/through lane

**Northbound Approach:** (Deer Run Road) one shared left-turn/right-turn lane, stop control

### **3) Delaware Route 20 & Bayard Road / Johnson Road**

**Type of Control:** existing two-way stop; DelDOT traffic study proposes a traffic signal

**Eastbound Approach:** (Delaware Route 20) one left-turn lane, one through lane, one bicycle lane, and one right-turn lane

**Westbound Approach:** (Delaware Route 20) one shared left-turn/through/right-turn lane

**Northbound Approach:** (Johnson Road) one shared left-turn/through/right-turn lane, stop control

**Southbound Approach:** (Bayard Road) one shared left-turn/through/right-turn lane, stop control

## **Safety Evaluation**

**Crash Data:** Per current DelDOT policy, review of crash data was not conducted at this time.

**Sight Distance:** The proposed site access on Delaware Route 20 is located between two horizontal curves, so sight distance is limited looking in either direction (especially to the left) from the proposed northbound driveway approach. As always adequacy of available sight distance should be confirmed during the site plan review process for all proposed movements at the site accesses.

## **Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** Based on the current DART Bus Stop Map, the Delaware Transit Corporation (DTC) does not currently operate any fixed-route transit bus service in the area of the proposed Twin Cedars residential development.

**Planned transit service:** The TIS provided documentation of correspondence with a DTC representative who stated that no transit amenities are needed at this time. DTC has no plans to provide transit service to the area in the near future.

**Existing bicycle and pedestrian facilities:** The following study area roadways are identified as “Bicycling Routes” on the *Sussex County Bicycle Map* published by DelDOT:

- Delaware Route 20:
  - Regional Bicycle Route with bikeway
  - Over 5,000 vehicles daily
- Bayard Road: Connector bicycle route without bikeway
- Johnson Road: Connector bicycle route without bikeway

There are no existing sidewalks or exclusive pedestrian facilities in the immediate area of the proposed site entrance on Delaware Route 20. There are however new pedestrian facilities and bike lanes at the Delaware Route 20 & Bayard / Johnson Road intersection in the eastbound direction.

**Planned bicycle and pedestrian facilities:** The TIS provided documentation of correspondence with a representative from DelDOT’s Local Systems Planning Section who was contacted to determine requested accommodations for bicycles and pedestrians. It is requested that a 10-foot-wide Multi-Use Pathway would be needed across the frontage.

### **Previous Comments**

In a review letter dated February 5, 2020, DelDOT indicated that the revised Preliminary TIS was acceptable as submitted.

It appears that all substantive comments from DelDOT’s TIS Scoping Memorandum, Traffic Count Review, Preliminary TIS Review, and other correspondence were addressed in the Final TIS submission.

### **General HCS Analysis Comments**

*(see table footnotes on the following pages for specific comments)*

- 1) Both The Traffic Group, Inc. and McCormick Taylor utilized Highway Capacity Software (HCS) version 7.8 to complete the traffic analyses.
- 2) As per HCM methodologies, The Traffic Group and McCormick Taylor applied percent heavy vehicles (HV) by lane at all-way stop control intersections. In general, existing HV were applied to future conditions as well. For new intersections, 3% was assumed as per the DelDOT Development Coordination Manual section 2.2.8.11.6.H.
- 3) For existing conditions, the TIS and McCormick Taylor determined overall intersection peak hour factors (PHF) for each intersection based on the turning movement counts. Future PHFs were determined as per the DelDOT Development Coordination Manual section 2.2.8.11.6.F.

Table 2  
Peak Hour Levels of Service (LOS)  
Based on Twin Cedars Traffic Impact Study – March 2020  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection <sup>1</sup> One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 20 &amp; Site Access</b>						
2026 with Twin Cedars (Case 3)						
Westbound DE 20 – Left	A (7.9)	A (8.3)	A (8.6)	A (7.9)	A (8.3)	A (8.6)
Northbound Site Access	B (12.9)	B (14.1)	C (19.8)	B (12.9)	B (14.1)	C (19.8)

<sup>1</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 3  
Peak Hour Levels of Service (LOS)  
Based on Twin Cedars Traffic Impact Study – March 2020  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection <sup>2</sup> One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 20 &amp; Deer Run Road</b>						
2019 Existing (Case 1)						
Westbound DE 20 – Left	A (7.8)	A (7.9)	A (8.2)	A (7.8)	A (7.9)	A (8.2)
Northbound Deer Run Road	B (10.8)	B (10.8)	B (12.5)	B (10.8)	B (10.8)	B (12.5)
2026 without Twin Cedars (Case 2)						
Westbound DE 20 – Left	A (7.9)	A (8.0)	A (8.3)	A (7.9)	A (8.0)	A (8.3)
Northbound Deer Run Road	B (11.3)	B (11.2)	B (13.0)	B (11.3)	B (11.2)	B (13.0)
2026 with Twin Cedars (Case 3)						
Westbound DE 20 – Left	A (7.9)	A (8.1)	A (8.4)	A (7.9)	A (8.1)	A (8.4)
Northbound Deer Run Road	B (11.6)	B (11.6)	B (13.4)	B (11.6)	B (11.6)	B (13.4)

<sup>2</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 4  
Peak Hour Levels of Service (LOS)  
Based on Twin Cedars Traffic Impact Study – March 2020  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection <sup>3</sup> Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 20 &amp; Bayard Road / Johnson Road</b>						
2019 Existing (Case 1)						
Eastbound DE 20 – Left	A (7.8)	A (8.0)	A (8.6)	A (7.8)	A (8.0)	A (8.6)
Westbound DE 20 – Left	A (7.7)	A (7.8)	A (8.1)	A (7.7)	A (7.8)	A (8.1)
Northbound Johnson Road	B (14.9)	C (16.6)	D (30.3)	B (14.9)	C (16.7)	D (30.6)
Southbound Bayard Road	C (17.1)	C (18.3)	F (70.9)	C (17.6)	C (18.9)	F (82.6)
2026 without Twin Cedars (Case 2)						
Eastbound DE 20 – Left	A (7.9)	A (8.1)	A (8.8)	A (7.9)	A (8.1)	A (8.8)
Westbound DE 20 – Left	A (7.7)	A (7.8)	A (8.2)	A (7.7)	A (7.8)	A (8.2)
Northbound Johnson Road	C (16.4)	C (19.8)	E (47.2)	C (16.5)	C (19.9)	E (49.1)
Southbound Bayard Road	C (21.2)	C (24.1)	F (206.3)	C (22.1)	D (25.4)	F (238.9)
2026 with Twin Cedars (Case 3)						
Eastbound DE 20 – Left	A (8.0)	A (8.2)	A (8.9)	A (8.0)	A (8.2)	A (8.9)
Westbound DE 20 – Left	A (7.8)	A (7.9)	A (8.2)	A (7.8)	A (7.9)	A (8.2)
Northbound Johnson Road	C (18.6)	C (23.5)	F (76.2)	C (18.6)	C (23.6)	F (86.1)
Southbound Bayard Road	D (25.5)	D (29.1)	F (310.7)	D (27.5)	D (31.1)	F (354.3)

<sup>3</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.





***Appendix 10 – Utility Analysis***

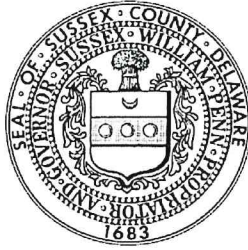
**“Sewer Concept Evaluation Study”, Sussex County Engineering  
Department, September 23, 2019**

**“Ability to Serve Letter”, Artesian Water Company, March 10, 2021**



## ENGINEERING DEPARTMENT

ADMINISTRATION (302) 855-7718  
AIRPORT & INDUSTRIAL PARK (302) 855-7774  
ENVIRONMENTAL SERVICES (302) 855-7730  
PUBLIC WORKS (302) 855-7703  
RECORDS MANAGEMENT (302) 854-5033  
UTILITY ENGINEERING (302) 855-7717  
UTILITY PERMITS (302) 855-7719  
UTILITY PLANNING (302) 855-1299  
FAX (302) 855-7799



# Sussex County

DELAWARE  
sussexcountyde.gov

HANS M. MEDLARZ, P.E.  
COUNTY ENGINEER

JOHN J. ASHMAN  
DIRECTOR OF UTILITY PLANNING

## SEWER SERVICE CONCEPT EVALUATION (SSCE) UTILITY PLANNING DIVISION

Applicant: Morris & Ritchie Associates, Inc.

Date: 9/23/2019

Reviewed by: **Chris Calio**

Agreement #: **943-1**

Project Name: **Twin Cedars**

Tax Map & Parcel(s): **533-11.00-42.00**

Sewer Tier: Tier 1 - Sussex County Unified Sanitary Sewer District

Proposed EDUs: **258**

Pump Station(s) Impacted: **PS 305 & PS 30**

List of parcels to be served, created from the base parcel: **N/A.**

List of additional parcels to be served (Parcels required for continuity must be served with infrastructure): **533-11.00-44.00**

Connection Point(s): **Manhole JC-111 or JC-110**

Use of Existing Infrastructure Agreement required? Yes  or No

Annexation Required? Yes  or No

Easements Required? Yes  or No

Fee for annexation (based on acreage): **N/A**

Current Zoning: **C-1 & GR** Zoning Proposed: **C-1 & GR w/ RPC overlay**

Acreage: **64.22**



Additional Information: [Click or tap here to enter text.](#)

\* No capacity is guaranteed until System Connection Fees are paid

**All gravity sewers with three (3) or more minor branches shall be designed at minimum slope and maximum depth.**

**Once Construction Drawings are completed with all of the above information satisfied, please submit to:**

Sussex County Public Works Department  
2 The Circle  
P.O. Box 589  
Georgetown DE 19947

CC: John Ashman  
Jayne Dickerson  
Michael Brady  
Noell Warren



OVER 100 YEARS OF SUPERIOR SERVICE

Artesian Water Company



Artesian Wastewater Management



Artesian Utility Development



Artesian Water Pennsylvania



Artesian Water Maryland



Artesian Wastewater Maryland

March 10, 2021

Mr. Henry Mast  
Bay Developers, LLC  
220 Weston Drive  
Dover, DE 19904

RE: Twin Cedars Subdivision Ability to Serve Letter

With reference to your request concerning Water Service (“Service”) for the proposed Twin Cedars Subdivision Project on Zion Church Road in Baltimore Hundred, Sussex County, Delaware known as Tax Parcel Number 533-11.00-42.00 (the “Property”), please be advised as follows:

Subject to the following conditions, Artesian Water Company, Inc. (“Artesian”) is willing and able to provide Service to the Property that meets all applicable State of Delaware, Delaware Department of Natural Resources and Environmental Control standards. Artesian currently has the water Certificate of Public Convenience and Necessity (“CPCN”) from the Delaware Public Service Commission (the “Commission”). Artesian will provide Service in accordance with Artesian’s Commission approved tariffs, as amended from time to time.

Based on current conditions and subject to the development entity and Artesian entering Water Service Agreements (“Agreements”) that addresses the financial terms of the provision of Service for the Property, in accordance with Artesian’s tariff, Artesian is willing and able to provide the required Service for this Property.

This letter shall expire if Agreements are not executed within one year of the date of this letter.

Yours very truly,

**ARTESIAN WATER COMPANY, INC.**

*Katherine E. Garrison*

Katherine E. Garrison  
Senior Planning Designer



STATE OF DELAWARE  
EXECUTIVE DEPARTMENT  
OFFICE OF STATE PLANNING COORDINATION

August 21, 2019

Mr. Christopher Flathers, P.E.  
Morris & Ritchie Associates, Inc.  
18 Boulden Circle, Suite 36  
New Castle, DE 19720

RE: PLUS review 2019-07-05; Twin Cedars

Dear Mr. Flathers:

Thank you for meeting with State agency planers on July 24, 2019 to discuss the proposed plans for the Twin Cedars project. According to the information received you are seeking review of a 254 unit subdivision on 64.22 acres along Zion Church Road in Sussex County.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. **The developers will also need to comply with any Federal, State, and local regulations regarding this property. We also note that as Sussex County is the governing authority over this land, the developers will need to comply with any and all regulations/restrictions set forth by the county.**

**Strategies for State Policies and Spending**

This project is located in Investment Level 3 according to the Strategies for State Policies and Spending. Investment Level 3 reflects areas where growth is anticipated by local, county, and state plans in the longer term future, or areas that may have environmental or other constraints to development. State investments may support future growth in these areas, but may have priorities for the near future. Level 3 area means there may be environmental concerns on or near the parcel and we would encourage you to design the site with respect for the environmental features which are present.

## Code Requirements/Agency Permitting Requirements

### Department of Transportation – Contact Bill Brockenbrough 760-2109

- The site access on Zion Church Road (Delaware Route 20) must be designed in accordance with DelDOT's Development Coordination Manual, which is available at <http://www.deldot.gov/Business/subdivisions/index.shtml?dc=changes>.
- Pursuant to Section P.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. The form needed to request the meeting and guidance on what will be covered there and how to prepare for it is located at [https://www.deldot.gov/Business/subdivisions/pdfs/Meeting\\_Request\\_Form.pdf?08022017](https://www.deldot.gov/Business/subdivisions/pdfs/Meeting_Request_Form.pdf?08022017).
- Section P.5 of the Manual addresses fees that are assessed for the review of development proposals. DelDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when construction plans are submitted for review.
- Per Section 2.2.2.1 of the Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. From the PLUS application, the total daily trips are estimated at 2,030 vehicle trip ends per day. DelDOT calculates a higher number, 2,051 vehicle trip ends per day, but regardless the warrant for a TIS is met.

On July 30, 2008, DelDOT commented to the County on its review of a TIS for an earlier plan to develop these lands. Having reviewed the attached letter, DelDOT finds that a new TIS, conforming to current DelDOT regulations, is needed to address the plan now proposed. The primary purpose of a TIS is to determine the need for off-site transportation improvements. Without prejudging the results of the TIS, DelDOT expects to require turning lanes at the site entrance and a signal agreement for the intersection of Zion Church Road, Johnson Road aka Bunting Road (Sussex Road 382A) and Bayard Road (Sussex Road 384).

- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, DelDOT will require dedication of right-of-way along the site's frontage on Zion Church Road. By this regulation, this dedication is to provide a minimum of 40 feet of right-of-way from the physical centerline along both roads. The following right-of-way dedication note is required, **"An X-foot wide right-of-way is hereby dedicated to the State of Delaware, as per this plat."**
- In accordance with Section 3.2.5.1.2 of the Manual, DelDOT will require the establishment of a 15-foot wide permanent easement across the property frontage on Zion Church Road. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the

site. The following note is required, **“A 15-foot wide permanent easement is hereby established for the State of Delaware, as per this plat.”**

- Referring to Section 3.4.2.1 of the Manual, the following items, among other things, are required on the Record Plan:
  - A Traffic Generation Diagram. See Figure 3.4.2-a for the required format and content.
  - Depiction of all existing entrances within 600 feet of the entrances on Zion Church Road.
  - Notes identifying the type of off-site improvements, agreements (signal, letter) contributions and when the off-site improvements are warranted.
- Section 3.5 of the Manual provides DelDOT’s requirements with regard to connectivity. The requirements in Sections 3.5.1 through 3.5.3 shall be followed for all development projects having access to state roads or proposing DelDOT maintained public streets for subdivisions. DelDOT supports the proposed extension of Road B.
- Section 3.5.4.2 of the Manual addresses requirements for shared-use paths and sidewalks. For projects in Level 1 and 2 Investment Areas, installation of paths or sidewalks along the frontage on State-maintained roads is required. DelDOT anticipates requiring the developer to build a Shared Use Path along their frontage on Zion Church Road.
- Referring to Section 3.5.5 of the Manual, existing and proposed transit stops and associated facilities as required by the Delaware Transit Corporation (DTC) or DelDOT shall be shown on the Record Plan.
- In accordance with Section 3.8 of the Manual, storm water facilities, excluding filter strips and bioswales, shall be located a minimum of 20 feet from the ultimate State right-of-way along Zion Church Road.
- In accordance with Section 5.2.9 of the Manual, the Auxiliary Lane Worksheet should be used to determine whether auxiliary lanes are warranted at the site entrances and how long those lanes should be. The worksheet can be found at <http://www.deldot.gov/Business/subdivisions/index.shtml>.
- In accordance with Section 5.14 of the Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.



**Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352**

**Habitat of Conservation Concern (Site Assessment)**

- This project parcel was surveyed on September 21, 2006 to search for habitat of conservation concern and to assess the ecological quality of the area. A copy of this report has been included with these comments. During the survey, the forest at this site was determined to be 25 to 75 years of age; however, some individuals were identified that were likely 100 years of age or greater.

Contact the Division of Fish and Wildlife for assistance in identifying, preserving, and managing the existing forest on-site. For technical assistance or to schedule a site visit please contact Katie Kadlubar, [Kathryn.Kadlubar@delaware.gov](mailto:Kathryn.Kadlubar@delaware.gov).

**Wetland and Forest Preservation**

- DNREC mapping indicates presence of forested wetlands and hydric soils (Hurlock) which encompass a large portion of the subject parcel.
- DNREC botanist, Bill McAvoy, can assist in drafting a list of plants suitable for this site. Bill can be contacted at (302) 735-8668 or [William.McAvoy@delaware.gov](mailto:William.McAvoy@delaware.gov).

**State Historic Preservation Office – Contact Carlton Hall 736-7404**

- There are no known archaeological sites or known National Register listed or eligible properties on the parcel. There was a farmstead that disappeared by 1965. There is a suspicious tree spot on the 1937 aerial east of the house that may indicate a cemetery. The soils range from somewhat poorly drained to very poorly drained. There is potential for a mid-19<sup>th</sup> century archaeological site and possibly a cemetery. Therefore, our office recommends an archaeological survey of the project area. If you have any questions please contact our office for assistance at 302-736-7408.
- If any project or development proceeds, the developer should be aware of the Unmarked Human Burials and Human Skeletal Remains Law (Del. C. Title 7, Ch. 54). Prior to any demolition or ground-disturbing activities, the developer should hire an archaeological consultant to examine the parcel for archaeological resources, including unmarked human burials or human skeletal remains, to avoid those sites or areas.
- If there is federal involvement, in the form of licenses, permits, or funds, the federal agency, often through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. For further information on the Section 106 process please review the Advisory Council on Historic Preservation's website at: [www.achp.gov](http://www.achp.gov)

**Delaware State Fire Marshall's Office – Contact Duane Fox 259-7037**

At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation (DSFPR):

**Fire Protection Water Requirements:**

- Water distribution system capable of delivering at least 1000 gpm for 1-hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers.
- Where a water distribution system is proposed for residential sites, the infrastructure for fire protection water shall be provided, including the size of water mains for fire hydrants and sprinkler systems.

**Fire Protection Features:**

- All structures over 10,000 Sq. Ft. aggregate will require automatic sprinkler protection installed.
- Buildings occupied as apartments (multi-family living units comprising of 3 or more units) will require automatic sprinkler protection installed.
- Buildings greater than 10,000 sq. ft., 3-stories or more, over 35 feet, or classified as High Hazard, are required to meet fire lane marking requirements
- For townhouse buildings, provide a section / detail and the UL design number of the 2-hour fire rated separation wall on the Site plan
- Show Fire Department Connection location (Must be within 300 feet of fire hydrant), and detail as shown in the DSFPR.
- Show Fire Lanes and Sign Detail as shown in DSFPR

**Accessibility:**

- All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. The road island at the entrance from the main thoroughfare must be constructed so fire department apparatus may negotiate it.
- Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.
- Any dead end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

### **Gas Piping and System Information**

- Provide type of fuel proposed, and show locations of bulk containers on plan.

### **Required Notes:**

- Provide a note on the final plans submitted for review to read “ All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations”
- Proposed Use
- Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
- Square footage of each structure (Total of all Floors)
- National Fire Protection Association (NFPA) Construction Type
- Maximum Height of Buildings (including number of stories)
- Note indicating if building is to be sprinklered
- Name of Water Provider
- Letter from Water Provider approving the system layout
- Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
- Provide Road Names, even for County Roads

### **Sussex County – Contact Rob Davis 302-855-7820**

- The parcel is within Tier 1 - Sussex County Unified Sanitary Sewer District and sewer service is available. A sewer system concept evaluation must be requested to define a connection point.

The proposal for 254-unit subdivision 64.22 acres is within sewer system design assumptions and sewer capacity can be assumed. A “Use of Existing Infrastructure Agreement” is required and must be approved prior to approval of construction plans. Sussex County Code, Chapter 110, requires that the Engineer and/or Developer request a Sewer System Concept Evaluation (SSCE) from the Utility Planning Department for their project by providing the parcel(s) estimated equivalent dwelling units (EDU) for the project, along with payment of \$1,000.00 payable to Sussex County Council. The Utility Planning Department will review the parcel(s) and EDU, confirm capacity, provide the connection point and define any additional parcels that must be served as part of the project. Should it be determined that a pump station is required for the project, additional information may be requested. This information will be conveyed to the engineer and/or developer as well as the Sussex County Public Works department. The Public Works Division will use this information when reviewing construction drawings to verify that the correct connection point is used, and all required parcels are served.

- The proposed development will require a developer installed collection system in accordance with Sussex County standards and procedures.

- Onetime system connection charges will apply. Please contact the Utility Permits Division at 302 855-7719 for additional information on charges.

### **Recommendations/Additional Information**

This section includes a list of site specific suggestions that are intended to enhance the project. These suggestions have been generated by the State Agencies based on their expertise and subject area knowledge. **These suggestions do not represent State code requirements.** They are offered here in order to provide proactive ideas to help the applicant enhance the site design, and it is hoped (**but in no way required**) that the applicant will open a dialogue with the relevant agencies to discuss how the suggestions can benefit the project.

#### **Department of Transportation – Contact Bill Brockenbrough 760-2109**

- The applicant should expect a requirement that any substation and/or wastewater facilities will be required to have access from an internal driveway with no direct access to Zion Church Road.
- The applicant should expect a requirement that all PLUS and Technical Advisory Committee (TAC) comments be addressed prior to submitting plans for review.
- Please be advised that the Standard General Notes have been updated and posted to the DelDOT website. Please begin using the new versions and look for the revision dates of March 21, 2019 and March 25, 2019. The notes can be found at <https://www.deldot.gov/Business/subdivisions/>

#### **Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352**

##### **Habitat of Conservation Concern (Site Assessment)**

- Small animals, such as salamanders have difficulty climbing vertical curbs. DNREC recommends designing the development to exclude curbs is best for these species but if road curbing is part of the design, curbing that allows small animals to climb out of the roadbed (such as Cape Cod curbing) is preferred over steep, vertical curbing.
- Avoid installing sewers with grates, which can create a hazard for amphibians and reptiles.
- Any culverts installed should be open bottom box culverts to allow for natural substrate to remain and in-water passage of aquatic life. Additionally, culverts should be left as wide as possible to ensure that salamanders can travel through them.

- To deter waterfowl from taking up residence in the stormwater ponds, DNREC recommends planting pond perimeters with a mix of native grasses and wildflowers (to be planted in accordance with Sediment and Stormwater Plan requirements and delegated agency approval). In addition to deterring nuisance waterfowl, the native wildflower mix will also serve to attract pollinators like bees and butterflies, and reduce run-off, which can contain pollutants from nearby impervious surfaces.

### **Wetland and Forest Preservation**

- Given the benefit of trees in erosion control and flood abatement, tree removal for construction activities and stormwater management should be minimized. The site plan should be designed in a way that allows for preservation of as much of this wooded area as feasible.
- Restrict forest clearing and disturbance of soil to the footprint of buildings and infrastructure. Re-seed and stabilize disturbed areas immediately. Landscape with native species.
- To reduce impacts to nesting birds and other wildlife species that utilize forests for breeding, forest clearing should not occur April 1st to July 31st.
- Low spillage lights (those that reflect light directly downward onto the illuminated area) should be used on roads and homes within 750 feet of the forested wetlands on site. Fluorescent and mercury vapor lighting should not be used.
- Green-technology stormwater management is highly recommended. Efforts to mitigate for impervious cover (pervious pavers) should also be implemented where applicable. Avoid diverting surface water from roadways and stormwater facilities into the wetlands on-site. Water quality could be detrimentally affected by run-off which can contain oil and other pollutants, such as fertilizers and other lawn treatments applied by homeowners.
- Avoid causing increases or decreases in water levels by maintaining inputs to natural wetlands at pre-construction levels.
- To protect the function and integrity of wetlands, a minimum 100-foot buffer should be left intact around the perimeter of remaining waterbodies or wetlands on site. Buffers reduce the amount of non-point source pollution entering waterways that could negatively affect habitat function and aquatic organism survival.

### **Delaware State Fire Marshall's Office – Contact Duane Fox 259-7037**

- Although not a requirement of the State Fire Prevention Regulations, the Office of the State Fire Marshal encourages home builders to consider the benefits of home sprinkler

protection in dwellings, including single family dwellings and townhomes. The Office of the State Fire Marshal also reminds home builders that they are obligated to comply with requirements of Subchapter III of Chapter 36 of Title 6 of the Delaware Code which can be found at the following website:

<http://delcode.delaware.gov/title6/c036/sc03/index.shtml>

- Preliminary meetings with fire protection specialists are encouraged prior to formal submittal. Please call for appointment. Applications and brochures can be downloaded from our website: [www.statefiremarshal.delaware.gov](http://www.statefiremarshal.delaware.gov) technical services link, plan review, applications or brochures.

**State Housing Authority – Contact: Jonathan Adkins-Taswell 739-4263**

- DSHA strongly supports the site plan for 254 units of 168 multi-family apartments on 64.22 acres along Zion Church Road in Sussex County. This would provide Sussex County an excellent opportunity to facilitate a more affordable housing product in the southern Coastal Area. The need for housing affordable to the many county residents who work in this resort economy is acute and well documented. Considering the site's close proximity to the Rt. 54 and north of Selbyville and location within a DSHA-defined "Areas of Opportunity" provides economic opportunity, high performing school district, and supportive infrastructure that help households succeed. This is an excellent location for a more affordable housing product. As a result, DSHA recommends that Sussex County embrace the opportunity to approve this proposal permitting residents to live close to their jobs, as well as, access the resources and benefits this area provides.
- DSHA encourages a site layout and quality design measures that creates desirable rental units which are vital to any well-balanced community, the intensity of the proposal warrants design measures to create human-scaled, and pedestrian-oriented community. Incorporating attractive streetscapes, community recreation areas, visually appealing façade treatments, significant landscaping and pedestrian-oriented measures will help the proposal to integrate well into the larger coastal area.
- If you have any questions or would like more information, please feel free to call me at (302) 739-4263 ext. 245 or via e-mail at [Jonathan@destatehousing.com](mailto:Jonathan@destatehousing.com).

In addition to the comments above our office has received a letter from Brandy Nauman, Sussex County Housing Coordinator & Fair Housing Compliance Officer. A copy of that letter is enclosed with this letter.

**Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.**

PLUS review 2019-07-05

Page 10 of 10

Thank you for the opportunity to review this project. If you have any questions, please contact me at 302-739-3090.

Sincerely,

A handwritten signature in cursive script that reads "Constance C. Holland".

Constance C. Holland, AICP

Director, Office of State Planning Coordination

CC: Sussex County Planning

Enclosure

Attachment

BRANDY BENNETT NAUMAN  
HOUSING COORDINATOR &  
FAIR HOUSING COMPLIANCE OFFICER  
(302) 855-7777 T  
(302) 854-5397 F  
bnauman@sussexcountyde.gov



**Sussex County**  
DELAWARE  
sussexcountyde.gov

July 22, 2019

Mr. Christopher Flathers  
Morris & Ritchie Associates, Inc.  
18 Boulden Circle, Suite 36  
New Castle, DE 19720

RE: Twin Cedars – PLUS Review (PLUS 2019-07-05)

Dear Mr. Flathers,

Sussex County endeavors to promote non-discrimination and affordable housing whenever possible throughout the County. In this regard, the developer and associated financial institutions are encouraged to provide and finance affordable housing opportunities to Sussex County residents in all new developments, and affirmatively market those affordable housing units to diverse populations.

For questions about opportunities available for affordable housing projects within Sussex County, please consult Sussex County's "Affordable Housing Support Policy". The policy along with other resources are available on the County's Affordable & Fair Housing Resource Center website: [www.sussexcountyde.gov/affordable-and-fair-housing-resource-center](http://www.sussexcountyde.gov/affordable-and-fair-housing-resource-center). The County's Community Development & Housing Department can advise about existing affordable housing opportunities in Sussex County and the appropriate County Department to contact regarding specific development issues concerning future affordable housing projects within Sussex County.

The Community Development & Housing Department can also explain and assist with any financial support or incentives that may be available to a project from federal, state and county sources, as well as private funding sources that also promote affordable housing in Sussex County.

Please understand that all residential projects, including Affordable Housing Projects are subject to the applicable provisions of the Sussex County Subdivision and Zoning Codes, and the approval processes set forth in those Codes.

On behalf of Sussex County, we look forward to cooperating with you and your project as it moves forward.

Thank you,

Brandy B. Nauman  
*Housing Coordinator &  
Fair Housing Compliance Officer*



COUNTY ADMINISTRATIVE OFFICES WEST COMPLEX  
22215 DUPONT BOULEVARD | PO BOX 589  
GEORGETOWN, DELAWARE 19947



1 October 2006

Roger Black  
Charles/Black Companies, LLC  
7820 B-1 Penn Western Ct.  
Upper Marlboro, MD 20772

**RE:** "Twin Cedars" development project (parcel ID: 5-33-11.00-42.00), Sussex Co., southeast of Frankford and Roxana

Dear Mr. Black,

On 21 September 2006, I meet with you at the above referenced site to tour the property and search for unique habitat that may support rare and uncommon species, as well as to assess the overall ecological quality of the natural areas that occur on site.

The natural areas on the property are found in the southern half of the site and consist of about 38 acres of forest. The majority of the forest appears to be poorly drained and could be classified as forested wetland, with the remainder being moist to well drained uplands. The poorly drained areas of forest are mid-to-late successional (about 50 to 75 years of age), and the moist to well drained areas are early-to-mid successional (about 25 to 50 years of age). The forested wetland areas are likely older in age due to the fact that it is more difficult to clear trees in poorly drained soils than in moist or well drained soils. The forest canopy is composed of a variety of deciduous [red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), willow oak (*Quercus phellos*), scarlet oak (*Q. coccinea*), white oak (*Q. alba*), black gum (*Nyssa sylvatica*)] and evergreen [loblolly pine (*Pinus taeda*)] tree species. In the lower strata, the following shrubs and small trees were encountered: sweet pepper bush (*Clethra alnifolia*), high bush blueberry (*Vaccinium corymbosum*), arrow-wood (*Viburnum dentatum*), and sweet bay magnolia (*Magnolia virginiana*). The dominant herbaceous plants of the forest floor included: netted chain fern (*Woodwardia areolata*), Virginia chain fern (*W. virginica*), cinnamon fern (*Osmunda cinnamomea*), and Indian cucumber root (*Medeola virginiana*). There is good structural diversity within this forest, with areas of dense to sparse shrub cover, and scattered canopy gaps. Coarse woody debris is evident throughout the forest with many standing dead trunks observed. A few drainage ditches in the northeast portion of the forest appear to be quite old in age and may only have a limited affect on the overall hydrology of the site. Found infrequently scattered through the forested wetland area, were small pockets containing large individuals (30 to 40 inches in diameter) of willow oak and loblolly pine. These trees are likely to be at least 100 years of age or greater. The forested southern half of the property is somewhat isolated ecologically, with only limited connectivity to early successional woodlands in the southwest and southeast corners. Overall, I would rank the quality of this forest as fair, although the forested wetland portions of the site are of good quality. No state rare plant species of concern, or federally listed plants were discovered on this day and the potential for future discoveries is low. However, based on the ecological characteristics of the site, it is likely a valuable area for wildlife species, particularly songbirds that may be utilizing the area for breeding and foraging, and also for species of reptiles and amphibians, especially salamanders.

The preliminary design for the Twin Cedars development designates the majority of the forest (24 acres) as open space, with most of the forested wetlands being preserved. However, lots and storm water basins planned for the southeast portion of the forest may be impacting some of the pockets mentioned above that support large willow oaks and loblolly pines. Scaling-down, or eliminating these lots and basins would go far to help maintain the current ecological condition of the forest. Of course preserving the forest in its entirety would be ideal. If this is an option that you would consider, putting the forested area of the property in a conservation easement would offer financial incentives. For more information about conservation easements, contact Tim Kaden at the Division of Parks and Recreation (302-739-9235, [timothy.kaden@state.de.us](mailto:timothy.kaden@state.de.us)).

The Delaware Natural Heritage Program appreciates the opportunity to visit this site and to comment on the development design. The data collected here will be added to our plant community database and will add to our overall knowledge of the forest types of southeast Sussex County.

If you have any questions or concerns regarding this brief report, don't hesitate to write or call.

Respectfully,

William A. McAvoy  
Botanist, Delaware Natural Heritage Program  
[William.mcavoy@state.de.us](mailto:William.mcavoy@state.de.us)

cc: Karen Bennett, Edna Stetzar, Rober Coxe, Kevin Coyle, Connie Holland, Robert Zimmerman, Stephanie Hansen



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

CAROLANN WICKS, P.E.  
SECRETARY

July 30, 2008

Mr. Lawrence B. Lank  
Director  
Sussex County Planning & Zoning Commission  
P.O. Box 417  
Georgetown, DE 19947

Dear Mr. Lank:

The attached Traffic Impact Study (TIS) review letter for the **Twin Cedars** development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Rules and Regulations for Subdivision Streets and other accepted practices and procedures for such studies. DelDOT accepts this TIS review and concurs with the recommendations. We are providing it to you in fulfillment of our joint agreement regarding the review of TIS. If you have any questions concerning this letter or the attached review letter, please contact me at (302) 760-2134.

Sincerely,

A handwritten signature in blue ink, appearing to read "Todd Sammons".

Todd Sammons  
Project Engineer

TS:km  
Enclosures  
cc with enclosures:

Ms. Constance C. Holland, Office of State Planning Coordination  
Mr. Derrick Kennedy, Orth-Rodgers & Associates, Inc.  
Mr. Andrew J. Parker, McCormick Taylor  
Mr. Mir Wahed, Johnson, Mirmiran, and Thompson  
DelDOT Distribution

## DelDOT Distribution

Frederick H. Schranck, Deputy Attorney General  
Darrel Cole, Chief of Community Relations, Public Relations  
Robert Taylor, Director, Transportation Solutions (DOTS)  
Ralph A. Reeb, Director, Division of Planning  
Michael H. Simmons, Assistant Director, Project Development South, DOTS  
Donald D. Weber, Chief Traffic Engineer, Traffic, DOTS  
Mark Luszcz, Assistant Chief Traffic Engineer, Traffic, DOTS  
Thomas E. Meyer, Traffic Studies Manager, Traffic, DOTS  
Theodore G. Bishop, Assistant Director, Development Coordination  
Joseph Wright, Assistant Director, Transportation Engineering  
Marvin Roberts, Public Works Manager, South District  
Jennifer Pinkerton, Deputy Principal Assistant, Pavement Management  
William J. Dryden, Transportation Planner, Project Development South, DOTS  
Lisa Collins, Service Development Planner, Delaware Transit Corporation  
Marc Coté, Subdivision Engineer, Development Coordination  
T. William Brockenbrough, Jr., County Coordinator, Development Coordination  
John Fiori, Subdivision Manager, Development Coordination  
Anthony Aglio, Bicycle and Pedestrian Coordinator, Statewide & Regional Planning  
Troy Brestel, Project Engineer, Development Coordination

July 30, 2008

Mr. Todd J. Sammons  
Project Engineer  
DelDOT Division of Planning  
P.O. Box 778  
Dover, DE 19903

RE: Agreement No. 1404  
Traffic Impact Study Services  
**Task No. 19A – Twin Cedars**

Dear Mr. Sammons,

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for Twin Cedars prepared by Orth-Rodgers & Associates, Inc (ORA) for McCrone Inc., dated April 18, 2008. This review was assigned as Task Number 19A. ORA prepared the report in a manner generally consistent with DelDOT's *Rules and Regulations for Subdivision Streets*.

The TIS evaluates the impacts of Twin Cedars, proposed to be located along the south side of Zion Church Road (Delaware Route 20 / Sussex Road 382), between Deer Run Road (Sussex Road 388) and Johnson Road (Sussex Road 389) / Bayard Road (Sussex Road 384) in Sussex County, Delaware. The proposed development would consist of 31 single-family detached houses, 120 apartments, 80 townhouses and 40,000 square feet of retail on approximately 64 acres of land. Two access points are proposed along Zion Church Road. Construction is anticipated to be complete by 2012.

As evaluated by the TIS and McCormick Taylor, the proposed development of The Estuary was considered as one of the committed developments. However, we now understand The Estuary is no longer moving forward. As a result, the future analyses conducted by the TIS and McCormick Taylor, for a number of intersections, are based on volumes that are greater than anticipated without The Estuary. However, the recommendations included in this letter would be needed whether or not The Estuary is ever built.

DelDOT currently has one relevant project near the study area. The *SR 54, Mainline Improvements* project (State Contract No. 24-112-01) includes improvements planned along Delaware Route 54 (Sussex Road 58 / Lighthouse Road) east of Zion Church Road to Keenwick Road (Sussex Road 58C), which will include two 12-foot travel lanes, a 14-foot center left-turn lane, two eight-foot shoulders, two three-foot grass buffers, and two five-foot sidewalks. In addition, a reconstruction project was recently completed for the intersection of Zion Church Road and Delaware Route 54, which realigned the intersection and added a fourth leg for the Americana Bayside development.

Based on our review, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

<i>Intersection</i>	<i>Situations for which deficiencies occur</i>
Zion Church Road and East Site Entrance	2012 Saturday with Twin Cedars
Zion Church Road and West Site Entrance	2012 Saturday with Twin Cedars
Zion Church Road and Johnson Road / Bayard Road	2012 AM, PM, and Saturday without and with Twin Cedars

Should the County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should improve Zion Church Road from Deer Run Road to the eastern edge of the site frontage in order to meet DeIDOT's major collector road standards. These standards include but are not limited to twelve-foot travel lanes and eight-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes, at DeIDOT's discretion. DeIDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary.
2. The developer should construct the two site entrances on Zion Church Road to each include a separate right-turn lane on the eastbound Zion Church Road approach and a separate left-turn lane on the westbound Zion Church Road approach. Each northbound site entrance approach should consist of one left-turn lane and one right-turn lane.
3. The developer should enter into a traffic signal agreement with DeIDOT for one of the two proposed site entrances along Zion Church Road, to be determined at DeIDOT's discretion. The agreement should include pedestrian signals, crosswalks and interconnection at DeIDOT's discretion, and the developer will be required to perform a peak hour and a four-hour signal warrant analysis.
4. The developer should enter into a traffic signal agreement with DeIDOT for the intersection of Zion Church Road and Johnson Road / Bayard Road. The agreement should include pedestrian signals, crosswalks and interconnection at DeIDOT's discretion. At least one other developer is expected to enter into a traffic signal agreement for this intersection as well. The developer should coordinate with DeIDOT on the implementation and equitable cost sharing of the traffic signal.

5. The following bicycle, pedestrian, and transit improvements should be included:
  - a. The shoulders on Zion Church Road should be maintained and marked as bike lanes from Deer Run Road to the eastern edge of the site frontage.
  - b. A right-turn yield to bikes sign (MUTCD R4-4) should be added at the start of each right-turn lane added to Zion Church Road.
  - c. Where right-turn lanes are added to Zion Church Road, a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.
  - d. Utility covers should be moved outside of the designated bicycle lane or be flush with the pavement.
  - e. Covered bike parking should be included near the commercial locations to be included with this development.
  - f. A 15-foot wide easement from the edge of the right-of-way should be dedicated to DelDOT for future use within the site frontage along Zion Church Road.
  - g. ADA compliant curb ramps should be provided at all pedestrian crossings. Type 3 curb ramps are discouraged.
  - h. Internal sidewalks to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. These sidewalks should be constructed to extend to the site entrances, and should connect to the frontage shoulders along Zion Church Road.
  - i. The developer should coordinate with the Delaware Transit Corporation regarding the possibility of adding transit services and facilities at this location.

Improvements in this TIS may be considered “significant” under DelDOT’s *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT’s website at [http://www.deldot.gov/information/pubs\\_forms/manuals/de\\_mutcd/index.shtml](http://www.deldot.gov/information/pubs_forms/manuals/de_mutcd/index.shtml). For any additional information regarding the work zone impact and mitigation procedures during construction please contact Mr. Mark Luszcz of DelDOT’s Traffic Section.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DeDOT's subdivision review process.

Additional details on our review of this TIS are attached. Please contact me at (302) 738-0203 or through e-mail at [ajparker@mtmail.biz](mailto:ajparker@mtmail.biz) if you have any questions concerning this review.

Sincerely,

**McCormick Taylor, Inc.**



Andrew J. Parker, P.E., PTOE  
Project Manager

Enclosure



**General Information**

**Report date:** April 18, 2008

**Prepared by:** Orth-Rodgers & Associates, Inc.

**Prepared for:** McCrone Inc.

**Tax parcel:** 533-11.00-42.00

**Generally consistent with DelDOT's Rules and Regulations for Subdivision Streets:** Yes

**Project Description and Background**

**Description:** The proposed development would consist of 31 single-family detached houses, 120 apartments, 80 townhouses and 40,000 square feet of retail.

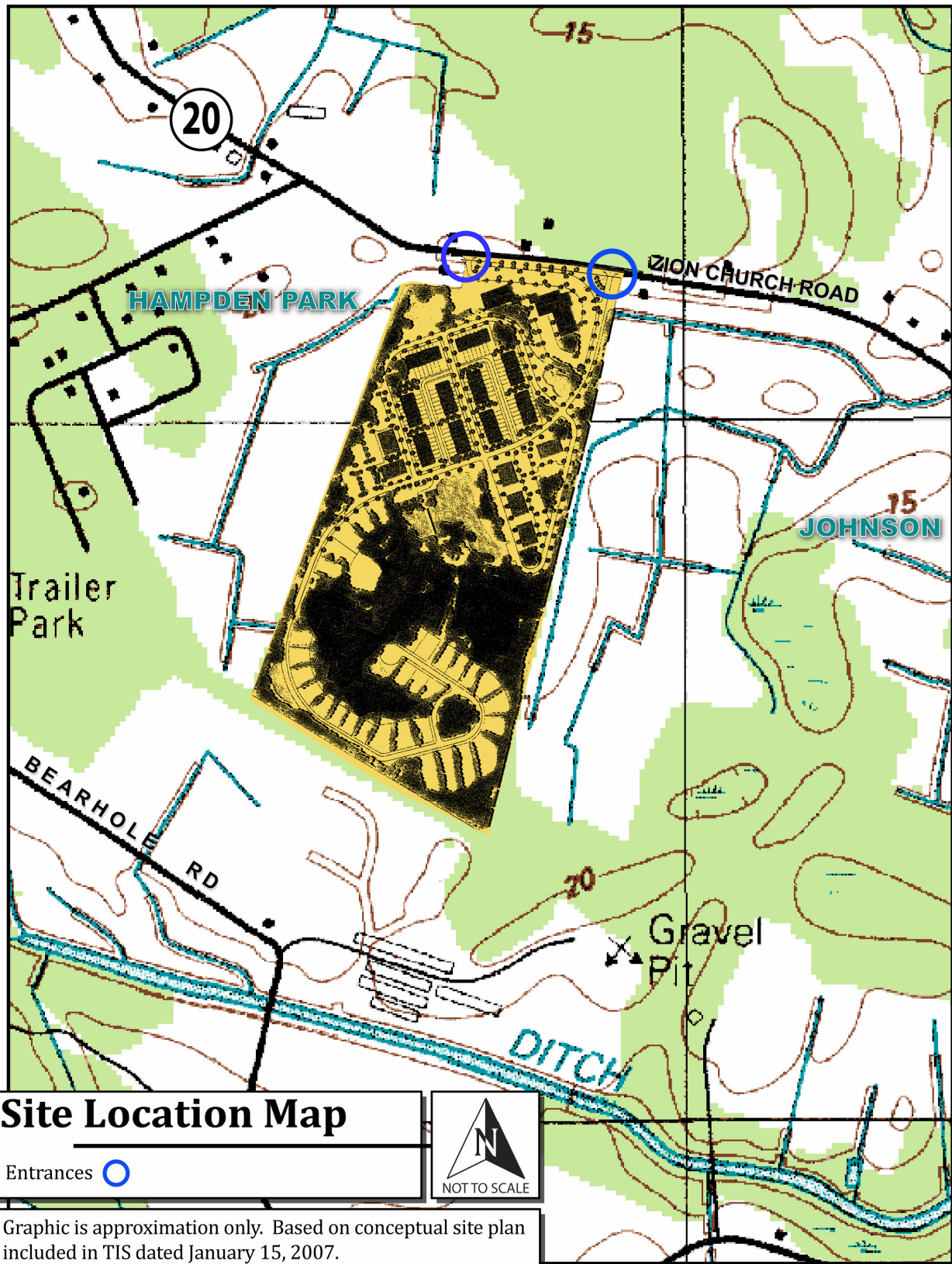
**Location:** Twin Cedars is proposed to be located along the south side of Zion Church Road (Delaware Route 20 / Sussex Road 382), between Deer Run Road (Sussex Road 388) and Johnson Road (Sussex Road 389) / Bayard Road (Sussex Road 384) in Sussex County, Delaware. A site location map is included on Page 6.

**Amount of land to be developed:** approximately 64 acres of land

**Land use approval(s) needed:** Subdivision approval. The land is currently zoned as GR (General Residential) and C-1 (Commercial) in Sussex County and will be developed under the current zoning.

**Proposed completion date:** 2012

**Proposed access locations:** Two access points are proposed along Zion Church Road.



### **Livable Delaware**

*(Source: Delaware Strategies for State Policies and Spending, July 2004)*

#### **Location with respect to the Strategies for State Policies and Spending Map of Delaware:**

The proposed Twin Cedars development is located within Investment Level 4.

#### *Investment Level 4*

Areas located within Investment Level 4 are predominantly agricultural; contain agribusiness activities, farm complexes and small settlements that are often found at historic crossroads. These areas contain undeveloped natural areas, including forestland and recreational parks, however may have scattered single-family detached residential houses located within them.

Transportation facilities and services will be preserved by the state while they continue to manage the transportation system in a manner that will support the preservation of the natural environment. The state will limit its investments in water and wastewater systems to existing public health, safety and environmental risks and discourage accommodating further development. In addition, the state will limit continued development of areas within Investment Level 4 to those that enhance agriculture and protect water supplies, preserve critical habitat and maintain existing education and public safety services. Although residential development is not desirable in Investment Level 4, conservation design techniques (protecting large portions of existing open space and farmland while clustering development on a smaller portion of the parcel and using environmentally friendly design innovations) can be utilized in some cases to help ensure that developments are compatible with the rural character and natural resources present in the area. However, it is the state's general intent to discourage additional development in Investment Level 4 areas that are unrelated to the areas' needs by limiting infrastructure investment.

#### **Proposed Development's Compatibility with Livable Delaware:**

The proposed Twin Cedars development falls within Investment Level 4 and is to be developed with a mix of residential and commercial sites. According to Livable Delaware, areas classified as an Investment Level 4 are not desirable to be built upon unless preserving the natural and/or agricultural environment already in place. As such, this development appears to be generally inconsistent with the 2004 update of the Livable Delaware "Strategies for State Policies and Spending."

### **Comprehensive Plan**

#### **Sussex County Comprehensive Plan:**

*(Source: 2003 Sussex County Comprehensive Plan Update)*

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed development parcel is in a Low Density Area. The purpose of the Low Density Area is to provide for a full range of agricultural activities and to protect agricultural lands as one of the County's most valuable natural resources from the depreciating effect of objectionable, hazardous and unsightly uses. The housing types appropriate for these areas include single-

family detached homes and manufactured homes, where permitted by ordinance. Density guidelines state that the minimum lot size in a Low Density Area without on-site wastewater systems is 0.75 acres, or 0.50 acres if the clustering option is used. If on-site wastewater systems are to be provided, the minimum lot size in a Low Density area is 20,000 square feet (approximately 0.46 acres). Appropriate non-residential uses in a Low Density Area include limited retail and commercial business uses for convenience shopping.

**Proposed Development’s Compatibility with Comprehensive Plans:**

Assuming no open space, the average lot size of this development is approximately 0.28 acres, which is less than the minimum lot size for Low Density Areas. Actually, there will be a certain amount of open space, which would make the average lot size even smaller. Although the limited commercial portion may be deemed appropriate as stated above, the proposed residential land use is generally not appropriate for a Low Density Area and the proposed development appears to be incompatible with the Sussex County Comprehensive Plan.

**Transportation Analysis Zone**

**Transportation Analysis Zones (TAZ) where development would be located: 1188**

**TAZ Boundaries:**



**Current employment estimate for TAZ: 608 jobs in 2005**  
**Future employment estimate for TAZ: 734 jobs in 2030**

**Current population estimate for TAZ: 525 people in 2005**

**Future population estimate for TAZ: 870 people in 2030**

**Current household estimate for TAZ: 234 houses in 2005**

**Future household estimate for TAZ: 392 houses in 2030**

**Relevant committed developments in the TAZ: None**

**Would the addition of committed developments to current estimates exceed future projections: No**

**Would the addition of committed developments and the proposed development to current estimates exceed future projections: Yes**

### **Relevant Projects in the DelDOT Capital Transportation Program (FY 2008 – FY 2013)**

DelDOT currently has one relevant project near the study area. The *SR 54, Mainline Improvements* project (State Contract No. 24-112-01) includes improvements planned along Delaware Route 54 (Sussex Road 58 / Lighthouse Road) east of Zion Church Road to Keenwick Road (Sussex Road 58C), which will include two 12-foot travel lanes, a 14-foot center left-turn lane, two eight-foot shoulders, two three-foot grass buffers, and two five-foot sidewalks. In addition, a reconstruction project was recently completed for the intersection of Zion Church Road and Delaware Route 54, which realigned the intersection and added a fourth leg for the Americana Bayside development.

### **Trip Generation**

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Seventh Edition, published by the Institute of Transportation Engineers (ITE). The following land uses were utilized to estimate the amount of new traffic generated for this development:

- 31 single-family detached houses (ITE Land Use Code 210)
- 120 apartments (ITE Land Use Code 220)
- 80 townhouses (ITE Land Use Code 230)
- 40,000 square feet of retail (ITE Land Use Code 820)

Table 1  
TWIN CEDARS TRIP GENERATION

Land Use	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
31 single-family detached houses	8	22	30	23	14	37	21	18	39
120 apartments	13	50	63	55	29	84	34	34	68
80 townhouses	7	36	43	33	17	50	36	30	66
Subtotal	28	106	136	111	60	171	91	82	173
Internal Capture	-	-	-	21	15	36	16	12	28
<b>Primary Residential Trips</b>	<b>28</b>	<b>106</b>	<b>136</b>	<b>90</b>	<b>45</b>	<b>135</b>	<b>75</b>	<b>70</b>	<b>145</b>
40,000 square feet of retail	55	35	90	164	178	342	248	229	477
Internal Capture	-	-	-	15	21	36	12	16	28
External Trips	-	-	-	149	157	306	236	213	449
Pass-by Trips	-	-	-	76	80	156	89	81	170
<b>Primary Retail Trips</b>	<b>55</b>	<b>35</b>	<b>90</b>	<b>73</b>	<b>77</b>	<b>150</b>	<b>147</b>	<b>132</b>	<b>279</b>
<b>TOTAL TRIPS</b>	<b>83</b>	<b>143</b>	<b>226</b>	<b>163</b>	<b>122</b>	<b>285</b>	<b>222</b>	<b>202</b>	<b>424</b>

### Overview of TIS

#### Intersections examined:

- 1) Zion Church Road & East Site Entrance
- 2) Zion Church Road & West Site Entrance
- 3) Zion Church Road & Johnson Road / Bayard Road
- 4) Zion Church Road & Delaware Route 54
- 5) Zion Church Road & Delaware Route 17 (Sussex Road 52 / Roxana Road)
- 6) Delaware Route 54 & Johnson Road (Sussex Road 390)
- 7) Zion Church Road & Deer Run Road
- 8) Delaware Route 17 & Bixler Road (Sussex Road 388)

#### Conditions examined:

- 1) 2007 existing conditions (Case 1)
- 2) 2012 without Twin Cedars (Case 2)
- 3) 2012 with Twin Cedars (Case 3)

**Peak hours evaluated:** Weekday morning and evening, and Saturday mid-day peak hours

#### Committed developments considered:

- 1) The Estuary (1,052 single-family detached houses)
- 2) Americana Bayside (413 single-family detached houses (278 unbuilt), 1,227 condominiums/townhouses (912 unbuilt), 60 assisted-living units (fully built and

- occupied), 81,880 square feet of retail, and an 18 hole golf course (fully built and operational))
- 3) Hamlet at Dirikson Pond (81 single-family detached houses; 28 unbuilt)
  - 4) The Refuge at Dirikson Creek (287 single-family detached houses (77 unbuilt) and 57 townhouses)

Note: Although we now understand The Estuary is no longer moving forward, it was included as a committed development at the time future analyses were conducted by both the TIS and McCormick Taylor.

### **Intersection Descriptions**

- 1) **Zion Church Road & East Site Entrance**  
**Type of Control:** proposed two-way stop-controlled (T-intersection)  
**Northbound approach:** (East Site Entrance) proposed one left-turn lane and one right-turn lane, stop-controlled  
**Eastbound approach:** (Zion Church Road) existing one through lane, proposed one shared through/right-turn lane  
**Westbound approach:** (Zion Church Road) existing one through lane, proposed one shared through/left-turn lane
  
- 2) **Zion Church Road & West Site Entrance**  
**Type of Control:** proposed two-way stop-controlled (T-intersection)  
**Northbound approach:** (West Site Entrance) proposed one left-turn lane and one right-turn lane, stop-controlled  
**Eastbound approach:** (Zion Church Road) existing one through lane, proposed one shared through/right-turn lane  
**Westbound approach:** (Zion Church Road) existing one through lane, proposed one shared through/left-turn lane
  
- 3) **Zion Church Road & Johnson Road / Bayard Road**  
**Type of Control:** two-way stop-controlled  
**Northbound approach:** (Johnson Road) one shared left/through/right-turn lane, stop controlled  
**Southbound approach:** (Bayard Road) one shared left/through/right-turn lane, stop controlled  
**Eastbound approach:** (Zion Church Road) one shared left/through/right-turn lane  
**Westbound approach:** (Zion Church Road) one shared left/through/right-turn lane
  
- 4) **Zion Church Road & Delaware Route 54**  
**Type of Control:** signalized four-leg intersection  
**Northbound approach:** (Delaware Route 54) one left-turn lane, two through lanes, and one right-turn lane  
**Southbound approach:** (Delaware Route 54) one left-turn lane, two through lanes, and one right-turn lane

**Eastbound approach:** (Zion Church Road) one left-turn lane, two through lanes, and one right-turn lane

**Westbound approach:** (Bayside Driveway) one left-turn lane, two through lanes, and one right-turn lane

5) **Zion Church Road & Delaware Route 17**

**Type of Control:** signalized four-leg intersection

**Northbound approach:** (Delaware Route 17) one shared left/through/right-turn lane

**Southbound approach:** (Delaware Route 17) one shared left/through/right-turn lane

**Eastbound approach:** (Zion Church Road) one shared left/through/right-turn lane

**Westbound approach:** (Zion Church Road) one shared through/left-turn lane and one right-turn lane

6) **Delaware Route 54 & Johnson Road**

**Type of Control:** two-way stop-controlled (T-intersection)

**Southbound approach:** (Johnson Road) one shared left/right-turn lane, stop-controlled

**Eastbound approach:** (Delaware Route 54) one shared through/left-turn lane

**Westbound approach:** (Delaware Route 54) one shared through/right-turn lane

7) **Zion Church Road & Deer Run Road**

**Type of Control:** two-way stop-controlled (T-intersection)

**Northbound approach:** (Deer Run Road) one shared left/right-turn lane, stop-controlled

**Eastbound approach:** (Zion Church Road) one shared through/right-turn lane

**Westbound approach:** (Zion Church Road) one shared through/left-turn lane

8) **Delaware Route 17 & Bixler Road**

**Type of Control:** two-way stop-controlled (T-intersection)

**Northbound approach:** (Delaware Route 17) one shared through/right-turn lane

**Southbound approach:** (Delaware Route 17) one shared through/left-turn lane

**Westbound approach:** (Bixler Road) one shared left/right-turn lane, stop-controlled

**Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** The Delaware Transit Corporation (DTC) currently does not offer any transit service near the study area.

**Planned transit service:** McCormick Taylor contacted Ms. Lisa Collins, a Service Development Planner for the DTC, via email on May 2, 2008 to determine whether DTC has any plans to extend the existing transit system in the vicinity of the development. No comments were received from DTC. However, included in the TIS was an October 26, 2007 email from Mr. David Dooley, a Service Development Planner for the DTC, stating that a transit route has been proposed along Delaware Route 54 from Selbyville to the beach, but this proposal has no funding and its eventual implementation is in doubt. Mr. Dooley also requested that Twin Cedars include sidewalks along the site frontage and connecting the site entrance to the development.



**Existing bicycle and pedestrian facilities:** According to the *Delaware Kent and Sussex Counties Bicycle Touring Map*, Bixler Road and Deer Run Road are both designated as having average cycling conditions with low traffic volumes (less than 2,000 ADT). Delaware Route 17 is designated as having above average cycling conditions with moderate traffic volumes (between 2,000 and 10,000 ADT). Johnson Road and Bayard Road are both designated as having above average cycling conditions with low traffic volumes, however there is a small portion of Johnson Road just south of Zion Church Road that has average cycling conditions with low traffic volumes. Zion Church Road and Delaware Route 54 are both designated as having average cycling conditions with moderate traffic volumes. There are currently no designated bicycle lanes or sidewalks along the site frontage on Zion Church Road.

**Planned bicycle and pedestrian facilities:** DelDOT's Bicycle and Pedestrian Facilities Team indicated, in a letter from Stephen Bayer dated November 9, 2007, that the following bicycle and pedestrian facilities should be required. In the letter, Mr. Bayer commented that Livable Delaware's updated State Strategies for Spending Map indicates the site is located in an Investment Level 4 area, where the existing transportation network should preserve the natural environment. However, if the development does occur, the following requests should be incorporated into the project to facilitate bicycle and pedestrian transportation:

- a. 5' bike lanes should be added on both sides of Zion Church Road. At the proposed entrances on Zion Church Road, a 5' bike lane should be striped through any turn lanes and a right turn yield to bikes sign (MUTCD R4-4) should be added at the start of any right-turn lanes.
- b. A 15' wide permanent easement should be dedicated to DelDOT for future instillation of multimodal facilities along all property frontages.
- c. Internal sidewalks should be included with this development and should be constructed to extend to the entrance of this development.
- d. Covered bike parking should be included near the commercial locations to be included with this development.

Mr. Bayer also indicated the State's Bicycle Map designates Zion Church Road as a bike route.

### **Previous Comments**

All comments from DelDOT's Scoping Letter, Traffic Count Review and Preliminary TIS Review were addressed in the Final TIS submission.

### **General HCS Analysis Comments**

*(see table footnotes on the following pages for specific comments)*

- 1) For future conditions at existing intersections, the TIS generally assumed heavy vehicle factors (HV) to be the same as existing HV and assumed no minimum HV. McCormick Taylor assumed the future HV to be either existing HV or 2%, whichever was greater.

- 2) For future conditions, the TIS (with a few minor exceptions) and McCormick Taylor assumed a peak hour factor (PHF) of either existing PHF or 0.88, whichever was greater, at all intersections.
- 3) The HCS analyses included in the TIS did not always reflect the lane widths observed in the field by McCormick Taylor. McCormick Taylor's HCS analyses incorporated the field-measured lane widths.
- 4) The TIS and McCormick Taylor used different cycle lengths and/or signal timing parameters when analyzing the signalized intersections in some cases.
- 5) The TIS input existing Right-Turn-on-Red (RTOR) volumes for some future analyses. Due to increased volumes and fewer available gaps, there would likely be fewer vehicles able to make right turns on red, so McCormick Taylor input no RTOR volumes for future conditions.

Table 2  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study Twin Cedars  
Report dated April 18, 2008  
Prepared by Orth-Rodgers & Associates, Inc.

Unsignalized Intersection <sup>1</sup> Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Zion Church Road &amp; East Site Entrance</b>						
2012 with Twin Cedars (Case 3)						
Northbound Site Entrance	B (12.4)	C (16.8)	F (62.3)	B (12.4)	C (17.0)	F (63.5) <sup>2</sup>
Westbound Zion Church Road – Left	A (8.0)	A (8.6)	A (9.8)	A (8.0)	A (8.6)	A (9.8)
2012 with Twin Cedars (Case 3) With Improvement Option 1 <sup>3</sup>						
Northbound Site Entrance	N/A	N/A	N/A	B (12.3)	C (16.2)	F (54.8) <sup>2</sup>
Westbound Zion Church Road – Left	N/A	N/A	N/A	A (8.0)	A (8.6)	A (9.8)

Signalized Intersection <sup>1</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Zion Church Road &amp; East Site Entrance</b>						
2012 with Twin Cedars (Case 3) With Improvement Option 1 <sup>3</sup>	N/A	N/A	N/A	A (0.27)	A (0.33)	A (0.51)

<sup>1</sup> For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

<sup>2</sup> The 95<sup>th</sup> percentile queue length for the northbound site entrance approach during the Case 3 Saturday peak hour is less than 5 vehicles.

<sup>3</sup> Improvement Option 1 includes the addition of an exclusive right-turn lane on the eastbound Zion Church Road approach and an exclusive left-turn lane on the westbound Zion Church Road approach. Both turn lanes are warranted by DelDOT's Standards and Regulations for Access to State Highways.

Table 3  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Twin Cedars  
Report dated April 18, 2008  
Prepared by Orth-Rodgers & Associates, Inc.

Unsignalized Intersection <sup>4</sup> Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Zion Church Road &amp; West Site Entrance</b>						
2012 with Twin Cedars (Case 3)						
Northbound Site Entrance	B (14.4)	C (16.1)	E (40.8)	B (13.1)	C (16.3)	E (41.7) <sup>5</sup>
Westbound Zion Church Road – Left	A (7.9)	A (8.5)	A (9.5)	A (7.9)	A (8.5)	A (9.5)
2012 with Twin Cedars (Case 3) With Improvement Option 1 <sup>6</sup>						
Northbound Site Entrance	N/A	N/A	N/A	B (13.0)	C (15.8)	E (38.6) <sup>5</sup>
Westbound Zion Church Road – Left	N/A	N/A	N/A	A (7.9)	A (8.5)	A (9.5)

<sup>4</sup> For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

<sup>5</sup> The 95<sup>th</sup> percentile queue length for the northbound site entrance approach during the Case 3 Saturday peak hour is less than 3 vehicles.

<sup>6</sup> Improvement Option 1 includes the addition of an exclusive right-turn lane on the eastbound Zion Church Road approach and an exclusive left-turn lane on the westbound Zion Church Road approach. Both turn lanes are warranted by DelDOT's Standards and Regulations for Access to State Highways.

Table 4  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Twin Cedars  
Report dated April 18, 2008  
Prepared by Orth-Rodgers & Associates, Inc.

Unsignalized Intersection <sup>7</sup> Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Zion Church Road &amp; Johnson Road / Bayard Road</b>						
2007 Existing (Case 1)						
Northbound Johnson Road	B (12.5)	B (12.9)	C (18.8)	B (12.5)	B (12.9)	C (18.8)
Southbound Bayard Road	B (12.3)	B (13.8)	C (20.0)	B (12.3)	B (13.8)	C (20.0)
Eastbound Zion Church Road – Left	A (7.6)	A (7.6)	A (8.2)	A (7.6)	A (7.6)	A (8.2)
Westbound Zion Church Road – Left	A (7.5)	A (7.6)	A (8.0)	A (7.5)	A (7.6)	A (8.0)
2012 without Twin Cedars (Case 2)						
Northbound Johnson Road	C (21.2)	D (30.4)	F (105.9)	C (21.4)	D (30.4)	F (105.9) <sup>8</sup>
Southbound Bayard Road	E (42.6)	F (391.8)	F (1633)	E (43.6)	F (391.8) <sup>9</sup>	F (1659) <sup>10</sup>
Eastbound Zion Church Road – Left	A (8.5)	A (8.4)	A (9.4)	A (8.5)	A (8.4)	A (9.4)
Westbound Zion Church Road – Left	A (7.7)	A (8.1)	A (8.6)	A (7.7)	A (8.1)	A (8.6)
2012 with Twin Cedars (Case 3)						
Northbound Johnson Road	D (32.3)	F (71.7)	F (1131)	D (32.2)	F (71.7)	F (1168) <sup>8</sup>
Southbound Bayard Road	F (91.7)	F (682.8)	F (4707)	F (91.7)	F (682.8) <sup>9</sup>	F (4707) <sup>10</sup>
Eastbound Zion Church Road – Left	A (8.6)	A (8.6)	A (9.8)	A (8.6)	A (8.6)	A (9.9)
Westbound Zion Church Road – Left	A (7.8)	A (8.2)	A (8.8)	A (7.8)	A (8.2)	A (8.9)

Signalized Intersection <sup>7</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Zion Church Road &amp; Johnson Road / Bayard Road</b>						
2012 with Twin Cedars (Case 3)	B (0.55)	C (0.71)	C (0.89)	B (0.59)	C (0.76)	C (0.88)

<sup>7</sup> For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

<sup>8</sup> The 95<sup>th</sup> percentile queue length for the northbound Johnson Road approach is approximately 5 vehicles during the Case 2 Saturday peak hour and approximately 15 vehicles during the Case 3 Saturday peak hour.

<sup>9</sup> The 95<sup>th</sup> percentile queue length for the southbound Bayard Road approach is approximately 25 vehicles during the Case 2 PM peak hour and approximately 34 vehicles during the Case 3 PM peak hour.

<sup>10</sup> The 95<sup>th</sup> percentile queue length for the southbound Bayard Road approach is approximately 38 vehicles during the Case 2 Saturday peak hour and approximately 49 vehicles during the Case 3 Saturday peak hour.

Table 5  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Twin Cedars  
Report dated April 18, 2008  
Prepared by Orth-Rodgers & Associates, Inc.

Signalized Intersection <sup>11</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Zion Church Road &amp; Delaware Route 54</b>						
2007 Existing (Case 1)	C (0.29)	C (0.29)	C (0.55)	C (0.36)	C (0.38)	C (0.55)
2012 without Twin Cedars (Case 2)	D (0.57)	C (0.60)	D (0.78)	D (0.51)	D (0.55)	D (0.82)
2012 with Twin Cedars (Case 3)	D (0.58)	C (0.62)	D (0.80)	D (0.53)	D (0.56)	D (0.84)

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<sup>11</sup> For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 6  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Twin Cedars  
Report dated April 18, 2008  
Prepared by Orth-Rodgers & Associates, Inc.

Signalized Intersection <sup>12</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Zion Church Road &amp; Delaware Route 17</b>						
2007 Existing (Case 1)	B (0.19)	B (0.27)	B (0.36)	B (0.20)	B (0.28)	B (0.35)
2012 without Twin Cedars (Case 2)	B (0.31)	B (0.47)	B (0.57)	B (0.31)	B (0.48)	B (0.58)
2012 with Twin Cedars (Case 3)	B (0.36)	B (0.53)	B (0.65)	B (0.34)	B (0.55)	B (0.67)

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<sup>12</sup> For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 7  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Twin Cedars  
Report dated April 18, 2008  
Prepared by Orth-Rodgers & Associates, Inc.

Unsignalized Intersection <sup>13</sup> Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Delaware Route 54 &amp; Johnson Road</b>						
2007 Existing (Case 1)						
Southbound Johnson Road	A (9.4)	A (9.7)	B (13.2)	A (9.3)	A (9.7)	B (13.3)
Eastbound Delaware Route 54 – Left	A (7.6)	A (7.6)	A (8.1)	A (7.5)	A (7.6)	A (8.1)
2012 without Twin Cedars (Case 2)						
Southbound Johnson Road	B (10.3)	B (10.6)	C (17.4)	B (10.3)	B (10.7)	C (17.4)
Eastbound Delaware Route 54 – Left	A (7.8)	A (8.0)	A (8.8)	A (7.8)	A (8.0)	A (8.8)
2012 with Twin Cedars (Case 3)						
Southbound Johnson Road	B (10.5)	B (10.8)	C (18.8)	B (10.5)	B (10.9)	C (18.8)
Eastbound Delaware Route 54 – Left	A (7.8)	A (8.0)	A (8.9)	A (7.8)	A (8.0)	A (8.9)

<sup>13</sup> For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.



Table 8  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Twin Cedars  
Report dated April 18, 2008  
Prepared by Orth-Rodgers & Associates, Inc.

Unsignalized Intersection <sup>14</sup> Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Zion Church Road &amp; Deer Run Road</b>						
2007 Existing (Case 1)						
Northbound Deer Run Road	A (9.6)	A (9.9)	B (11.1)	A (9.6)	A (9.9)	B (11.2)
Westbound Zion Church Road – Left	A (7.6)	A (7.6)	A (8.0)	A (7.6)	A (7.6)	A (8.0)
2012 without Twin Cedars (Case 2)						
Northbound Deer Run Road	B (10.7)	B (12.1)	B (13.5)	B (10.7)	B (12.1)	B (13.5)
Westbound Zion Church Road – Left	A (7.8)	A (8.0)	A (8.5)	A (7.8)	A (8.0)	A (8.5)
2012 with Twin Cedars (Case 3)						
Northbound Deer Run Road	B (11.2)	B (13.3)	C (15.2)	B (11.2)	B (13.3)	C (15.3)
Westbound Zion Church Road – Left	A (7.9)	A (8.3)	A (8.9)	A (7.9)	A (8.3)	A (8.9)

<sup>14</sup> For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 9  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Twin Cedars  
Report dated April 18, 2008  
Prepared by Orth-Rodgers & Associates, Inc.

Unsignalized Intersection <sup>15</sup> Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
<b>Delaware Route 17 &amp; Bixler Road</b>						
2007 Existing (Case 1)						
Southbound Delaware Route 17 – Left	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)
Westbound Bixler Road	A (9.7)	B (10.5)	B (10.0)	A (9.7)	B (10.1)	B (10.1)
2012 without Twin Cedars (Case 2)						
Southbound Delaware Route 17 – Left	A (7.6)	A (7.5)	A (7.5)	A (7.6)	A (7.6)	A (7.5)
Westbound Bixler Road	A (9.7)	B (10.4)	B (10.1)	A (9.8)	B (10.4)	B (10.2)
2012 with Twin Cedars (Case 3)						
Southbound Delaware Route 17 – Left	A (7.6)	A (7.6)	A (7.5)	A (7.6)	A (7.6)	A (7.6)
Westbound Bixler Road	A (10.0)	B (10.6)	B (10.5)	A (10.0)	B (10.6)	B (10.6)

<sup>15</sup> For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

**FILE COPY**

Received at Public Hearing  
06.15.2021

**FINDINGS OF FACT**  
(Proposed)

**TWIN CEDARS**  
CZ#1942

1. This is an application to amend the comprehensive zoning map from C-1 (General Commercial District), CR-1 (Commercial Residential District) and GR (General Residential District) to GR-RPC (General Residential-Residential Planned Community) for 64.32 +/- acres located in Baltimore Hundred, Sussex County, being situated on the southeasterly side of Zion Church Road (Delaware Route 20/Sussex Road 384), approximately 1,200' east of its intersection with Deer Run Road (Sussex Road 384), also being known as Tax Parcel 533-11.00-42.00 (the "Property").

2. The Property is owned by Twin Cedars, LLC.

3. The applicant is Bay Developers, LLC, the contract purchaser of the Property.

4. The Property is presently used for agricultural purposes and was most recently used for an apartment complex consisting of fifty (50) units in three (3) buildings all of which have been removed from the Property.

5. This land use application involves the same lands that were the subject of CZ#1668 (GR-RPC) and CZ#1669 (CR-1). CZ#1668 was a change of zone application seeking to amend the Comprehensive Zoning Map from GR (General Residential District) and C-1 (General Commercial District) to a GR-RPC (General Residential District-Residential Planned Community) for 58.55 acres of land. CZ#1669 was a change of zone application seeking to amend the Comprehensive Zoning Map from a GR (General Residential District) and a C-1 (General Commercial District) to a CR-1 (Commercial Residential District) for 5.79 acres of land. Both applications were approved by Sussex County Council on July 20, 2010. The Master Site Plan from these approvals showed 199 residential units and 38,175 square feet of commercial development on the Property. More specifically, the Master Site Plan showed 120 apartments/condos, 45 townhomes and 34 duplexes on the Property. The project was never built.

6. This land use application involves the same lands that were the subject of CZ#1909 which was identical to the present application and was terminated so that the County could correct its Comprehensive Zoning Map and the present application could be made consistent with the correct Comprehensive Zoning Map.

7. This application seeks to change the zoning classification of the C-1 (General Commercial District) and CR-1 (Commercial Residential Zoning District) portions of the Property to GR (General Residential District) and use the provisions of the Residential Planned Community Ordinance to create a pedestrian friendly community clustered around centrally located amenities, while maintaining a meaningful connection to the open space planned within the Property.

8. The application proposes a total of 254 dwelling units comprised of 168 apartments within 7 buildings, 44 multifamily townhomes in 11 buildings and 42 single-family units, for a gross density of 3.95 units/acre and a net density (less public and private rights-of-way) of 4.31 units/acre, and involves less density than permitted in the current C-1, CR-1 and GR zoning classifications of the Property. GR zoning permits four (4) residential units per acre and C-1 and CR-1 zoning permits twelve (12) residential units per acre.

9. In the 2019 Sussex County Comprehensive Plan update, the area for the proposed rezoning is identified for purposes of future land use as being part of the Coastal Community, a "growth area." The proposed project is consistent with the guidelines for projects within the Coastal Community Areas.

10. The 2015 Delaware Strategies for State Policies and Spending identify the property as Investment Level 3.

11. Artesian Water Company, Inc. will provide potable water to the site as it has a Certificate of Public Convenience and Necessity for this area including this Property.

12. Sussex County Engineering has identified the proposed site as a Tier 1 Sewer District Area located within the Sussex County Unified Sanitary Sewer District and will collect, treat and dispose of sanitary sewerage from the site.

13. Through Sussex County and Artesian Water Company adequate public water and sewage treatment is available to support the proposed project.

14. DelDOT responded to the Service Level Evaluation Request and, pursuant to its Memorandum of Understanding for Land Development Coordination with Sussex County, found that a Traffic Impact Study is required.

15. On July 13, 2020, DelDOT issued its Traffic Impact Study review letter for the Twin Cedars project with three (3) off-site improvements described as being required, including:

- a. the construction of a full-movement site access on Zion Church Road (Delaware Route 20) directly across from the Bayside Mini Storage entrance;
- b. the funding of an equitable portion of DelDOT's project to install a traffic signal at the intersection of Zion Church Road (Delaware Route 20) and Bayard Road/Johnson Road; and
- c. the inclusion of bicycle, pedestrian and transit improvements along the property's frontage on Zion Church Road (Delaware Route 20).

16. As the site plan is finalized, DelDOT's approval, will be required to provide for safe vehicular and pedestrian movement within the site and onto Zion Church Road (Delaware Route 20).

17. As a part of final site plan approval, stormwater management design and permitting will be required; thus assuring neighboring lands will be protected from the development and use of the Property.

18. The proposed project is consistent with the character and trend of development in the area and will not adversely affect the neighboring and adjacent properties.

19. The applicant has satisfactorily demonstrated that the proposed project creates a sense of community focusing on the centrally located amenities and better defines the perimeter buffer consistent with the requirements of a Residential Planned Community. The result of this design are a centralized development with lots connected to the open space and an enhanced perimeter buffer.

20. As a result of all the above and the record presented, this application, as Council found with respect to the earlier applications, is consistent with the character and trend of development in the area and thereby consistent with the land use plan and will have no adverse impact on property values.

21. The proposed project meets the purpose of the Zoning Ordinance and the Comprehensive Plan in that it promotes the orderly growth, convenience, order, prosperity and welfare of the County.

## **PROPOSED CONDITIONS**

(Proposed)

### **TWIN CEDARS**

CZ#1942

1. The maximum number of dwelling units shall not exceed 254 units, of which 168 shall be apartments/condominiums, 44 shall be townhomes and 42 shall be single-family dwellings.
2. All entrance, intersection, roadway and multi-modal improvements required by DelDOT shall be completed by the applicant in accordance with DelDOT's requirements and time periods.
3. Recreational amenities and facilities shall be completed and open to use by the residents of the development upon the issuance of the 100<sup>th</sup> building permit.
4. If required by the Indian River School District, a protected school bus shelter shall be provided. If required by the school district, the location of the bus stop area shall be shown on the Final Site Plan.
5. The development shall be served as a part of the Sussex County Unified Sanitary Sewer District and shall be constructed in accordance with County engineering specifications and regulations.
6. The development shall be served by Artesian Water Company, Inc. providing a central water system for drinking water and fire protection, as required by applicable regulations.
7. Stormwater management facilities, erosion, and sediment control shall be constructed in accord with best management practices consistent with applicable State and County regulations. These facilities shall be operated in a manner that is consistent with Best Management Practices.
8. The interior street design shall be in accordance with or exceed Sussex County street design requirements. Street design shall include sidewalks on both sides of the streets and street lighting.
9. Road naming and addressing shall be subject to the approval of the Sussex County Mapping and Addressing Department.
10. A 20-foot vegetated buffer shall be established along the perimeter of the property. This buffer may include existing trees.
11. The applicant, its successors and/or assigns, shall cause a property owners association(s) or condominium association(s) to be formed and be responsible for the maintenance of the streets, roads, buffers, open spaces, stormwater management facilities and other common areas.

12. Deed restrictions and/or covenants and condominium documents shall reference that agriculture activities exist nearby and the Agriculture Protection Notice shall be included in the restrictions/covenants and other documents.
13. Deed restrictions and/or covenants and condominium documents shall reference that an adjacent property is used as an RV Campground.
14. Deed restrictions and/or covenants and condominium documents shall reference that hunting activities may occur nearby and on the adjacent RV Campground, said notice shall be similar to the Agriculture Protection Notice.
15. Construction, site work, grading and deliveries of construction materials, landscaping materials and fill on and to the property shall only occur from Monday through Saturday and only between the hours of 7:00 a.m. to 6:00 p.m.
16. The Final Site Plan shall include the approval of the Sussex Conservation District for the design and location of all stormwater management areas and erosion and sedimentation control facilities.
17. The Final Site Plan shall include a landscape plan for all of the buffer areas, showing all of the landscaping and vegetation to be included in the buffer areas.
18. The Final Site Plan shall include a notice that an adjacent property is used as an RV Campground.
19. The Final Site Plan shall include a notice similar to the Agricultural Use Protection Notice indicating that hunting activities may occur nearby and on the adjacent RV Campground.
20. The Preliminary Site Plan and the Final Site Plan shall be subject to the review and approval of the Planning & Zoning Commission.