Espey, Huston & Associates, Inc.
Engineering & Environmental Consultants

FAX MEMORANDUM

Date: December 10, 1996

Number of Pages: 13
(Including Cover Page)
Fax Number:
(757) 678-0483

To: Timothy E. Hayes, Executive Director
Joint Industrial Development Authority
Of Northampton County and Its Incorporated Towns

From: Steven Pophal, Manager, Land Development Services

Subject: Port of Cape Charles Sustainable Technologies Industrial Park

Attached find a draft package for the USDA Water Recovery Plant proposal. It includes the following:

Overall Plan of the STIP
Plan View of the plant
Narrative
Estimate of Cost for Existing Plant Upgrade (Bandaid)
Estimate of Cost for Phase I Constructed Wetlands Treatment

I will forward color plots of the plans and originals upon receipt of your comments. Please feel free to contact me to discuss this matter.

copy: 17058-3.3.2, 96-0672

A Planet Pacific Company

11838 Rock Landing Drive, Suite 250, Newport News, Virginia 23606-4232
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DRAFT

PORT OF CAPE CHARLES
SUSTAINABLE TECHNOLOGIES INDUSTRIAL PARK

Request for Funding

A Plan for Converting the Existing Wastewater Treatment Plant

to a

Water Recovery Facility

Cape Charles, Virginia

December 09, 1996

EH&A Espey, Huston & Associates, Inc.
Engineering & Environmental Consultants

17058

NN960672

Purpose:

The purpose of this project is to convert the existing wastewater treatment facility on the harbor at Cape Charles, Virginia into a resource recovery plant which complies with government regulations and meets the goals and objectives of the Port of Cape Charles Sustainable Technologies Industrial Park (STIP).

From a global perspective, wastewater is viewed as a recoverable resource. The overall objective of the STIP is to design for resource conservation, efficiency, and enhancement, to promote the wise use of renewable resources, and to integrate the concept of recycling into all aspects of daily life.

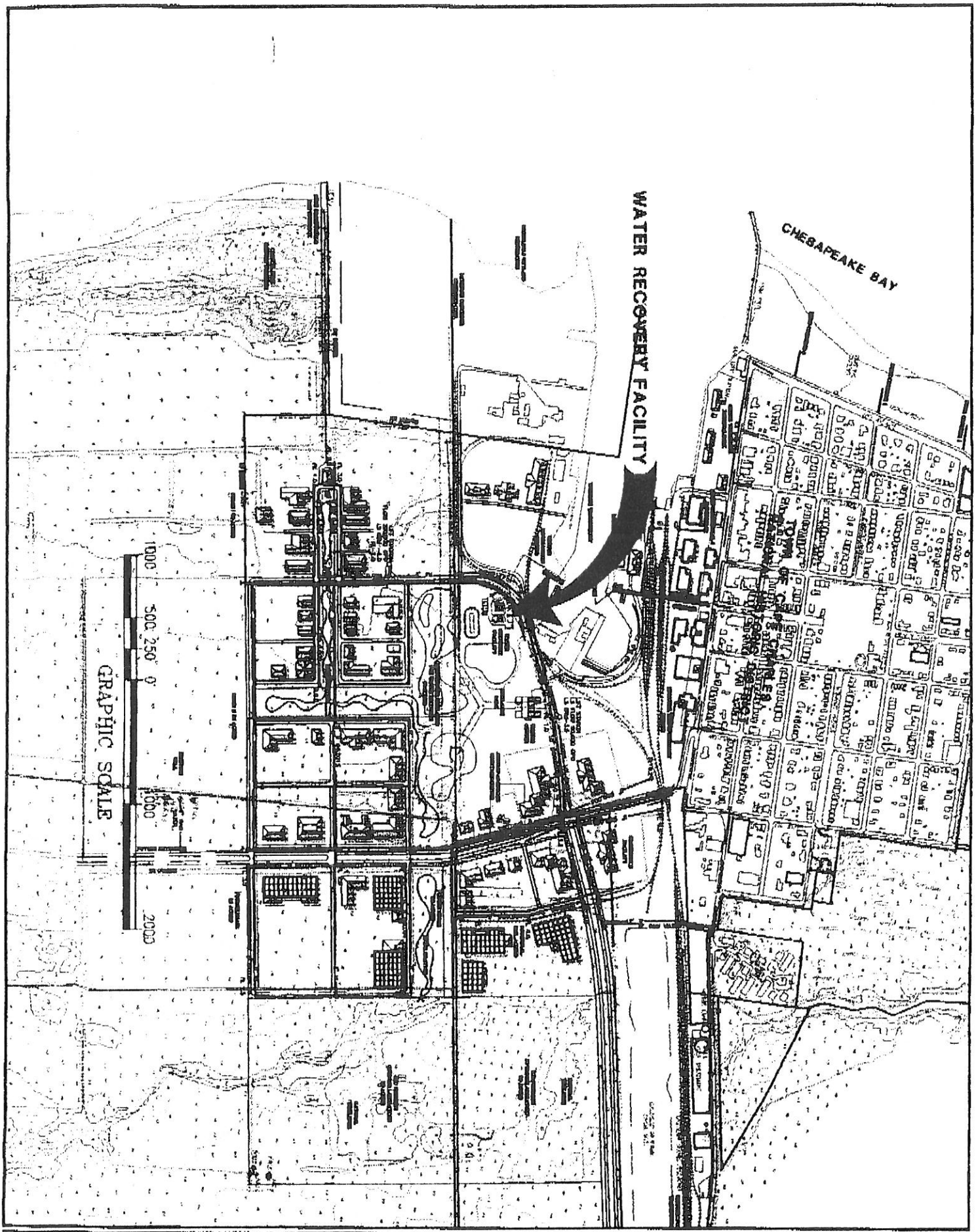
The goal of the project is zero discharge from the site; that water which has been used for industrial and domestic purposes be recovered in such a way as to minimize the consumption of energy; that resources consumed in the recovery of the water be renewable; that all of the products generated in the process be reused, including the water.

General Background:

The Port of Cape Charles Sustainable Technologies Industrial Park, located between the Chesapeake Bay and the Atlantic Ocean, lies on a slender finger of land known as Virginia's Eastern Shore. The site has been chosen as a prototype industrial facility by the President's Council on Sustainable Development to demonstrate advanced facilities in resource efficiency and pollution prevention. Espey, Huston & Associates has been chosen to lead a team of consultants in the execution of the plans for guiding the construction, maintenance and operation of the STIP.

The initial work included overall master planning, preparation of new zoning, land use designations, design guidelines and covenants. Additionally, field surveys, subdivision plans and construction documents for infrastructure in the Phase I area of the STIP are included. The plans envision the eventual construction of approximately 4-million square feet of industrial office space and the revitalization of the Town of Cape Charles.

Planning concepts will allow for the construction of demonstration projects such as alternative pavements and roadway design, water recovery systems utilizing vegetated as well as other forms of biotechnology, emissions control, reuse of byproducts, state of the art vegetative management practices for minimization of water usage, energy consumption and nutrient runoff. Techniques for allowing the continued industrial and recreational uses of the Cape Charles harbor to coexist while protecting the Bay from pollution will be demonstrated. Design guidelines and covenants will be established to insure that buildings will meet similar goals and objectives. The park's goal is to serve as a world-model industrial facility with eco-tourism being a predominating use.

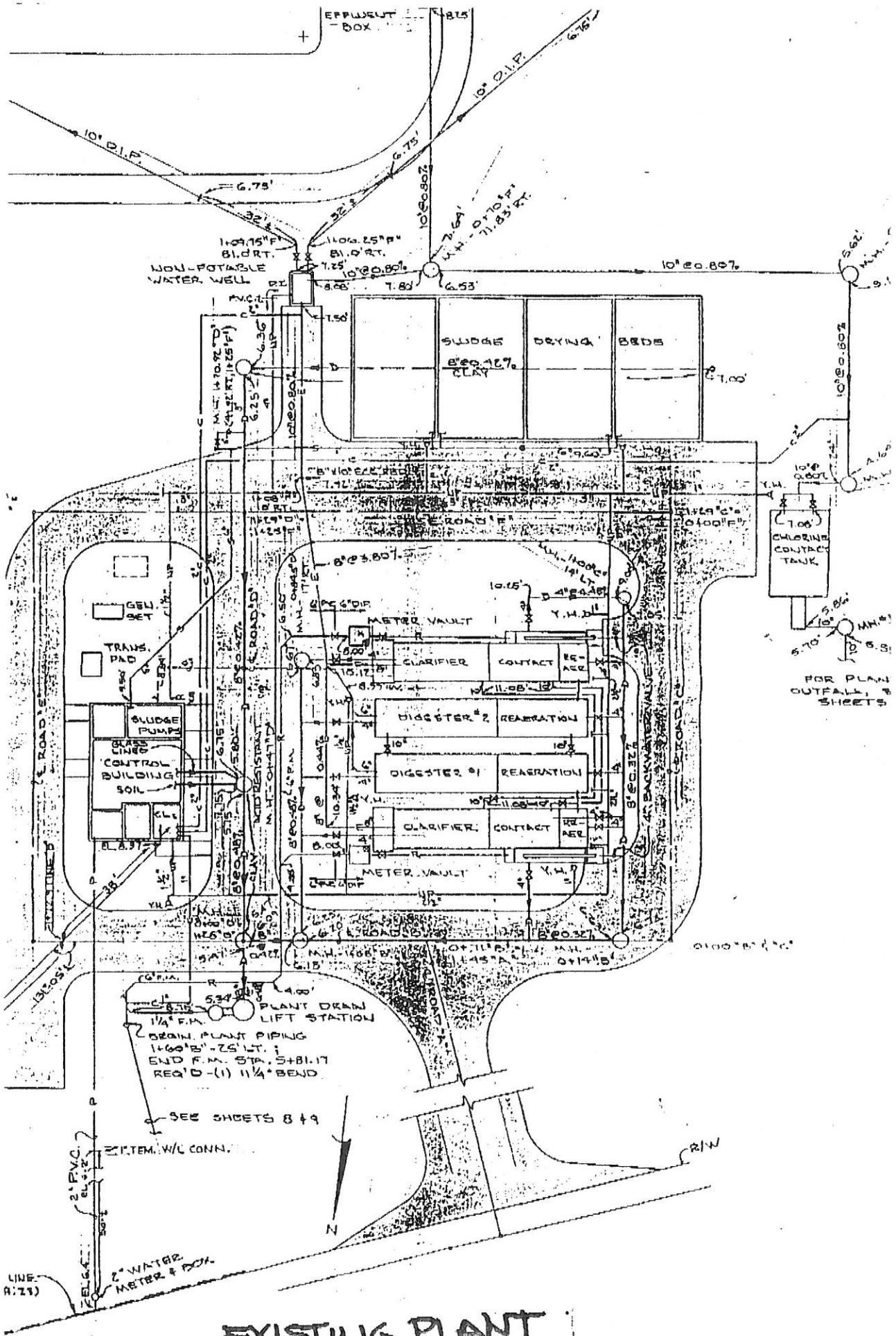


PORT of CAPE CHARLES
Sustainable Technologies Industrial Park
Town of Cape Charles & Northampton County, Virginia

PROPOSED WATER RECOVERY FACILITY

EH&A
Espey, Huston & Associates, Inc.
Engineering & Environmental Consultants

058033



EXISTING PLANT

PIPING PLAN

Description of the Existing Plant:

The existing wastewater treatment facilities are owned and operated by the Town of Cape Charles. Constructed in the early 1980's, it is located on Bay Shore Road which runs immediately adjacent to the Cape Charles Harbor.

The plant consists of an activated sludge process including sewage pumping, comminution, screening and grit collection, aeration, sedimentation, polishing/holding pond, UV disinfection (with chlorination as standby), post-aeration, aerobic digestion and sludge handling facilities. The design flow for the existing plant is 250,000 gallons per day. The plant was originally designed for expansion capabilities to 425,000 gallons per day.

The receiving stream for the plants discharge is Cape Charles Harbor which flows into the Chesapeake Bay and then the Atlantic Ocean. This facilities VPDES Permit was issued in January of 1994 and will expire in January, 1999.

Goals and Objectives:

In order to meet the objectives of this project, a two step solution may be required. The first step is to analyze the existing plant, both from an operations as well as process standpoint to determine the improvements necessary to maintain plant compliance until such time that it can be converted into a water recovery facility. The second step is to upgrade or replace the plant with a process or processes that meets the goals and objectives of the STIP. The initial effort is intended to insure that the facility maintains its compliance with the State and provides for the needs of Phase I development of the STIP.

From a global perspective, wastewater is viewed as a recoverable resource. The overall objective of the STIP is to design for resource conservation, efficiency, and enhancement, to promote the wise use of renewable resources, and to integrate the concept of recycling into all aspects of the project. The goal of the project is zero discharge from the site; that wastewater be treated in such a way as to minimize the consumption of energy; that resources consumed in the recovery of the water be renewable and that the all of the products generated in the process be reused.

Water Reuse:

As a demonstration of this intent, the first phase of STIP development, a fifty-acre tract south of the existing plant and Cape Charles Harbor includes plans for a recovered water return pipeline from the plant back to the eco-industrial park. It is expected that the waste stream recovery system will involve a pressurized line running within the planned utility corridor along with potable water, sanitary sewer, electric and communications lines. The recovery line will be designed to be tapped by each user within

the park. Water not immediately needed could be discharged into ponds and wetland systems for further polishing via biofiltration prior to reuse, flowing to the bay or infiltrating to the groundwater aquifer.

It is expected that the water could be utilized in various manufacturing processes, as well as for hydrological support of vegetation planned for harvesting, soil stabilization and remediation, natural or constructed wetlands enhancement, wildlife habitat enhancement, acquacultural activities, stabilization of water volumes and water quality for surface ponds planned for stormwater management and groundwater recharge.

Methods of Resource Recovery:

The new plant is expected to utilize multiple treatment methods as a demonstration of new technologies. Of primary interest are constructed solar and aquatic systems which most closely emulate the biological nutrient removal capabilities found occurring naturally. A built environment combining mechanical pretreatment, aquatic ponds, solar/aquatic shells, granular filtration, open water surface (FWS) and subsurface flow (SWS) wetland systems and advanced treatment systems for nutrient control will be our focus technologies. It is expected that open water and some limited subsurface flow wetland systems be constructed to serve Phase I STIP development.

High energy consuming systems will be considered if alternative electrical generation sources develop within the STIP. Alternative methods of disinfection will be researched and incorporated into the system to minimize the reintroduction of microorganisms into the environment. Should we focus on reuse of water where more public exposure is anticipated, more effective treatment techniques will be explored such as micro filtration, chemically enhanced pollutant removal and absorption units.

Byproducts from the waste stream will be marketed for reuse. Wherever possible, the "loop" will be closed within the park, so as to demonstrate the ability to do so to the ecotourists visiting Cape Charles. The plant will be designed for visitation and interpretation. Visitors will be provided with paths and interpretive demonstrations where appropriate.

Planning for the Future:

As the Town and the STIP grows, plant expansion will be required. The resource recovery plant will be developed to allow for the incorporation of technologies which are not currently available. Land will be set aside to accommodate these needs. Wherever feasible, the plant will be designed with maximum flexibility for later modifications as technology continues to improve. Of particular interest are the secondary and polishing phases of the recovery process and the recovery and reuse of sludge.

Port of Cape Charles Sustainable Technologies Industrial Park Masterplan

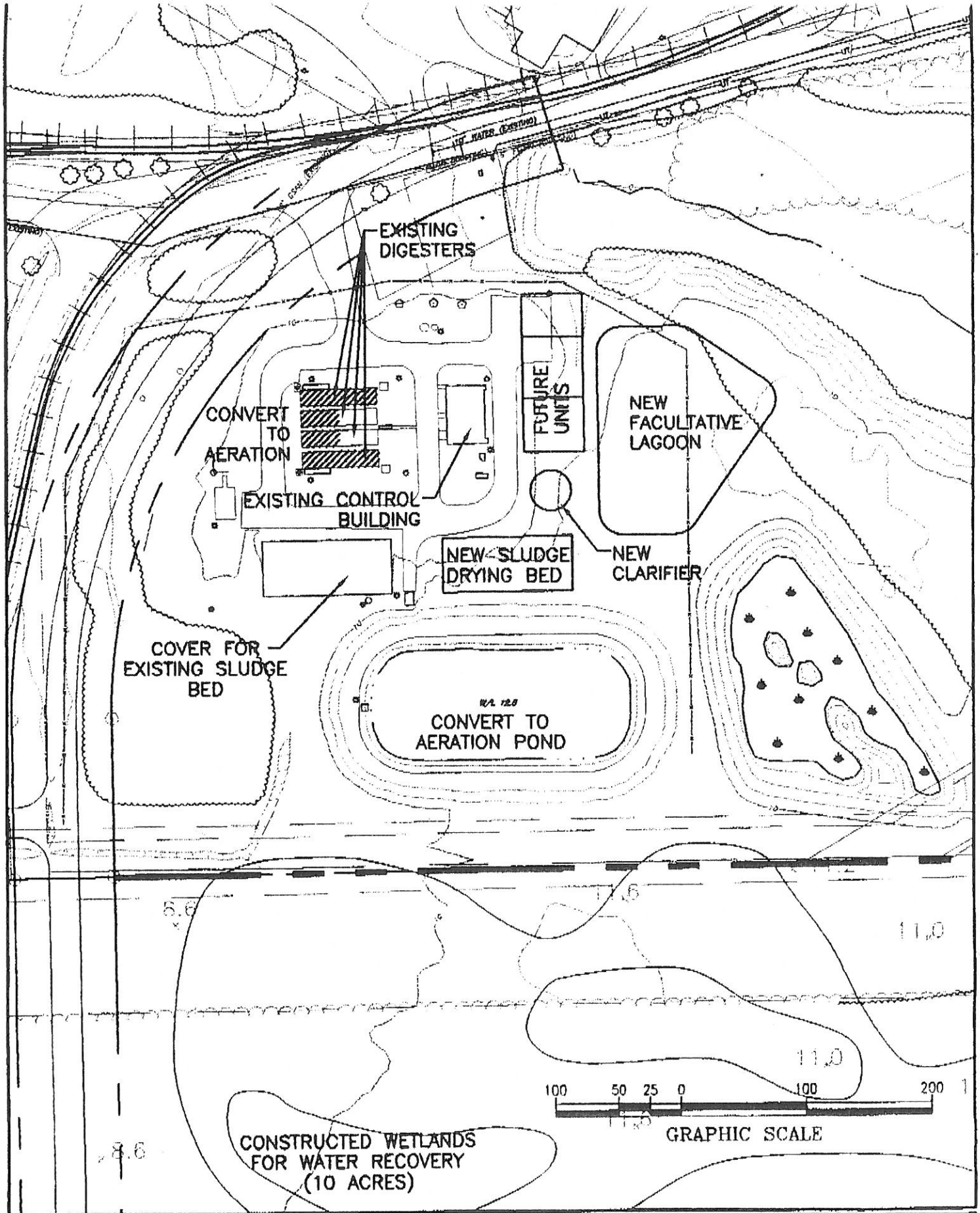
SEWER/WATER FLOWS

SITE	DESCRIPTION	AREA (SF)	AREA (ACRES)	MAX. FLOOR AREA (S.F.) 40% of Lot	LAND USE % OFFICE	% INDUST.	PERSONS OFFICE (2.5/1,000 S.F.)	INDUSTRIAL (1.5/1,000 S.F.)	TOTAL PERSONS	FLOW (25 GPD/ PERSON)
1A	PHASE I DEVELOPMENT	N/A	50.00	871,200	60.00%	40.00%	1,307	523	1,830	45,738
1B	PHASE II DEVELOPMENT	N/A	43.90	764,914	40.00%	60.00%	765	688	1,453	36,333
1C	PHASE II DEVELOPMENT	N/A	41.40	721,354	20.00%	80.00%	361	866	1,226	30,658
9	HARBOR AREA	1,709,946	39.25	683,978	20.00%	80.00%	342	821	1,163	29,069
10	HARBOR AREA	321,663	7.38	128,665	20.00%	80.00%	64	154	219	5,468
11	HARBOR AREA	77,362	1.78	30,945	20.00%	80.00%	15	37	53	1,315
12	HARBOR AREA	45,336	1.04	18,134	20.00%	80.00%	9	22	31	771
13	DUMP AREA	10,243	0.24	4,097	60.00%	40.00%	6	2	9	215
14	DUMP AREA	745,678	17.12	298,271	60.00%	40.00%	447	179	626	15,659
15	TOWER AREA	58,117	1.33	23,247	80.00%	20.00%	46	7	53	1,337
17	TREATMENT PLANT	637,153	14.63	254,861	60.00%	40.00%	382	153	535	13,380
18	TREATMENT PLANT	9,669	0.22	3,868	60.00%	40.00%	6	2	8	203
19	HARBOR AREA	53,461	1.23	21,384	20.00%	80.00%	11	26	36	909
20	HARBOR AREA	53,461	1.23	21,384	20.00%	80.00%	11	26	36	909
22	HARBOR AREA	20,281	0.47	8,112	20.00%	80.00%	4	10	14	345
NA	BAYSHORE CONCRETE	3,502,321	80.40	1,400,928	0.00%	25.00%	0	525	525	13,134
TOTAL			301.62	5,255,344			3,777	4,041	7,818	195,443

TOTAL FLOW (SEWER OR WATER): 195,443 GPD

NOTES:

1. These numbers are approximate and include the areas around the harbor or within the town.
2. Flow rates are based upon Table 4.1, Sewage Flows, Virginia Wastewater Regulations and Table 2-10, Wastewater Flow From Commercial Sources, Wastewater Engineering, Metcaf & Eddy, Third Edition. Heavy users will cause significant deviations from the the above projections.
3. Fire flow demands are not included in the above figures. Fire flow typically is significantly greater than industrial/domestic demands.
4. Site numbers correspond to tax map parcels.
5. Land use percentages for Bayshore Concrete were adjusted down to meet the anticipated lower population figure.



PORT of CAPE CHARLES
Sustainable Technologies Industrial Park
Town of Cape Charles & Northampton County, Virginia

Administered by The Joint Industrial Development Authority of Northampton County & its Incorporated Town
A Demonstration Project of the President's Council on Sustainable Development

PROPOSED WATER RECOVERY FACILITY

Espey, Huston & Associates, Inc.
Engineering & Environmental Consultants

The following table summarizes the planned improvements to the existing wastewater treatment plant at Cape Charles, from the initial improvements necessary to meet the State of Virginia's new limits to the proposed water recovery facility needed to serve the proposed STIP through the planned residential development of the adjoining Brown & Root property. It is expected that the work will be performed in stages and that each new phase will benefit from advances in technology.

PHASE	PROJECT DESCRIPTION	INCREASED CAPACITY	TOTAL CAPACITY
1.	Upgrade to meet new limits	na	250,000 gpd
	Add Wetland Treatment for Ph I	50,000 gpd	300,000 gpd
2.	Add Sustainable Treatment(s) for future STIP Phases	150,000 gpd	450,000 gpd
	Add Capacity for Brown & Root Residential Development	150,000 gpd	600,000 gpd
3.	Add Capacity for remaining Brown & Root Development	400,000 gpd	1,000,000gpd

Operations Personnel:

The proposed solution will also include the provision of properly trained personnel to manage the resource recovery facility. The expertise required will depend upon the final plan. Methods of maintenance and operation are significantly different from those found at conventional plants. Additionally, the operations plan will include a monitoring and testing plan to ensure that the plant is functioning as intended. As a part of this proposed effort, we will develop a plan of action for provision of appropriate expertise for the new facility.

Building the Design Team:

In order to design a resource recovery facility which meets the goals and objectives of the STIP, the design team must consist of specialists from areas outside of the conventional wastewater treatment arena. In addition to conventional process waste engineering, solar energy, bioengineering, wetland creation and restoration, hydrology, hydraulics, pond management and aquaculture experts will be required members of the team. Much of this expertise will come from within the ranks of Espey, Huston and Associates. However, it is our intention to include a number of experts from outside of our firm who have had recent experience with alternative technologies.

Focus on Alternative Concepts:

The design team, under the direction of Espey, Huston & Associates, will, through a series of iterations, develop several concept plans. Each alternative will then be evaluated for its merit towards meeting the goals and objectives of the STIP.

Involving the Regulatory Community:

Members of the regulatory community will be encouraged to participate in the design process. They will be invited to review the alternative concepts and offer their comments. We would expect to involve both State as well as Federal agencies in this effort.

PORT OF CAPE CHARLES, VIRGINIA
SUSTAINABLE TECHNOLOGIES INDUSTRIAL PARK
EXISTING PLANT UPGRADE
(TO MEET NEW STATE LIMITS)

ESTIMATED CONSTRUCTION COST

CATAGORY	ITEM	UNIT	UNIT COST	UNITS	TOTAL	CATAGORY TOTAL
EXISTING INTAKES:	NO CHANGE TO LIFT STATION & FORCE MAIN	N.A.	$0.00	0.0	$0	
	REROUTE PLANT PIPING	L.S.	$4,000.00	1.0	$4,000	
						$4,000
EXISTING POND:	CONSTRUCT NEW PUMP STATION & PIPE TO HEADWORKS USING EXISTING 6" F.M.	L.S.	$16,000.00	1.0	$16,000	
						$16,000
EXISTING UNITS:	REPIPE, CONNECT EXISTING CLARIFIERS W/ CONTACT UNITS & EXPAND PIPING BETWEEN RE-AERATION & CONTACT TANKS	L.S.	$4,000.00	1.0	$4,000	
	U.V. DISINFECTION - NO CHANGE	N.A.	$0.00	0.0	$0	
						$4,000
ADDITIONAL UNITS:	ADD 3-BLOWERS & DIFFUSERS	L.S.	$60,000.00	1.0	$60,000	
	NEW 32' DIA. CLARIFIER & PIPING	L.S.	$80,000.00	1.0	$80,000	
	EXPAND SLUDGE DRYING BEDS ADDIT. 4,500 S.F.	L.S.	$36,000.00	1.0	$36,000	
	COVER SLUDGE DRYING BEDS	L.S.	$40,000.00	1.0	$40,000	
						$216,000
			SUBTOTAL:			$240,000
CONTINGENCIES:	25% OF SUBTOTAL					$60,000
			TOTAL:			$300,000
CONSULTANTS:	15% OF SUBTOTAL					$42,000
TOTAL:			TOTAL ESTIMATED PROJECT COST:			$342,000
NOTES:						

ESPEY, HUSTON ASSOCIATES, INC.

12/10/96

FORT OF CAPE CHARLES, VIRGINIA
SUSTAINABLE TECHNOLOGIES INDUSTRIAL PARK

PHASE I CONSTRUCTED WETLANDS TREATMENT (50,000 GPD)

PROPOSED WATER RECOVERY FACILITY

ESTIMATED CONSTRUCTION COST

CATAGORY	ITEM	UNIT	UNIT COST	UNITS	TOTAL	CATAGORY TOTAL
SCREENING:	FINE SCREENS AT EXISTING UPGRADED PLANT	N.A.	$0.00	0	$0	$0
FACULTATIVE LAGOON:	LAGOON EXCAVATION (24,000 S.F. X 3 FT.)	C.Y.	$6.00	2,667	$16,002	
	LAGOON LINER	S.F.	$1.00	24,000	$24,000	$40,002
WETLANDS POND:	POND EXCAVATION & BERMING (1.5 ACRES X 1 FT.)	C.Y.	$6.00	2,420	$14,520	
	POND LINER	S.F.	$1.00	65,340	$65,340	
	ROCK MEDIA (30% X 1.5 AC. X 3' DEEP)	S.Y.	$15.00	2,178	$32,670	
	PIPING	L.S.	$25,000.00	1	$25,000	
	HYDRAULIC CONTROL STRUCTURES	L.S.	$65,000.00	1	$65,000	
	WETLAND PLANTINGS	AC.	$50,000.00	1	$50,000	$252,530
DISINFECTION:	REUSE EXISTING & SUPPLEMENT WITH NEW	L.S.	$30,000.00	1	$30,000	$30,000
LAND ACQUISITION:	NOT INCLUDED	N.A.	$0.00	0	$0	$0
			SUBTOTAL:			$322,532
CONTINGENCIES:	25% OF SUBTOTAL					$80,633
			TOTAL:			$403,165
CONSULTANTS:	15% OF SUBTOTAL					$56,443
TOTAL:			TOTAL ESTIMATED PROJECT COST:			$459,608

NOTES:
1. THIS ESTIMATE ASSUMES THAT THE WASTE WATER PLANT HAS ALREADY BEEN UPGRADED TO MEET THE STATE'S CURRENT MINIMUM LIMITS TO SERVE THE TOWN'S NEEDS.

COMMONWEALTH of VIRGINIA

PETER W. SCHMIDT
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
287 INDEPENDENCE BOULEVARD
PEMBROKE TWO, SUITE 310
VIRGINIA BEACH, VIRGINIA 23462
(804) 552-1840
FAX (804) 552-1849 TDD # - RICHMOND (804) 762-4021

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 10
To Joyce Tr, 6616 | From Traycie West
Co. | Co. DEQ
Dept. | Phone # 552 1840
Fax # | Fax # 1849

May 11, 1995

Ms. Joyce Tribble
FAX (804) 678-0477

Dear Ms. Tribble,

Following, please find descriptive statistics of available water quality parameters from sampling station 7-CCH000.00 (mouth of Cape Charles Harbor). A guide to the station headers and a map showing the approximate location of the sampling station has been included.

If you require additional information on this station, or if I can be of further assistance, please feel free to contact me.

Thank you,

Traycie L. West
Environmental Data Manager
Water Resources Development

I had to use N
Small Font... if you
can't read this printout
CALL me before 5P or
After 7:15 tomorrow And
I'll remove some columns
to Allow for A bigger font
Traycie

Following is a retrieval of data from the Environmental Protection Agency's STORET system, a database of sampling sites and their associated water quality data. The retrieval was performed by a staff member of the Virginia Department of Environmental Quality -Water Division, Tidewater Regional Office.

THE FORMAT FOR THE STATION HEADER INFORMATION WHICH APPEARS ON EACH PAGE OF THE RETRIEVAL.

STATION NUMBER(S)
LATITUDE/LONGITUDE PRECISION CODE
STATION LOCATION
STATE/COUNTY CODE STATE NAME COUNTY NAME
MAJOR BASIN NAME MAJ/MIN/SUB BASIN CODE
MINOR BASIN NAME
STATION TYPE AGENCY CODE STORED DATE HYDROLOGIC UNIT
STATION DEPTH ELEVATION
ECOREGION
WATER BODY
AQUIFERS
LOCKED DATE

RIVER MILE INDEX

PARAMETER SPECIFIC INFORMATION -

Parameter # 1351 - Stream Flow Severity:

1 = DRY 2 = LOW 3 = NORMAL 4 = FLOOD 5 = ABOVE NORMAL

Parameter # 0041 - Weather Code:

1 = CLOUDY 2 = RAIN 3 = CLEAR 4 = FOG

Parameter # 0067 - Tide Code:

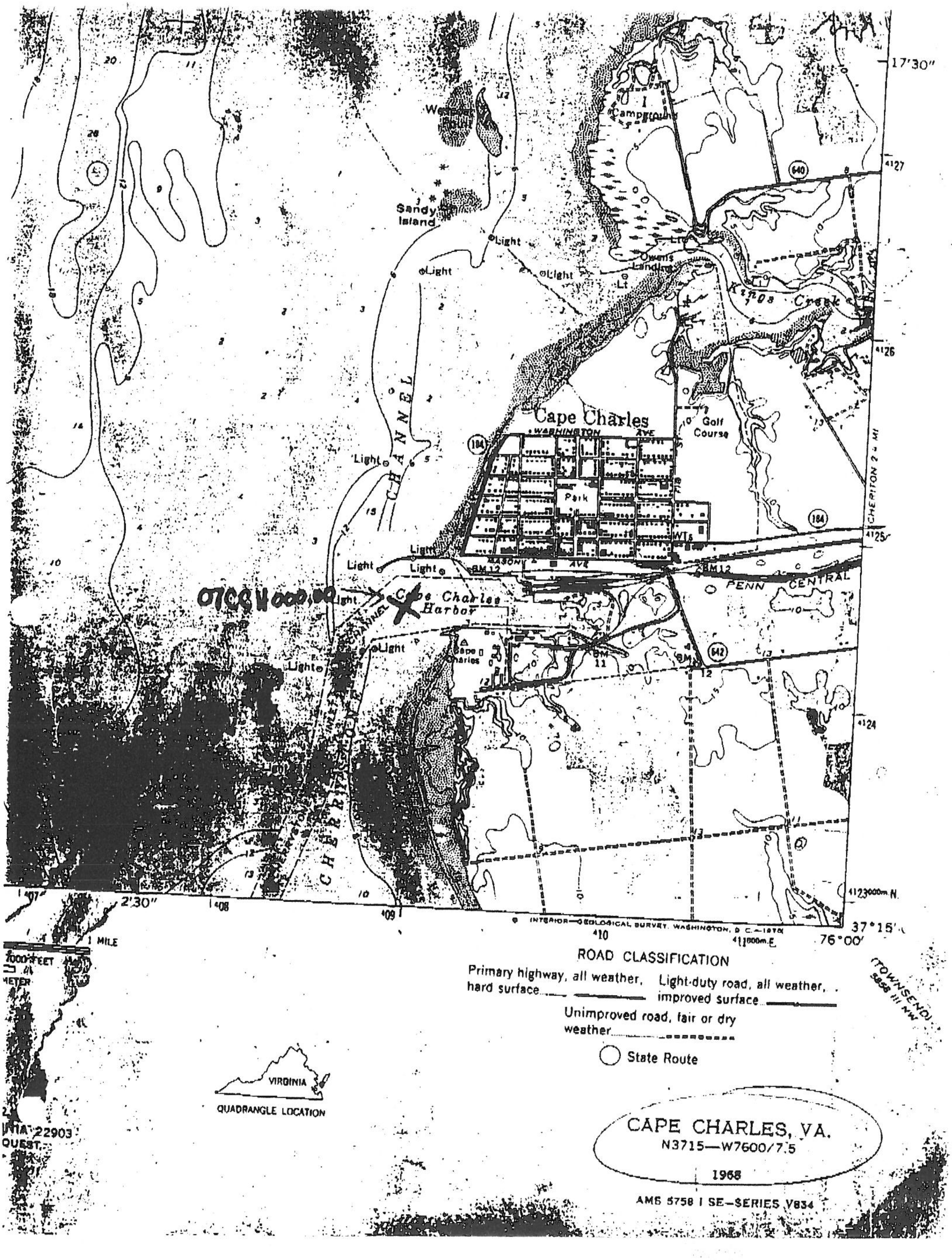
1 = HIGH 2 = LOW 3 = FLOOD 4 = EBB

* next to a parameter code means a second, similar parameter code was designated to substitute where the original parameter code is missing. This option is typically used when new procedures are introduced to replace old ones that measure the same parameter, and is especially used for requests that span many years. For example, Dissolved Oxygen measured by probe is code 299. DO measured by Winkler method is 300. Both parameters would be requested, one as a substitute for when the other is missing, providing a continuous stream od DO data to the requestor.

..over..

LIST OF REMARK CODES USED TO DESIGNATE CERTAIN DATA POINTS AS BEING A SPECIAL CASE OR HAVING A CERTAIN ATTRIBUTE.
Unless specified by the requesting party, data will be retrieved regardless of remark codes. Remark codes will appear next to the applicable data point (i.e. 0.001U).

A	Value Reported is the mean of two or more determinations.
B	Results based upon colony counts outside the acceptable range.
C	Value calculated.
D	Field measurement.
E	Extra samples taken at composite stations.
F	In the case of species, Female.
G	Value reported is the maximum of two or more determinations.
H	Value based on field kit determination; results may not be accurate.
J	Estimated value or value not accurate.
K	Actual value is known to be less than value given.
L	Actual value is known to be greater than value given.
M	Presence of material verified but not quantified, or in the case of temperature or oxygen reduction potential - a negative value, or in the case of species - Male.
N	Presumptive evidence of presence of material.
O	Sampled, but analysis lost or not performed.
P	Too numerous to count.
Q	Sample held beyond normal holding time.
R	Significant rain in the past 48 hours.
S	Laboratory test.
T	Value reported is less that criteria of detection.
U	Indicates material was analyzed for but not detected, or in the case of species - undetermined gender.
V	The analyte was detected in the sample and the method blank.
W	Value observed is less that the lowest value reportable under "T" code.
X	Value is quasi vertically-integrated sample.
Y	Laboratory analysis from unpreserved sample, data may not be accurate.
Z	too many colonies present to count (TNTC), the numeric value represents the filtration volume.
$	Value automatically calculated by the STORET system.



Sandy Island
Light
Campground
Owens Landing
Kings Creek
CHANNEL
Cape Charles
WASHINGTON AVE
Golf Course
Park
WTs
MASON AVE
BM 12
PENN CENTRAL
184
640
642
07CCV000.00
Cape Charles Harbor
CHERRYSTONE CHANNEL
BM 11
CHERITON 2.4 MI.
17'30"
4127
4126
4125
4124
4123000m N.
37°15'
2'30"
408
409
410
411000m E.
76°00'
1 MILE
INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1970
ROAD CLASSIFICATION
Primary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather
State Route
(TOWNSEND) 5858 III NW
VIRGINIA
QUADRANGLE LOCATION
CAPE CHARLES, VA.
N3715—W7600/7.5
1968
AMS 5758 I SE—SERIES V834

STORET RETRIEVAL DATE 95/05/11 PGM=INVENT PAGE: 1

7-CCH000.00 VA7-02-X0135 VA7-5X0135
REQUEST FOR JOYCE TRIBBLE
37 15 53.0 076 01 36.0 1
FAX TO 804-678-0483
MOUTH CAPE CHARLES HARBOR
51131 VIRGINIA NORTHAMPTON
02-NORTH ATLANTIC
7-SMALL COA. + CHES. BAY
/TYPA/AMBNT/STREAM
21VASWCB 770428 02080101
0000 FEET DEPTH

	PARAMETER			MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00002	MSAMPLOC	% FROM	RT BANK	WATER		69	27.10200	517.2100	22.74200	50.0	.0	89/01/25	95/04/26
00010	WATER	TEMP	CENT	WATER		73	15.17800	64.81800	8.050900	28.4	1.5	89/01/26	95/04/26
00011	WATER	TEMP	FAHN	WATER	$	73	59.32000	210.0200	14.49200	83.1	34.7	89/01/26	95/04/26
00041	WEATHER	WMO CODE	4501	WATER		73	2.164400	1.000400	1.000200	4	1	89/01/25	95/04/26
00067	TIDE	STAGE	CODE	WATER		70	2.971400	.9267200	.9626600	4	1	89/01/25	95/04/26
00070	TURB	JKSN	JTU	WATER		35	6.255100	30.73100	5.543600	26.0	.7	89/01/26	92/06/25
00076	TURB	TRBIDMTR	HACH FTU	WATER		9	10.24500	106.2600	10.30800	37.0	3.1	94/07/28	95/03/21
00080	COLOR	PT-CO	UNITS	WATER		19	16.89500	51.65500	7.187200	33	6	91/02/21	93/02/23
00094	CNDUCTVY	FIELD	MICROMHO	WATER		68	24575.00	40870000	6393.000	40900	11500	89/01/26	95/04/26
00095	CNDUCTVY	AT 25C	MICROMHO	WATER		68	32014.00	33728000	5807.600	40300	3176	89/01/26	95/03/21
00096	SALINITY	AT 25C	MG/ML	WATER		35	24.74300	839.2500	28.97000	190	10	89/11/30	95/04/26
00299	DO	PROBE	MG/L	WATER		39	9.517200	6.742200	2.596600	15.3	5.0	89/11/30	95/04/26
00300	DO		MG/L	WATER		36	9.830500	6.827300	2.612900	15.3	5.7	89/01/26	92/06/25
00301	DO	SATUR	PERCENT	WATER	$	73	103.0700	296.5000	17.21900	150.0	65.9	89/01/26	95/04/26
00310	BOD	5 DAY	MG/L	WATER		57	2.015800	1.438500	1.199400	7.0	1.0	89/01/26	95/03/21
					U	10	1.000000	.0000000	.0000000	1.0	1.0	91/12/17	94/12/19
					TOT	67	1.864200	1.353600	1.163400	7.0	1.0	89/01/26	95/03/21
00340	COD	HI LEVEL	MG/L	WATER		2	5.650000	63.84500	7.990300	11	0	93/06/15	93/07/20
					0	26	.0000000	.0000000	.0000000	0	0	92/08/17	94/11/29
					TOT	28	.4035700	4.560400	2.135500	11	0	92/08/17	94/11/29
00400	PH		SU	WATER		69	8.188900	.1443000	.3798700	9.06	6.68	89/01/26	95/04/26
00403	PH	LAB	SU	WATER		68	7.861400	.0421530	.2053100	8.2	7.3	89/01/26	95/03/21
00410	T ALK	CACO3	MG/L	WATER		68	90.26700	72.64400	8.523100	105	43	89/01/26	95/03/21
00480	SALINITY		PPTH	WATER		28	17.30400	9.266200	3.044100	24.5	12.5	89/01/26	92/06/25
					L	1	40.00000			40.0	40.0	90/09/26	90/09/26
					TOT	29	18.08600	26.69800	5.167000	40.0	12.5	89/01/2[illegible]	92/06/25
00500	RESIDUE	TOTAL	MG/L	WATER		66	27857.00	7477E+05	27346.00	245000	13200	89/01/26	95/03/21
00505	RESIDUE	TOT VOL	MG/L	WATER		67	3721.700	1121100	1058.800	6300	186	89/01/26	95/03/21
00510	RESIDUE	TOT FIX	MG/L	WATER		64	23675.00	5871E+05	24232.00	213000	10200	89/03/21	95/03/21
00530	RESIDUE	TOT NFLT	MG/L	WATER		68	19.36800	257.1600	16.03600	69	1	89/01/26	95/03/21
00535	RESIDUE	VOL NFLT	MG/L	WATER		63	5.917500	16.42800	4.053100	19	1	89/01/26	95/03/21
					K	1	1.000000			1	1	89/03/21	89/03/21
					U	4	2.000000	1.333300	1.154700	3	1	90/08/23	94/12/19
					TOT	68	5.614700	16.44600	4.055300	19	1	89/01/26	95/03/21
00540	RESIDUE	FIX NFLT	MG/L	WATER		66	14.09400	163.5900	12.79000	57	1	89/01/26	95/03/21
					U	1	1.000000			1	1	90/12/27	90/12/27
					TOT	67	13.89900	163.6700	12.79300	57	1	89/01/26	95/03/21
00610	NH3+NH4-	N TOTAL	MG/L	WATER		48	.0766660	.0022993	.0479510	.290	.040	89/05/09	95/03/21
					K	6	.0400000	.0000000	.0000000	.040	.040	89/06/27	90/06/26

STORET RETRIEVAL DATE 95/05/11 PGM=INVENT PAGE: 2
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REQUEST FOR JOYCE TRIBBLE
FAX TO 804-678-0483

/TYPA/AMBNT/STREAM

PARAMETER			MEDIUM	RNK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00610 NH3+NH4- N TOTAL		MG/L	WATER	O	1	.0000000			.000	.000	92/11/19	92/11/19
				U	9	.0400000	.0000000	.0000000	.040	.040	91/08/22	94/10/25
				TOT	64	.0668750	.0020314	.0450710	.290	.000	89/05/09	95/03/21
00612 UN-IONZD	NH3-N	MG/L	WATER	$	63	.0033983	.0000085	.0029325	.014	.000	89/05/09	95/03/21
00615 NO2-N	TOTAL	MG/L	WATER		28	.0139290	.0000765	.0087514	.040	.010	89/01/26	95/02/22
				K	13	.0100000	.0000000	.0000000	.010	.010	89/03/21	90/10/24
				U	26	.0100000	.0000000	.0000000	.010	.010	90/11/26	95/03/21
				TOT	67	.0116420	.0000351	.0059281	.040	.010	89/01/26	95/03/21
00619 UN-IONZD	NH3-NH3	MG/L	WATER	$	63	.0041319	.0000127	.0035657	.017	.000	89/05/09	95/03/21
00620 NO3-N	TOTAL	MG/L	WATER		24	.0837500	.0017897	.0423050	.180	.040	89/03/21	95/01/24
				K	14	.0400000	.0000000	.0000000	.040	.040	89/01/26	90/10/24
				U	29	.0400000	.0000000	.0000000	.040	.040	90/11/26	95/03/21
				TOT	67	.0556720	.0010704	.0327170	.180	.040	89/01/26	95/03/21
00625 TOT KJEL	N	MG/L	WATER		66	.6287900	.0602360	.2454300	1.600	.200	89/01/26	95/03/21
				O	1	.0000000			.000	.000	93/11/23	93/11/23
				TOT	67	.6194000	.0652250	.2553900	1.600	.000	89/01/26	95/03/21
00665 PHOS-TOT		MG/L P	WATER		38	.1236800	.0050997	.0714120	.500	.100	89/01/26	94/12/19
				K	7	.1000000	.0000000	.0000000	.100	.100	89/05/09	90/10/24
				U	21	.1000000	.0000000	.0000000	.100	.100	90/12/27	95/03/21
				TOT	66	.1136400	.0030420	.0551550	.500	.100	89/01/26	95/03/21
00671 PHOS-DIS	ORTHO	MG/L P	WATER		31	.0229030	.0003412	.0184740	.100	.010	89/01/26	92/06/25
				U	4	.0100000	.0000000	.0000000	.010	.010	91/01/22	91/08/22
				TOT	35	.0214290	.0003184	.0178460	.100	.010	89/01/26	92/06/25
00680 T ORG C	C	MG/L	WATER		67	4.232700	5.151500	2.269700	15.0	1.7	89/01/26	95/03/21
				O	1	.0000000			.0	.0	93/01/19	93/01/19
				TOT	68	4.170400	5.338100	2.310400	15.0	.0	89/01/26	95/03/21
00900 TOT HARD	CACO3	MG/L	WATER		41	4063.100	727580.0	852.9800	5400	35	89/01/26	93/01/19
00940 CHLORIDE	TOTAL	MG/L	WATER		59	12259.00	9939200	3152.700	21800	71	89/01/26	95/03/21
00945 SULFATE	SO4-TOT	MG/L	WATER		59	1669.400	178420.0	422.4000	2990	9	89/01/26	95/03/21
				O	1	.0000000			0	0	93/09/21	93/09/21
				TOT	60	1641.600	221850.0	471.0100	2990	0	89/01/26	95/03/21
00951 FLUORIDE	F,TOTAL	MG/L	WATER		25	.4668000	.0136230	.1167200	.60	.10	89/01/26	92/08/17
				K	1	.1000000			.10	.10	90/02/27	90/02/27
				U	6	1.950000	15.59100	3.948600	10.00	.10	90/05/24	93/01/19
				TOT	32	.7334400	2.882000	1.697600	10.00	.10	89/01/26	93/01/19
00955 SILICA	DISOLVED	MG/L	WATER		29	1.518900	12.92000	3.594500	20.0	.01	89/04/20	92/09/22
				K	2	.0100000	.0000000	.0000000	.01	.01	89/10/26	91/01/22
				U	7	.8714300	.1157200	.3401700	1.0	.1	91/03/26	93/02/23
				TOT	38	1.320200	9.958000	3.155600	20.0	.01	89/04/20	93/02/23

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REQUEST FOR JOYCE TRIBBLE
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/TYPA/AMBNT/STREAM

PARAMETER		MEDIUM	RNK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
01002 ARSENIC	AS,TOT UG/L	WATER	K	1	10.00000			10	10	90/05/24	90/05/24
			U	4	10.00000	.0000000	.0000000	10	10	91/06/19	94/04/27
			TOT	5	10.00000	.0000000	.0000000	10	10	90/05/24	94/04/27
01012 BERYLLIUM	BE,TOT UG/L	WATER	K	1	100.0000			100.00	100.00	90/05/24	90/05/24
			U	2	10.00000	.0000000	.0000000	10.00	10.00	91/06/19	92/04/23
			TOT	3	40.00000	2700.000	51.96200	100.00	10.00	90/05/24	92/04/23
01027 CADMIUM	CD,TOT UG/L	WATER	K	1	5.000000			5	5	90/05/24	90/05/24
			U	4	10.00000	.0000000	.0000000	10	10	91/06/19	94/04/27
			TOT	5	9.000000	5.000000	2.236100	10	5	90/05/24	94/04/27
01034 CHROMIUM	CR,TOT UG/L	WATER	K	1	10.00000			10	10	90/05/24	90/05/24
			U	4	20.00000	400.0000	20.00000	50	10	91/06/19	94/04/27
			TOT	5	18.00000	320.0000	17.88900	50	10	90/05/24	94/04/27
01042 COPPER	CU,TOT UG/L	WATER		2	30.50000	760.5000	27.57700	50	11	90/05/24	91/06/19
			U	3	10.00000	.0000000	.0000000	10	10	92/04/23	94/04/27
			TOT	5	18.20000	316.2000	17.78200	50	10	90/05/24	94/04/27
01045 IRON	FE,TOT UG/L	WATER		2	504.4200	248100.0	498.0900	857	152	93/05/13	94/04/27
01051 LEAD	PB,TOT UG/L	WATER	K	1	100.0000			100	100	90/05/24	90/05/24
			U	4	10.00000	.0000000	.0000000	10	10	91/06/19	94/04/27
			TOT	5	28.00000	1620.000	40.24900	100	10	90/05/24	94/04/27
01055 MANGNESE	MN UG/L	WATER		2	25.72500	267.5000	16.35500	37.3	14.2	93/05/13	94/04/27
01059 THALLIUM	TL,TOTAL UG/L	WATER	K	1	100.0000			100	100	90/05/24	90/05/24
			U	2	15.00000	50.00000	7.071100	20	10	91/06/19	92/04/23
			TOT	3	43.33300	2433.300	49.32900	100	10	90/05/24	92/04/23
01067 NICKEL	NI,TOTAL UG/L	WATER	K	1	10.00000			10	10	90/05/24	90/05/24
			U	4	10.00000	.0000000	.0000000	10	10	91/06/19	94/04/27
			TOT	5	10.00000	.0000000	.0000000	10	10	90/05/24	94/04/27
01077 SILVER	AG,TOT UG/L	WATER	U	1	10.00000			10.0	10.0	92/04/23	92/04/23
01092 ZINC	ZN,TOT UG/L	WATER		1	30.00000			30	30	93/05/13	93/05/13
			K	1	5.000000			5	5	90/05/24	90/05/24
			U	3	10.00000	.0000000	.0000000	10	10	91/06/19	94/04/27
			TOT	5	13.01800	95.76700	9.786100	30	5	90/05/24	94/04/27
01097 ANTIMONY	SB,TOT UG/L	WATER	U	1	10.00000			10	10	92/04/23	92/04/23
01147 SELENIUM	SE,TOT UG/L	WATER		1	20.00000			20	20	91/06/19	91/06/19
			K	1	100.0000			100	100	90/05/24	90/05/24
			U	3	20.00000	.0000000	.0000000	20	20	92/04/23	94/04/27
			TOT	5	36.00000	1280.000	35.77700	100	20	90/05/24	94/04/27
01351 STREAM	FLOW SEVERITY	WATER		71	3.070400	.1806900	.4250800	5	2	89/01/25	95/04/26
31614 FEC COLI	MPN TUBECODE	WATER		27	61.01500	10289.00	101.4300	420	2	89/01/25	92/06/25
			K	2	1.800000	.0000000	.0000000	2	2	90/09/26	90/12/27

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REQUEST FOR JOYCE TRIBBLE
FAX TO 804-678-0483

/TYPA/AMBNT/STREAM

PARAMETER	MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
31614 FEC COLI MPN TUBECODE	WATER	L	4	1600.000	.0000000	.0000000	1600	1600	89/07/20	90/08/23
31614 FEC COLI MPN TUBECODE	WATER	TOT	33	243.9700	270120.0	519.7300	1600	2	89/01/25	92/06/25
31615 FEC COLI MPNECHED /100ML	WATER		26	182.9600	209170.0	457.3500	1600	2	92/08/17	95/04/26
		K	3	1.800000	.0000000	.0000000	2	2	93/10/19	94/01/25
		L	1	1600.000			1600	1600	94/08/17	94/08/17
		U	3	1.800000	.0000000	.0000000	2	2	92/11/19	94/12/19
		TOT	33	192.9600	232210.0	481.8800	1600	2	92/08/17	95/04/26
31616 FEC COLI MFM-FCBR /100ML	WATER		3	15.66700	140.3300	11.84600	23	2	89/10/26	93/06/15
32240 TANNIN LIGNIN MG/L	WATER		5	.3240000	.0964800	.3106100	.9	.1	92/09/22	93/01/19
34259 DELTABHC TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
34351 ENDSULSF TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
34356 B-ENDO SULFAN TOTWUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
34361 A-ENDO SULFAN TOTWUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
34366 ENDRINAL DEHYDE TOTWUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
34671 PCB 1016 TOTWUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
38442 DICAMBA (BANVEL) DISSUG/L	WATER	K	1	.2000000			.200	.200	90/05/24	90/05/24
38451 DICLPROP SUSPUG/L	WATER	K	1	.2000000			.200	.200	90/05/24	90/05/24
38745 2,4-DB TOTWUG/L	WATER	K	1	.2000000			.200	.200	90/05/24	90/05/24
39032 PCP TOT UG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39300 P,P'DDT TOT UG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39310 P,P'DDD TOT UG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39320 P,P'DDE TOT UG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39330 ALDRIN TOT UG/L	WATER	U	1	.1000000			.100	.100	90/05/24	90/05/24
39337 ALPHABHC TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39338 BETA BHC TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39340 GAMMABHC LINDANE TOT.UG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39380 DIELDRIN TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39390 ENDRIN TOT UG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39400 TOXAPHEN TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39410 HEPTCHLR TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39420 HPCHLREP TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39488 PCB-1221 TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39492 PCB-1232 TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39496 PCB-1242 TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39500 PCB-1248 TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39508 PCB-1260 TOTUG/L	WATER	K	1	.1000000			.100	.100	90/05/24	90/05/24
39730 2,4-D WHL SMPL UG/L	WATER	U	1	.2000000			.100	.100	90/05/24	90/05/24
39740 2,4,5-T WHL SMPL UG/L	WATER	K	1	.2000000			.200	.200	90/05/24	90/05/24
39760 SILVEX WHL SMPL UG/L	WATER	K	1	.2000000			.200	.200	90/05/24	90/05/24

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PARAMETER			MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
46570 CAL HARD	CA MG	MG/L	WATER		2	516.5100	10802.00	103.9300	590	443	93/05/13	94/04/27
70507 PHOS-T	ORTHO	MG/L P	WATER		28	.0267860	.0003855	.0196360	.100	.010	92/08/17	95/03/21
				U	3	.0100000	.0000000	.0000000	.010	.010	94/04/27	94/10/25
				TOT	31	.0251610	.0003724	.0193000	.100	.010	92/08/17	95/03/21
71900 MERCURY	HG,TOTAL	UG/L	WATER	K	1	.3000000			.3	.3	90/05/24	90/05/24
				U	4	.3000000	.0000000	.0000000	.3	.3	91/06/19	94/04/27
				TOT	5	.3000000	.0000000	.0000000	.3	.3	90/05/24	94/04/27
74041 WQF	SAMPLE	UPDATED	WATER		77	922160.0	3525E+05	18776.00	950504	890223	89/01/25	95/04/26
77825 ALACHLOR	TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	90/05/24	90/05/24
82078 TURBIDIT Y	FIELD	NTU	WATER		23	5.563500	13.75400	3.708700	15.3	1.1	92/08/17	94/06/28

THIS IS AN INVENTORY RETRIEVAL SHOWING SUMMARY STATISTICS FOR ALL PARAMETERS.
A BEGINNING DATE OF (YY/MM/DD) 89/01/01 WAS REQUESTED,
NO ENDING DATE WAS REQUESTED -- STOREY ASSUMED THE ENDING DATE WAS THAT OF THE MOST RECENT DATA VALUE FOUND.
***** END OF SUMMARY SECTION *****

GROSS

0 1 TOTAL STATIONS PROCESSED
REQUEST FOR JOYCE TRIBBLE
FAX TO 804-678-0483

	STA BEG	STA END	# OF OBS	# OF SAMPLE	STA END-PERIOD OF RECD IN YRS >0	<.5	<3	>=3
1989	1	0	402	14	0	0	0	0
1990	0	0	483	13	0	0	0	0
1991	0	0	363	10	0	0	0	0
1992	0	0	366	10	0	0	0	0
1993	0	0	491	15	0	0	0	0
1994	0	0	406	11	0	0	0	0
1995	0	1	114	4	0	0	0	1
TOTAL	1	1	2625	77	0	0	0	1

SCOPE OF ENVIRONMENTAL SITE ASSESSMENTS

The sections that follow describe the tasks that will be conducted, and are presented in the general format of the proposed Phase I ESA report. The report will include an Executive Summary that consists of a brief factual statement of the major findings and areas of concern identified during the ESA. The Phase I ESA will address, define, and include the following: purpose and scope of the ESA; process, procedures, and methodologies used in acquiring information and recording data; and any limitations of the ESA.

Site Overview

The site overview section of the Phase I ESA will address, define, and include the following:

- Site name; address, city, county, state, and zip code;
- Legal description of the property/site;
- Property size (acres or square feet);
- General description of zoning;
- Description of current improvements and occupancy uses; and a
- site vicinity map based on a recent 7.5 minute series topographic map.

Site Background/Operating History

The objective in this section is to conduct inquiries and interviews; and investigate, research, and trace the chain of ownership title and respective owners' uses of the subject property for the past 50 years minimum. When the minimum 50-year investigation indicates preceding improvements, operations, or uses, the City will continue to interview the appropriate people with historical knowledge of the site and research the property uses back to virgin land when improvements first occurred, as feasible.

Current Ownership

This section will identify the current owner(s) of the site.

Prior Ownership

The Prior Ownership section will address a minimum period of 50 years.

Review of Aerial Photographs

The Review of Aerial Photographs will collectively cover a minimum period of 50 years, as feasible. When necessary, the City will access more than one source in our attempt to cover the 50-year review period. The review shall address and include a discussion

of on-site and adjacent sites land utilization in each photo, and chronological changes observed between dated aerial photos.

Historical City Directories/Fire Insurance Maps

The City will conduct and document research covering a minimum of 50 years and continuing back until virgin land is verified without improvements, when possible, to address and include the following:

- Review and discussion of Sanborn Maps or equivalent;
- Review and discussion of Cole/Polk Directories or equivalent;
- General discussion of previous land utilization; and
- General discussion of previous business activities.

History of Property Use

This section will address, research, and describe the use of the property for a minimum of 50 years. When the minimum 50-year investigation indicates preceding improvements, the City will continue to research back until virgin land is verified, when possible. This section will include the following:

- History of property use under current ownership including business and tenant activities;
- Identification of observed current uses and/or activities conducted on the property that require regulatory agency permits, and status of identified permits;
- Identification of any EPA Identification Number(s) assigned to current operations;
- Review of applicable and available documents pertaining to current ownership and operator activities, such as but not limited to: underground storage tank (UST) records, Material Safety Data Sheets (MSDSs), spill prevention countermeasures and control (SPCC) plans, emergency response action plans, worker safety programs, previous ESA reports, Superfund Amendments and Reauthorization Act (SARA) Title III, and any asbestos operation and maintenance (O&M) plans;
- Identification of existing on-site structures, the years built, dates of previous on-site excavations, fill activity, construction and demolitions; and
- Identification of known past business activities and operations on site during the respective period when improvements were known to exist on the subject property.

Environmental Setting

The City will describe the physical environmental conditions of the site including hydrology, geology, topography, and general ecology characteristics.

Surface Water Characteristics

This section of the Phase I ESA will address, describe, and include the following:

- Site topography/physiography including all surface water bodies on site;
- Natural and man-made stormwater drainage systems;
- Flood potential, site relationship, and distance to a 100-year flood plain;
- Direction and distance to nearest upgradient and downgradient surface water; and
- Distance, direction, and drainage relationship to existing designated wetlands, as mapped on the National Wetlands Inventory Maps, within a ½-mile radius of the subject site.

Subsurface Geological Characterization

This section will address, describe, and include the following:

- Geotechnical soils investigation reports for the subject site and adjacent sites, if available;
- Stratigraphy of the unsaturated zone including thicknesses and depths, as available;
- Published area soil surveys, such as, but not limited to, U.S. Department of Agriculture Soil Conservation Service County Soil Surveys;
- Permeability characteristics of the soil, and potential for contaminant migration; and
- Potential for excessive radon levels based on review of published surveys, if available.

Ground Water Characteristics

The City will address and describe the following ground water characteristics, based on a review of published maps and literature such as, but not limited to, United States Geological Survey (USGS) studies:

- Primary and secondary aquifers, including alluvial, fluvial, or regional recharging characteristics;
- Springs or wells on site, and known water quality;
- Approximate depths to ground water;
- General utilization and consumption of ground water within ½ mile of the site; and
- Flow characteristics of regional ground water.

Site Inspection

Project personnel will conduct a physical on-site inspection to observe existing conditions, business activities, and operations on site and on abutting and adjacent sites. Appropriate pre-planning for the on-site inspection may include review of past uses, and pertinent documents such as plat plans, topographical surveys, site plans, aerial photos,

and inquiries with Federal, state, and local agencies. Findings during the on-site inspection may likewise prompt or target an area of concern for inquiry or investigation to complete the Phase I ESA.

Site Observations and Inquiries

The purpose of this portion of the Phase I ESA is to address, describe, and include the following:

- Date and time of the inspection(s);
- Names of all individuals performing the inspection(s);
- Names of site representatives present during the inspection;
- inquiry discussions, interviews, and conversation with property owners, property managers, maintenance personnel, tenants, neighbors, and other knowledgeable sources concerning their knowledge of any past or present environmentally significant activity, conditions, incidents, or emergency response actions pertaining to the site and immediate area;
- Description of the inspection process and procedures performed to observe and evaluate the site conditions;
- Description of site observations and findings from inquiries;
- Known or observed environmentally sensitive or suspect conditions on site; and
- Color photographic documentation with a descriptive log.

Aboveground/Underground Storage Tank (AST/UST) Systems and Pipelines

Information regarding AST/UST systems and pipelines discovered during inspection, inquiry, or regulatory records research will be collectively compiled in this section. This section will individually address and describe each on-site tank discovered as follows:

- Tank types: AST or UST;
- Tank locations;
- Size, age, construction, contents, piping (pressurized or suction) and active/inactive status;
- Ownership and registration status;
- Corrosion protection;
- Leak detection, overflow prevention, and spill containment devices;
- Secondary containment and AST support systems;
- Condition relative to leakage, pressurization, and/or releases;
- History of tank testing and results, prior tank removals or repairs, the known reasons for removal or repair, and whether or not any soil or ground water was impacted, removed, or remediated; and
- Compliance with current regulations and required upgrades to comply with future compliance deadlines.

This section will also individually address and describe each product pipeline on the subject property as follows:

hazards), operating pressure (low/high), and active/inactive status;
- Ownership/management, history of testing and results, history and reason for prior repairs or removals, and whether or not any soil or ground water was impacted, removed, or remediated; and
- History of contents carried, releases, and any operating incidents that would cause a hazardous condition with a description of the response made.

On-Site Regulated Substance Identification/Inventory

Project personnel will conduct an inventory of regulated substances during the site inspection without any physical disturbance of the materials and containers, and will address, describe, and include to the extent possible the following:

- Types, quantities, location, and condition of labeled containers/drums of chemicals, materials, and substances considered hazardous;
- List of unmarked or unlabeled containers/drums and their respective condition, location, size, and estimated content volume;
- General description of their related uses;
- Methods of their storage, disposal, and transportation, as reported by site personnel;
- Secondary containment/emergency response preparation;
- MSDS records, if available; and
- Visible hazards communications, such as signage, warnings, labels, alarms, etc.

During this task, project personnel will identify, to the extent possible through visual observation and utility company records, transformers and other potential polychlorinated biphenyl-containing equipment on site. In addition, suspect asbestos-containing materials (ACMs) will be identified. When deemed appropriate based on re-use potential of the site, project personnel will collect and analyze bulk samples of suspect ACM for asbestos content.

Area Reconnaissance

This portion of the Phase I ESA will cover properties within a ½-mile radius of the site, addressing, describing, and including the following:

- Description of abutting and adjacent properties indicating land uses and types of business operations;
- The potential for contamination of the subject property from current or prior activities on the abutting and adjacent properties;
- Visible off-site sources or suspect conditions posing a potential threat of environmental impairment; and
- Significant suspect conditions on abutting and adjacent off-site property by type, location, distance, and drainage gradient relationship to the subject site.

will address, describe, and include:

- City of Richmond environmental offices, divisions of solid waste, USTs, and emergency response actions;
- Local water and sewer authorities;
- Local health department records of any environmentally-related activities, incidents, issues or permits pertaining to the subject property and abutting properties;
- Fire Marshal records of UST installations, removals, leaks, or other incidents involving the site, such as, but not limited to, fires involving toxic releases, hazardous substance spills or toxic releases, emergency response actions, etc.;
- Records of building permits and demolition permits pertaining to the subject property;
- Records of archeological/historical sites; and
- Zoning information regarding land use and zoning violations.

References

A complete listing of resources consulted during the Phase I ESA investigation is provided for documentation purposes, and to allow for a retracing of the steps undertaken during the study.

Appendices

Appendices include copies of the Federal and State databases, and all written correspondence sent or received on behalf of the project. Copies of any reports or data reviewed for reported incidents on the subject site or surrounding facilities are also included as needed. Photographic documentation of the site inspection is provided with a descriptive log.

Report Summary

The ESA reports will contain a concise summary of the environmental conditions identified or suspected for each site.

FAX TRANSMITTAL SHEET

DEPARTMENT OF ENVIRONMENTAL QUALITY
Tidewater Region
Pembroke II - Suite 310
Virginia Beach, VA 23462
TEL. #(804) 552-1840
FAX #(804) 552-1849

TO: Joyce

FAX NO. 678 - 0483

FROM: Virginia P. Newton

DATE: 5/11/95 TIME: 4pm

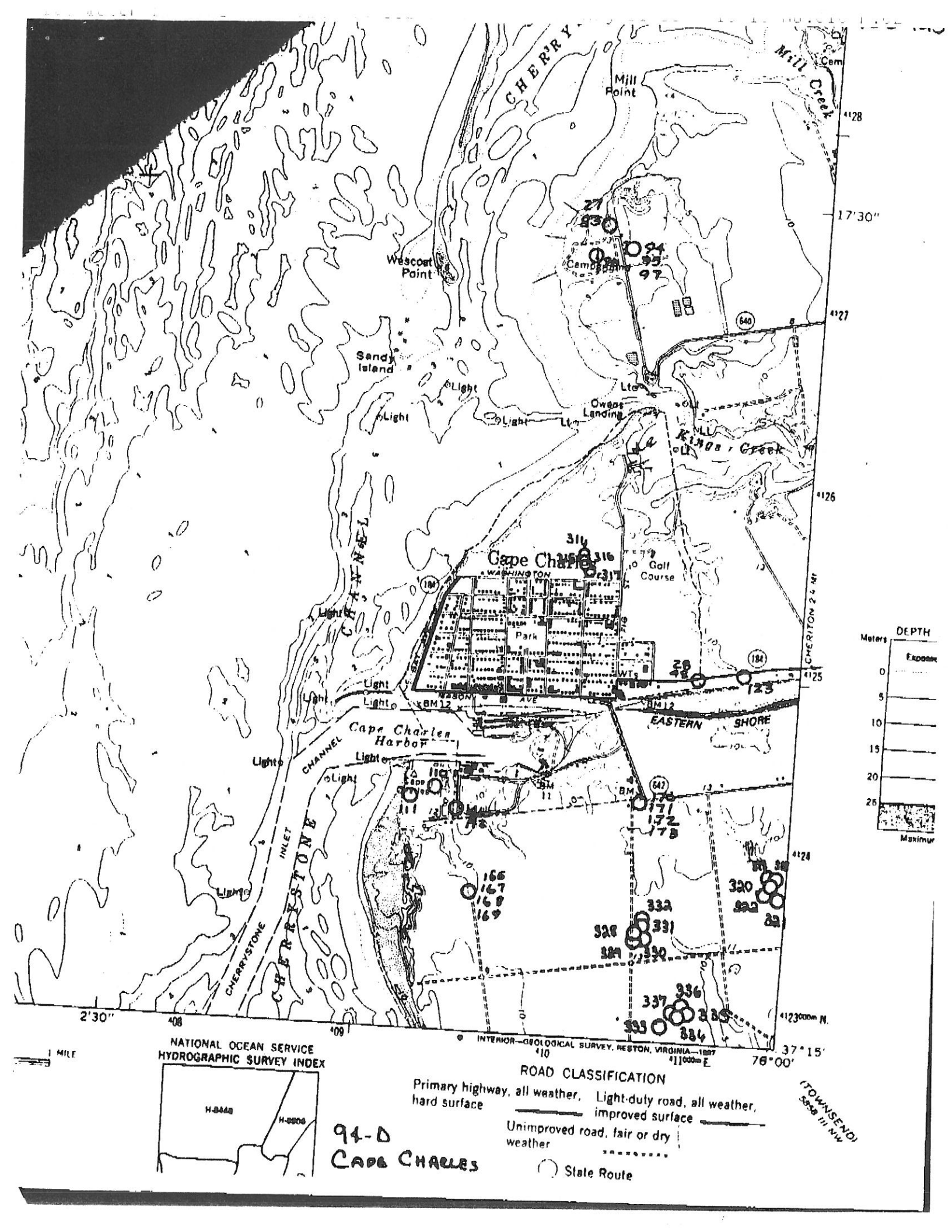
NO. OF PAGES (Including cover sheet): 11

SUBJECT:

COMMENTS / INSTRUCTIONS:

****

Return original to sender? ☐ Yes ☐ No



94-D
CAPE CHARLES

RECEIVED:

035090 JUL 21 87

Virginia State Water Control Board
P.O. Box 11143, Richmond, Va. 23230

COUNTY Northampton

FIELD AND LABORATORY DATA

SWCB WELL NUMBER: 16S-123

LATITUDE:

LONGITUDE:

DEPTH: 220'

DIAM:

SWL:

ELEV:

MAP:

FORMATION:

3

LG CD ADP:

YIELD:

DRAWDOWN:

HOURS:

DRILLER:

DATE COMP:

WATER ZONES/SCREENS	FROM	TO	FROM	TO	FROM	TO
	100'	200'				
FROM	TO	FROM	TO	FROM	TO	

Collect for: TRO-EMS

Collected by: ERGUNN

Station Description: Town of Cape Charles, pump in grass lot ¼ mile from town

MONTH	DAY	YEAR	TIME	FIELD pH 00400	BASIN	REGION
07	20	87	~~09~~ 10 ~~42~~ 11	M076 2.		5

Temp 19.2

	PARAMETER	STORET CODE	VALUE		PARAMETER	STORET CODE	VALUE
L	pH (Laboratory)	00403			Arsenic, Total µ/l	01002	
	Alkalinity/Acidity (mg/l as $CaCO_3$)	00410			Cadmium, Total µ/l	01027	
	Total Solids, Total (mg/l)	00500			Calcium, Total, µ/l	82033	
	Volatile	00505			Chromium, Total, µ/l	01034	
	Fixed	00510			Copper, Total µ/l	01042	
	Suspended Solids, Total (mg/l)	00530		✓	Iron, Total µ/l	01045	1800
	Volatile	00535			Lead, Total µ/l	01051	
	Fixed	00540			Magnesium, Total µ/l	82033	
	Dissolved Solids, Total (mg/l)	00515			Manganese, Total µ/l	01055	
	Settleable Solids (mg/l)	00545			Mercury, Total µ/l	71900	
	Chloride (mg/l)	00940			Zinc, Total µ/l	01092	
	Hardness, EDTA (mg/l as $CaCO_3$)	00900		✓	Sodium, Total µ/l	82035	21500
	Nitrogen, Total Kjeldahl (mg/l)	00625			Potassium, Total µ/l	82034	
	Phosphorus, Total (mg/l)	00665			Nickel, Total µ/l	01067	
	Phosphorus, Ortho (mg/l)	00671					
	Ammonia (mg/l as N)	00610			Total Coliform/100 ml - MF	31628	
	Nitrite + Nitrate (mg/l as N)	00630			Fecal Coliform/100 ml - MF	31616	
	Nitrite (mg/l as N)	00615			Total Coliform/100 ml - MPN	31507	
	Sulphate (mg/l)	00945			Fecal Coliform/100 ml - MPN	31615	
	Freon Extractables (mg/l)	00556					
	BOD_5 (mg/l)	00310			Conductivity (micro - mhos/cm)	00094	
	COD (mg/l)	00340			Turbidity, NTU	00070	
	Total Organic Carbon (mg/l)	00680			Pesticides, µ/l in water	39330	
	Fluoride (mg/l)	00951			Herbicide µ/l in water	39630	

Date released from Lab: 7-23-87

Chemist:

Virginia State Water Control Board
P.O. Box 11143, Richmond, Va. 23230

5087 JUL 21 87

FIELD AND LABORATORY DATA

Northampton

SWCB WELL NUMBER: 65-123

LATITUDE

LONGITUDE

DEPTH: 220'

DIAM | SWL

ELEV | MAP

FORMATION

LG CD ADP: 3

FIELD | DRAWDOWN | HOURS

DRILLER | DATE COMP

RECEIVED JUL 1990 Tidewater Regional Office VWCB

TRO - EMS

Collected by: E.R. GUNN

(8)

Station Description: Town of Cape Charles pump station
1/4 from town
331 4013 Mr Lewis
for keys

WATER ZONES/SCREENS	FROM	TO	FROM	TO
	100'	200'		
FROM	TO	FROM	TO	FROM	TO

MONTH	DAY	YEAR	TIME	FIELD pH 00400	BASIN	REGION
07	20	87	1010	M 7.6		5

Temp. 19.2

PARAMETER	STORET CODE	VALUE	PARAMETER	STORET CODE	VALUE
pH (Laboratory)	00403	7.6	Arsenic, Total µ/l	01002	
Alkalinity/Acidity (mg/l as $CaCO_3$)	00410	125	Cadmium, Total µ/l	01027	
Total Solids, Total (mg/l)	00500	455	Calcium, Total, µ/l	00916	
Volatile	00505	45	Chromium, Total, µ/l	01034	
Fixed	00510	258	Copper, Total µ/l	01042	
Suspended Solids, Total (mg/l)	00530		Iron, Total µ/l	01045	
Volatile	00535		Lead, Total µ/l	01051	
Fixed	00540		Magnesium, Total µ/l	00927	
Dissolved Solids, Total (mg/l)	00515	272	Manganese, Total µ/l	01055	
Settleable Solids (mg/l)	00545		Mercury, Total µ/l	71900	
Chloride (mg/l)	00940	29.0	Zinc, Total µ/l	01092	
Hardness, EDTA (mg/l as $CaCO_3$)	00900	164	Sodium, Total µ/l	00929	
Nitrogen, Total Kjeldahl (mg/l)	00625		Potassium, Total µ/l	00937	
Phosphorus, Total (mg/l)	00665		Nickel, Total µ/l	01067	
Phosphorus, Ortho (mg/l)	00671				
Ammonia (mg/l as N)	00610		Total Coliform/100 ml - MF	31628	
Nitrite + Nitrate (mg/l as N)	00630		Fecal Coliform/100 ml - MF	31616	
Nitrite (mg/l as N)	00615		Total Coliform/100 ml - MPN	31507	
Sulphate (mg/l)	00945	44.6	Fecal Coliform/100 ml - MPN	31615	
Freon Extractables (mg/l)	00556				
BOD_5 (mg/l)	00310		✓ Conductivity (micro - mhos/cm)	00094	444
COD (mg/l)	00340		Turbidity, NTU	00070	
Total Organic Carbon (mg/l)	00680		Pesticides, µ/l in water	39330	
Fluoride (mg/l)	00951	0.10	Herbicide µ/l in water	39630	

Date released from Lab: AUG 2 1 1987

Chemist: C. R. Tutt, Jr.

	Cl^-	Na^+ 165-123
-77	19	
-28-78	28	24
2-22-79	27	25.3
5-7-79	35	22
9-20-79	22	24
11-28-79	33	30
1-28-80	33	27
8-28-80	23	21
2-19-81	34	30
8-24-81	40	35
2-11-82	43	42
4-26-82	25	32
7-22-82	23	41
9-12-83	24	46
6-14-84	27	23000 µ/l
6-25-85	23	29
7/2/87	21.5	29

SCREEN DATA (Card 8)

DOES THE WELL HAVE SCREENS? Yes/No; OR
DOES THE WELL HAVE SLOTTED OR PERFORATED PIPE? Yes/No

LOCATION OF SCREENS: Give the diameter and depth of all screens or sections of slotted or perforated pipe.

6 inches from 100 to 120 feet	___ inches from ___ to ___ feet
6 inches from 165 to 185 feet	___ inches from ___ to ___ feet
6 inches from 200 to 220 feet	___ inches from ___ to ___ feet

QUALITY DATA (Card 9)

DID ANY STRATUM CONTAIN WATER WHICH WAS UNUSUABLE? Yes/No; TYPE OF WATER _____.

DEPTH OF STRATUM: from 100 to 120 feet; from 165 to 185 feet. WATER TEMPERATURE: 52 °F

If a permit was not issued for this well and a USGS topographic map is not available, a written description and sketch map of well location will suffice.

DRILLER'S LOG

DEPTH (feet) From	DEPTH (feet) To	TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc.; hardness, color, etc.)	REMARKS (water, caving, shot, screen, samples, etc.)
1	5	Top Soil & Clay	
5	40	Yellow sand and clay	
40	60	Blue clay and white shell	
60	100	Blue clay, white shell, gray sand	
100	120	White sand and gravel	
120	140	White shell and fine sand	
140	165	Blue clay and white shell	
165	200	White shell and fine gray sand	
200	220	Coarse gray sand and white shell	

GW-2
5,000

COMMONWEALTH OF VIRGINIA
STATE WATER CONTROL BOARD
P. O. Box 11143, 2111 North Hamilton Street
Richmond, Virginia 23230
Phone (804) 770-1411

MAR 28 1977

WATER WELL COMPLETION REPORT
(Certification of Completion)
(For use in all groundwater areas)

PERMIT NUMBER _____ 1-10
BWCM WELL NO. _____ 11-19
DATE REC'D _____ 20-25
TRUCK TAG NO. _____

LOCATION (Card 1)

COUNTY: Northampton

WELL IS LOCATED APPROX. 125 feet/[redacted] S. (direction) of Rt. 184 and 200 feet/[redacted] E. (direction) of R R Track.

WELL IS NEWLY CONSTRUCTED yes 26 OR IS AN ALTERATION, REHABILITATION, OR EXTENSION OF AN EXISTING WELL 27. NUMBER OF CERTIFICATE OF GROUNDWATER RIGHT OF EXISTING WELL, IF APPLICABLE _____ 28-37.

FOR OFFICE USE:

VA. PLANE COORDINATES: _____ N 38-43 _____ E 44-50

TOPOGRAPHIC MAP NUMBER: _____ 51-55

OWNER (Card 2)

NAME: Town of Cape Charles 11-40
STREET: _____ 41-55
CITY: Cape Charles 56-72
STATE: Va. 73-74 ZIP: 23310 75-79

DRILLER (Card 3)

NAME: Jimmy Burdick 11-40
STREET: _____ 41-55
CITY: Tainter, 56-72
STATE: Va. 73-74 ZIP: 23420 75-79

CONTRACTOR (Card 4)

SIGNATURE: Bundick Well & Pump Co.
NAME (type): _____ 11-40
STREET: _____ 41-55
CITY: Tainter, 56-72
STATE: Va. 73-74 ZIP: 23420 75-79

BASIC DATA (Card 5)

DATE STARTED: 11/5/76 11-16 DATE COMPLETED: 11/12/76 17-22 DEPTH DRILLED: 230 ft. 23-26

DEPTH OF COMPLETED WELL: 220 Ft. 27-30 STATIC WATER LEVEL: 15 31-33 feet below land surface.

YIELD TEST: Turbine 34-35 Method; Drawdown 72 36-38 feet; Yield 250 39-42 gpm; Duration 24 43-44 hours.

WAS THE WELL LOGGED? [redacted] 45/No; if Yes, BY WHOM? _____ 46-55; TYPE OF LOG(S): _____ 56-58.

WAS THE WATER ANALYZED? Yes/[redacted] 59; if Yes, BY WHOM? Contractor 60-65. TYPE OF RIG: Failing 69-71

WELL TO SUPPLY: Home/Farm/Municipality/School/Industry/Subdivision/Other (circle which) 72 73 74 75 76 77 _____ 78

WERE WELL DRILLINGS SAVED? Yes/[redacted] 79 (Well cuttings should be collected at 10-foot intervals and shipped express collect to this office in a shipping container. Sample bags are furnished free of charge upon request).

PUMP DATA (Card 6)

BRAND NAME: Goulds 11-30
TYPE: Sub. Turbine 31-45
MODEL NUMBER: UJ 66 NL 32 46-60
RATED CAPACITY: 250 61-65 gpm at 66-68 235 feet of head.
DEPTH OF INTAKE: 150 ft. 69-71
RATED HORSEPOWER: 20 72-76

CONSTRUCTION DATA (Card 7)

HOLE SIZE: 12 11-12 inches from 1 to 230 feet 13-20
___ 21-22 inches from ___ to ___ feet 23-30
___ 31-32 inches from ___ to ___ feet 33-40

CASE SIZE: 6 41-42 inches from 1 to 220 feet 43-50
___ 51-52 inches from ___ to ___ feet 53-60
___ 61-62 inches from ___ to ___ feet 63-70

GROUTING? Yes/[redacted] 71; from surface to 50 72-74 feet.

165-48

COMMONWEALTH OF VIRGINIA
WATER CONTROL BOARD
WELL LOCATION FORM

JAN 23 1975

OWNER Town of Cape Charles

USER Same Northampton Co.

LOCATION on S side of rt. 184 ~~about~~ .6 mi. E of town

COORDINATES N ~~350,200~~ 5000 E ~~2,727,000~~ 5000

ELEVATION 10 (topo) 11

MAP 94-D

TOPOGRAPHY Eastern Shore

FORMATION

LITHOLOGY

DRILLER Biddick - Boggs Water and sewage

COMPLETED March 2, 1973

USE Public

	FROM	TO
SCREEN	80	100
	190	210

DEPTH 210'

DIAMETER 6"

STATIC LEVEL 9/73 15' 1/75 15.2'

pumping level 36.6'

YIELD

PUMPING RATE 275 gpm
20hp

DRAWDOWN

TEST LENGTH

SAMPLED

grouted 50'

LOCATION BY field

DATE 1/16/75

SOURCE OF INFORMATION Jimmy Biddick

REMARKS Submersible turbine
MP - top of adapter pipe
hole on wire side
- no water under water tower
- maintenance man's office at town water tower
(Hayward Allaw) to get key and turn off chlorinator

VERIFIED
BY: JH
DATE: 10-10-90

050, 022/021, 024, 027, 033, 032, 094, 100, 095

RECEIVED

Virginia State Water Control Board230
P.O. Box 11143, Richmond, Va. 23230

VA. [illegible] MAY 13 1977

TIDEWATER [illegible] 1977 BOARD

FIELD AND LABORATORY DATA

Northampton

WELL NUMBER: N65-0048

DEPTH: 105-48

DIAM | SWL

ELEV | MAP

FORMATION

YIELD | DRAWDOWN | HOURS

DRILLER | DATE COMP

WATER ZONES/SCREENS | FROM | TO | FROM | TO

FROM | TO | FROM | TO | FROM | TO

LATITUDE

LONGITUDE

3

LG CD ADP

Collect for: Tidewater Region

Collected by: RES

Station Description: Town of Cape Charles

Contact - M.H. Allen 331-3003 - Pump inside green bldg. 1/4 mile from town / Get key at City Hall Cape Charles VA

MONTH	DAY	YEAR	TIME	FIELD pH	BASIN	REGION
04	18	77	1140	C0850		5

PARAMETER	STATE CODE	VALUE	PARAMETER	STATE CODE	VALUE
pH (Laboratory)	050	7.8	Arsenic (mg/l)	058	
Alkalinity/Acidity (mg/l as $CaCO_3$)	022/021	103	Cadmium (mg/l)	078	
Total Solids, Total (mg/l)	024	286	Calcium (mg/l)	052	
Volatile	025	51	Chromium (mg/l)	040	
Fixed	026	235	Copper (mg/l)	045	
Suspended Solids, Total (mg/l)	027	98	Iron (mg/l)	044	
Volatile	028	5	Lead, Total (mg/l)	043	
Fixed	029	93	Magnesium (mg/l)	246	
Dissolved Solids, Total (mg/l)	067		Manganese (mg/l)	096	
Settleable Solids (mg/l)	023		Mercury, Total (mg/l)	080	
Chloride (mg/l)	033	17	Zinc (mg/l)	041	
Hardness, EDTA (mg/l as $CaCO_3$)	032	140	Sodium (mg/l)	106	
Nitrogen, Total Kjeldahl (mg/l)	085	0.1	Potassium (mg/l)	105	
Phosphorus, Total (mg/l)	065	0.1	Nickel (mg/l)	098	
Phosphorus, Ortho (mg/l)	064	.05			
Ammonia (mg/l as N)	036	0.1	Total Coliform/100 ml - MF	020	
Nitrite + Nitrate (mg/l as N)	094	.05	Fecal Coliform/100 ml - MF	055	
Nitrite (mg/l as N)	037	.01	Total Coliform/100 ml - MPN	020	
Sulphate (mg/l)	107		Fecal Coliform/100 ml - MPN	055	
Freon Extractables (mg/l)	048				
Total BOD_5 (mg/l)	019		Conductivity (micro - mhos/cm)	034	
COD (mg/l)	051		Turbidity, NTU	049	
Total Organic Carbon (mg/l)	100	6	Pesticides	121/122	
Fluoride (mg/l)	095	0.14			

MAY 9 1977

( ) 4, 100, 095

Virginia State Water Control Board
P.O. Box 11143, Richmond, Va. 23230

FIELD AND LABORATORY DATA

VA. DCLS ENV. SCI.
000851 JAN 28 77

...IO	GW
	X

LATITUDE: [ ]

...OR. BIO NO.: ...8

LONGITUDE: [ ]

...STREAM	RIVER MILE	LG CD ADP

Collect for: Tidewater Region

...ORY NUMBER	DEPTH	SECTION	REGION
	210		5

Collected by: ~~[illegible]~~ JAE

Name of Stream: N/A

...NTH - DAY - YEAR	TIME	SOURCE
01 26 77	1535	05070

Station Description: Town of Cape Charles. (East of town on south side of road between road & R.R. Tracks)

TIDE	% FLB	FLOW CFS	WEATHER	TEMP. °C
—	—	—	3	—

DISSOLVED OXYGEN	DO% SAT	FIELD pH
—	—	C0750

Cl_2 RESIDUAL (TOTAL) ______

NEAR MAIN SUPERVISOR 9-11 TOWN WATER SHACK SECOND ON RIGHT

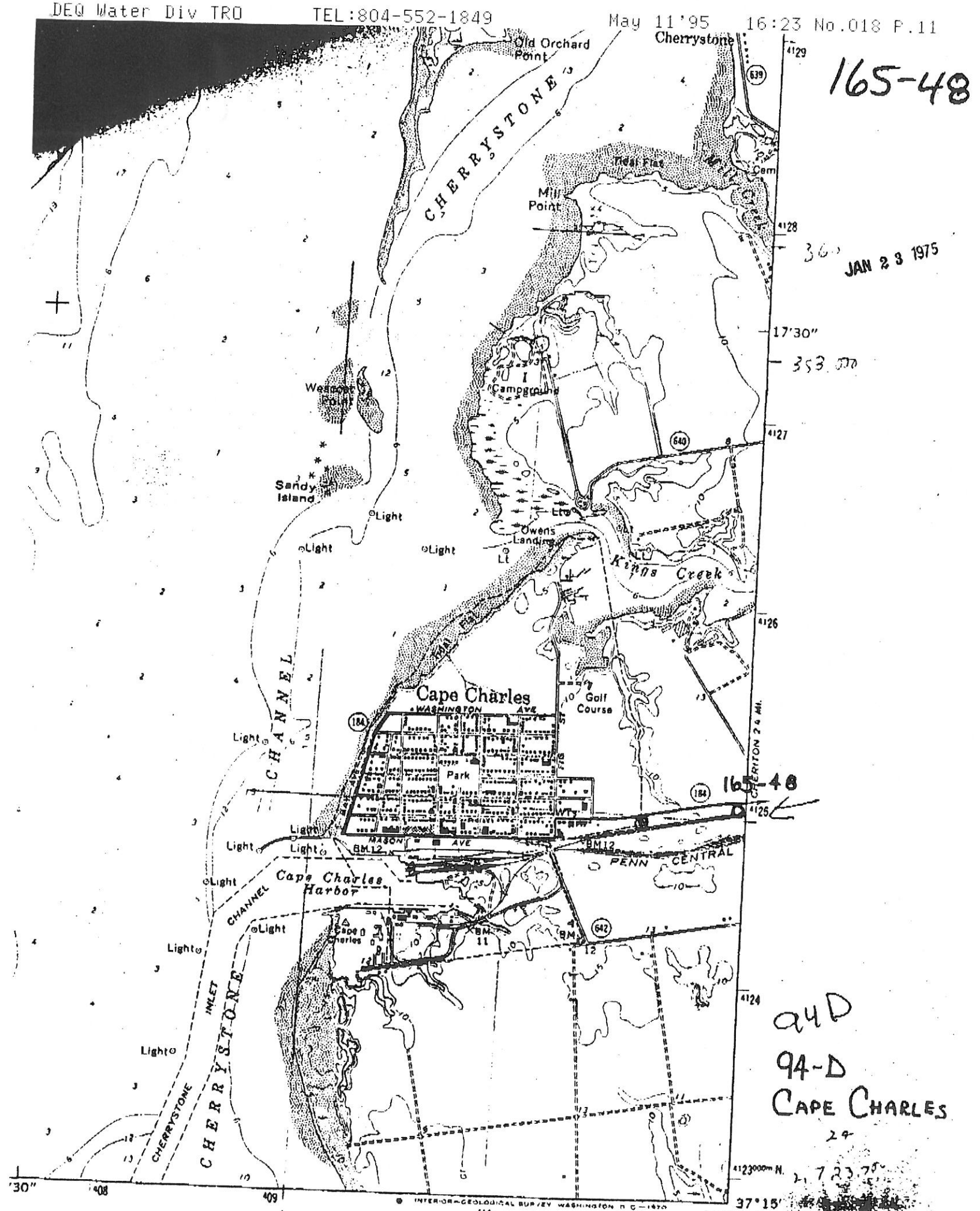
PARAMETER	STATE CODE	VALUE		PARAMETER	STATE CODE	VALUE
pH (Laboratory)	050	7.4	S (A)	Arsenic (mg/l)	058	
Alkalinity/Acidity (mg/l as $CaCO_3$)	022/021	146		Cadmium (mg/l)	078	
Total Solids, Total (mg/l)	024	344		Calcium (mg/l)	052	
Volatile	025	62		Chromium (mg/l)	040	
Fixed	026	282		Copper (mg/l)	045	
Suspended Solids, Total (mg/l)	027	5		Iron (mg/l)	044	
Volatile	028	2		Lead, Total (mg/l)	043	
Fixed	029	3		Magnesium (mg/l)	246	
Dissolved Solids, Total (mg/l)	067	339		Manganese (mg/l)	096	
Settleable Solids (mg/l)	023			Mercury, Total (mg/l)	080	
Chloride (mg/l)	033	36		Zinc (mg/l)	041	
Hardness, EDTA (mg/l as $CaCO_3$)	032	188		Sodium (mg/l)	106	
Nitrogen, Total Kjeldahl (mg/l)	035			Potassium (mg/l)	105	
Phosphorus, Total (mg/l)	065			Nickel (mg/l)	098	
Phosphorus, Ortho (mg/l)	064		X	Fluoride (mg/l)	095	0.13
Ammonia (mg/l as N)	036			Total Coliform/100 ml - MF	020	
Nitrite + Nitrate (mg/l as N)	094	.05		Fecal Coliform/100 ml - MF	055	
Nitrite (mg/l as N)	037	.01		Total Coliform/100 ml - MPN	020	
Sulphate (mg/l)	107			Fecal Coliform/100 ml - MPN	055	
Freon Extractables (mg/l)	048					
BOD_5 (mg/l)	019			Conductivity (micro - mhos/cm)	034	
...D (mg/l)	051			Turbidity, NTU	049	
Total Organic Carbon (mg/l)	100	2		Pesticides	121/122	

RECEIVED BSS (stamp)

Date released from Lab: FEB 4 1977 Chemist: [signature]

165-48

JAN 2 3 1975



94D

94-D

CAPE CHARLES