BORING LOG

Sheet 1 of 1

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-1**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 409.94

Shelby Tube | Standard Split Spoon | Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
	S-1		2-3-4	100%		0.7	8.0" TOPSOIL				409.3
							Brown red silty **SAND**, loose, trace rock fragments, moist				
	S-2		12-20-29	100%			- dense, dry				
5.0						5.0	- RESIDUAL -				404.9
	S-3		40-50/5"	100%			Red **WEATHERED ROCK**, very dense, dry				
						8.5	- WEATHERED ROCK -				401.4
	S-4		50/0"				REFUSAL AT 8.5 FEET				
10.0											
15.0											
20.0											

Remarks: Boring dry during and at completion of drilling.

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BORING LOG

Sheet 1 of 1

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-2**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 410.93

Shelby Tube | Standard Split Spoon | Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
	S-1		5-5-8	100%		0.3	3.0" CRUSHED STONE				410.7
							Brown red silty **GRAVEL**, medium dense, little sand, moist				
	S-2		9-12-23	22%			- dense				
5.0						5.5	- FILL -				405.4
	S-3		5-9-12	100%			Red clayey **SILT**, very stiff, low plasticity, trace rock fragments, trace sand, moist				
						8.5	- RESIDUAL -				402.4
	S-4		28-50/2"	100%			Red **WEATHERED ROCK**, very dense, dry				
10.0						11.5	- WEATHERED ROCK -				399.4
	S-5		50/0"				REFUSAL AT 11.5 FEET				
15.0											
20.0											

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Remarks: Boring dry during and at completion of drilling.

BORING LOG

Sheet 1 of 1

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-3**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 399.44

Shelby Tube | Standard Split Spoon | Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
						0.3	4.0" TOPSOIL				399.1
	S-1		1-1-3	100%			Brown red silty **GRAVEL**, loose, little sand, moist				
	S-2		5-5-7	100%			- medium dense				
5.0						5.0	- FILL -				394.4
	S-3		5-5-8	100%			Red clayey **SILT**, stiff, low plasticity, little sand, trace rock fragments, moist				
						8.5	- RESIDUAL -				390.9
	S-4		50/5"	100%			Red **WEATHERED ROCK**, very dense, dry				
10.0						11.5	- WEATHERED ROCK -				387.9
	S-5		50/0"				REFUSAL AT 11.5 FEET				
15.0											
20.0											

Remarks: Boring dry during and at completion of drilling.

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BORING LOG

Sheet 1 of 1

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-4**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 400.54

Shelby Tube | Standard Split Spoon | Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
						0.3	4.0" TOPSOIL				400.2
	S-1		1-2-2	44%			Brown red clayey **SILT**, soft, trace rock fragments, little sand, moist				
						2.5	- FILL -				398.0
	S-2		3-4-4	100%			Red clayey **SILT**, medium stiff, medium plasticity, trace rock fragments, trace sand, moist				
5.0											
	S-3		2-3-4	100%			- some gravel				
	S-4		4-16-32	100%			- very stiff, dry				
10.0											
						13.5	- RESIDUAL -				387.0
	S-5		50/1"	100%		13.6	Red **WEATHERED ROCK**, very dense, dry				386.9
							- WEATHERED ROCK -				
15.0							REFUSAL AT 13.6 FEET				
20.0											

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Remarks: Boring dry during and at completion of drilling.

BORING LOG

Sheet 1 of 1

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-5**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 398.64

Shelby Tube | Standard Split Spoon | Water Level First Noted 6.0 ft. | Water Level Upon Completion 7.0 ft.

Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
	S-1		1-2-2	100%		0.3	3.0" TOPSOIL				398.4
							Red sandy **CLAY**, soft, medium plasticity, little rock fragments, moist				
						2.5	- FILL -				396.1
	S-2		2-2-2	100%			Red clayey **SILT**, soft, medium plasticity, trace sand, little rock fragments, moist				
5.0											
	S-3		3-6-8	89%			- wet				
						8.5	- FILL -				390.1
	S-4		50/5"	20%			Red and gray **WEATHERED ROCK**, very dense, dry				
10.0											
						12.5	- WEATHERED ROCK -				386.1
	S-5		50/0"				REFUSAL AT 12.5 FEET				
15.0											
20.0											

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Remarks: Groundwater encountered dry during at 6.0 feet and at 7.0 feet upon completion of drilling.

BORING LOG

Sheet 1 of 1

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-6**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 392.92

Shelby Tube | Standard Split Spoon | Water Level First Noted 12.5 ft. | Water Level Upon Completion 12.5 ft.

Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
	S-1		1-2-3	100%		0.3	3.0" TOPSOIL				392.7
							Brown red clayey **SILT**, medium stiff, medium plasticity, some rock fragments, little sand, moist				
	S-2		50/1"	100%			- Auger gringing from 2.5 to 5, gravel auger cuttings, severe auger and spoon deflection at 2.5 feet				
5.0	S-3		1-2-1	33%			- soft				
						8.5	- FILL -				384.4
10.0	S-4		3-2-2	67%			Brown red clayey **SILT**, soft, medium plasticity, some rock fragments, trace sand, moist to wet				
						12.5	- FILL TO RESIDUAL -		▼		380.4
	S-5		50/1"	100%		12.6	Red **WEATHERED ROCK**, very dense, dry - WEATHERED ROCK - REFUSAL AT 12.6 FEET				380.3
15.0											
20.0											

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Remarks: Groundwater encountered dry during at 12.5 feet and at 12.5 feet upon completion of drillig.

BORING LOG

Sheet 1 of 1

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-7**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 388.61

Shelby Tube | Standard Split Spoon | Water Level First Noted 8.0 ft. | Water Level Upon Completion 8.5 ft.

Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
	S-1		2-3-3	100%		0.3	4.0" TOPSOIL Brown red silty **GRAVEL**, loose, little sand, moist				388.3
	S-2		7-10-7	100%							
5.0	S-3		7-3-5	100%							
						8.5	- FILL -				380.1
	S-4		6-6-7	100%			Brown clayey **SILT**, medium stiff, medium plasticity, some rock fragments, little sand, wet				
10.0											
						12.5	- FILL -				376.1
	S-5		50/1"	100%		12.6	Red **WEATHERED ROCK**, very dense, trace silty clay, moist - WEATHERED ROCK - REFUSAL AT 12.6 FEET				376.0
15.0											
20.0											

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Remarks: Groundwater encountered dry during at 8.0 feet and at 8.5 feet upon completion of drilling.

BORING LOG

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-8**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 394.81

Shelby Tube | Standard Split Spoon | Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
	S-1		2-2-5	78%		0.7	8.0" TOPSOIL				394.1
							Brown red clayey **SILT**, stiff to medium stiff, medium plasticity, some rock fragments, little sand, moist				
	S-2		5-6-5	100%							
5.0											
	S-3		6-6-7	89%							
	S-4		2-4-3	11%							
10.0											
							- FILL -				
	S-5		50/2"	100%		13.5	Red **WEATHERED ROCK**, very dense, dry				381.3
15.0											
	S-6		50/1"	100%		15.8	- WEATHERED ROCK -				379.0
							REFUSAL AT 15.8 FEET				
20.0											

Remarks: Boring dry during and at completion of drilling.

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BORING LOG

Project Number: **03-11-0062** Project Name: **Emmitsburg WWTP ENR Upgrade** Boring No.: **SB-9**

Inspector: SJG Boring Location: See Figure A-2

Date Started: 4/25/11 Drill/Method: CME-45C/HSA

Date Completed: 4/25/11 Driller: Connelly & Associates Ground Elev.: 408

Shelby Tube | Standard Split Spoon | Core Sample | Auger Probe

Depth (feet)	Sample No.	Sample Type	Blow Counts	Recovery (%)	RQD (RUN)	Strata Depth (ft)	MATERIAL DESCRIPTION	RQD (Strata)	Water Level	Graphic Log	Strata Elevation
	S-1	SS	7-5-7	78%		0.3	3.0" CRUSHED STONE				407.8
							Red clayey **SILT**, stiff, low plasticity, some rock fragments, little sand, moist				
	S-2	SS	5-12-28	100%							
5.0						5.0	- FILL -				403.0
	S-3	SS	6-6-8	100%			Red clayey **SILT**, stiff, medium plasticity, little rock fragments, trace sand, moist				
	S-4	SS	6-9-9	100%			- very stiff				
10.0						13.5	- RESIDUAL -				394.5
	S-5	SS	50/5"	100%		13.9	Red **WEATHERED ROCK**, very dense, dry				394.1
							- WEATHERED ROCK -				
15.0							BORING TERMINATED AT 13.9 FEET				
20.0											

Remarks: Boring dry during and at completion of drilling.

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Describe:	
Total Non-Environmental Contracting Revenue	

Part IV. CLAIM HISTORY

1. Are any Pollution Liability claims paid or pending at the proposed Project Location? ☐ Yes ☒ No

   If yes, state 1) the date when claim was made; 2) the date the incident, act or omission giving rise to the claim tookplace; 3) name of the claimant; 4) nature of the claim; 5) amount paid or estimated may be paid; and 6) final disposition or current status.

2. Is the applicant aware of any fact, circumstance or situation which could result in a claim being made against it or any other person or entity for whom coverage will be sought as respects this project?
   ☐ Yes ☒ No If, yes, give full details:

MICROBIAL MATTER COVERAGE:

a. For the immediate past 3 year period, have there been any known incidents, claims or other circumstances concerning the existence, growth or presence of microbial matter in any of your previous work or at the project location? ☐ Yes ☒ No If yes, please describe:

b. Is there a written reporting procedure for water leaks or mold issues at a job site? ☐ Yes ☒ No

c. Do you have an established Standard Operating Procedure (SOP) and/or written Quality Assurance Plan/ Protocols designed to prevent microbial matter growth and detailing microbial matter inspections or removal/remediation of any microbial matter contamination? ☐ Yes ☒ No If yes, please attach.
   The contractor is to draft one for review by the Town.

d. Are all building materials inspected upon delivery for pre-existing mold contamination? ☐ Yes ☒ No
   All bldg. materials to be inspected by contractor/verified by inspector.

e. When using subcontractors, does the applicant obtain written verification that the sub is certified in Mold Remediation or Mold Awareness? ☐ Yes ☐ No

f. Are certificates of insurance requested verifying insurance coverage for microbial matter/fungus/mold from subcontractors? ☐ Yes ☐ No If yes, please describe: _____

g. Does applicant assume liability for mold not otherwise imposed by law?
   ☐ Yes ☐ No

DISPOSAL SITE COVERAGE:

1. Does the applicant or any other project participant require disposal of any hazardous materials as part of its operations? ☐ Yes ☐ No If Yes, please describe (attached additional sheets if necessary).

Material	Volume	Disposal Facility

2. Does the applicant or any other project participant have [illegible] pending

Bid Form

Project Identification: Emmitsburg Wastewater Treatment Plant ENR Upgrade

Contract Identification and Number: Town of Emmitsburg, Maryland – Emmitsburg WWTP ENR Upgrade, Contract No. 2011-5-1651.

TABLE OF ARTICLES

ARTICLE 1 - BID RECIPIENT

1.01 This Bid Is Submitted To: Town of Emmitsburg, Maryland, 300A South Seton Avenue, Emmitsburg, Maryland 21727.

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in the Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Advertisement and Instructions to Bidders, including without limitations those dealing with the dispositions of Bid security. The Bid will remain subject to acceptance for 120 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in SC-4.02, and (2) reports and drawings of Hazard Environmental Conditions, if any, at the Site that have been identified in SC-4.06 as containing reliable "technical data."

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of the Work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

J. Bidder will submit written evidence of its authority to do business in the State or other jurisdiction where the Project is located not later than the date of its execution of the Agreement.

ARTICLE 4 - BIDDER'S CERTIFICATION

4.01 Bidder further represents that:

A. This Bid is genuine and not made in the interest of or on the behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

E. Consistent with the terms of the Purchaser's bid solicitation and the provisions of PL 111-5 (ARRA) Section 1605, the Bidder certifies that this bid reflects the Bidder's best, good faith effort to identify domestic sources of iron, steel, and manufactured goods for every component contained in the bid solicitation where such American-made components are available on the schedule and consistent with the deadlines prescribed in or required by the bid solicitation.

F. That all components contained in the bid solicitation that are American-made have been so identified, and if this bid is accepted, the Bidder agrees that it will provide

reasonable, sufficient, and timely verification to the Purchaser of the U.S. production of each component so identified.

G. That for any component or components that are not American-made and are so identified in this bid, the Bidder has included in or attached to this bid one or both of the following, as applicable:

1. Identification of and citation to a categorical waiver published by the U.S. Environmental Protection Agency in the Federal Register that is applicable to such component or components, and an analysis that supports its applicability to the component or components;

2. Verifiable documentation sufficient to the Purchaser, as required in the bid solicitation or otherwise, that the Bidder has sought to secure American-made components but has determined that such components are not available on the schedule and consistent with the deadlines prescribed in the bid solicitation, with assurance adequate for the Bidder under the applicable conditions stated in the bid solicitation or otherwise.

H. That for any such component or components that are not so available, the Bidder has also provided in or attached to this bid information, including but not limited to the verifiable documentation and a full description of the bidder's efforts to secure any such American-made component or components, that the Bidder believes are sufficient to provide and as far as possible constitute the detailed justification required for a waiver under Section 1605 with respect to such component or components. The Bidder further agrees that, if this bid is accepted, it will assist the Purchaser in amending, supplementing, or further supporting such information as required by the Purchaser to request and, as applicable, implement the terms of a waiver with respect to any such component or components.

ARTICLE 5 - BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

5.02 Lump Sum. Bidder shall provide all Work required by the Contract Documents for the following lump sum price:

Lump Sum Bid Price (A-1) _____ ($ _____)
(use words) (numerals)

5.03 Contingent Unit Price Work. Contingent Unit Price Work establishes fixed unit prices for items above and beyond Work included in the Contract Documents. Contingent Unit Price Work may only be performed at the express written authorization of the Owner and/or Engineer.

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Estimated Price
B-1	Test pit in paved areas	CY	50	$	$
B-2	Test pit in non paved areas	CY	50	$	$
B-3	Silt fence in accordance with Standard Details	LF	300	$	$
B-4	Super silt fence in accordance with Standard Details	LF	300	$	$
B-5	Miscellaneous excavation and stone backfill below subgrade in accordance with Division 2	CY	100	$	$
B-6	Miscellaneous excavation and select backfill below subgrade in accordance with Division 2	CY	100	$	$
B-7	Miscellaneous excavation and replacement of top soil in accordance with Division 2	CY	100	$	$
B-8	Furnishing and placing miscellaneous mix A concrete in accordance with Division 3	CY	50	$	$
B-9	Furnish and prepare pavement subgrade in accordance with Section 02229 and the Drawings	SY	100	$	$
B-10	Furnish new pavement in accordance with Section 02510 and the Drawings	SY	100	$	$
B-11	Furnish and install concrete walks in accordance with the Drawings	LF	100	$	$
B-12	Furnish and install aluminum guardrail in accordance with Section 05520 and Drawings	LF	100	$	$
B-13	Furnish and install aluminum grating in accordance with Section 05531 and the Drawings	SF	100	$	$
B-14	Furnish and install aluminum checkered plate in accordance with Section 05500 and the Drawings	SF	100	$	$
B-15	Furnish and install ¾-inch Type A Conduit	LF	500	$	$
B-16	Furnish and install ¾-inch Type D Conduit	LF	500	$	$
B-17	Furnish and install ¾-inch Type E1 Conduit	LF	500	$	$

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Estimated Price
B-18	Furnish and install No. 12 AWG, Type THWN Conductor	LF	2000	$	$
B-19	Furnish and install No. 14 AWG, Type THWN Conductor	LF	2000	$	$
B-20	Furnish and install No. 10 AWG, Type THWN Conductor	LF	2000	$	$
B-21	Furnish and install No. 16 TSP Instrumentation Cable	LF	1000	$	$
B-22	Below grade 2-inch ductbank	LF	500	$	$
B-23	Furnish and install complete heat trace system including heat trace controller, power termination box, 100 lf of heat trace cable, insulation, and metal jacketing (Note 1)	EA	2	$	$

Note:
1. Shall include low voltage conductor terminations, raceway, fittings, couplings, boxes, supports, and hardware as required for a complete installation.

Total of All Contingent Unit Price Work ($ _____)

Unit Prices have been computed in accordance with paragraph 11.03.B of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

5.04 Allowances. Bidder agrees to provide the following allowances as part of the work. Allowance includes cost of product and applicable taxes to Contractor or Subcontractor, less any applicable trade discounts. Allowance does not include costs associated with product delivery to site and handling at the site, including unloading, uncrating, and storage (protection of Products from elements and from damage) and labor for installation, set-up, and finishing. The above associated costs not included in the allowances shall be included in the Contractor's lump sum bid amount. Refer to individual specification sections for additional details.

The Engineer shall direct the Contractor on selection of products to be purchased. On notification of selection by Engineer, Contractor shall execute purchase agreement with applicable supplier; arrange for and process shop drawings, product data, and/or samples; arrange for delivery; promptly inspect products upon delivery for completeness, damage, and defects; and submit claims, if necessary, for transportation damage.

Differences between allowance amounts and actual final costs will be adjusted by Change Order prior to final payment.

Item No.	Description	Cash Allowance
C-1	Desktop computers and data historian server (Section 17560)	$20,000
C-2	Supervisory software, software autodialer, and reporting software for plant SCADA system (Section 17565)	$65,000
C-3	Engineer's field office equipment (computer workstations, camera, printer, and networking equipment) (Section 01500, Article 1.23)	$6,000
C-4	Tools and miscellaneous equipment allowance, above and beyond Section 11501	$5,000
Subtotal (Sum of Items C-1 through C-4)		**$96,000**

5.05 Total Bid Price. The Total Bid Price is the sum of the lump sum price (A-1); the total of all Contingent Unit Price Work (B-1 through B-23); and the total of all Allowance items (C-1 through C-4).

Total Bid Price _____ ($ _____)
(use words) (numerals)

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of the Bid:

A. Required Bid Security (circle type of security provided)

A1 Bid Bond (EJCDC No. C-430) or
A2 Certified Check and Statement of Surety's Intent;

B. List of Proposed Subcontractors;

C. Not Used;

D. Required Bidder Qualification Statement;

E. Contractor's Maryland License No.: _____ or Evidence of Bidder's ability to obtain a State of Maryland Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;

F. If Bid amount exceeds $10,000, signed Compliance Statement (RD 400-6). Refer to specific equal opportunity requirements set forth in paragraph 18.10 of the General Conditions;

G. If Bid amount exceeds $25,000, signed Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions (AD-1048);

H. If Bid amount exceeds $100,000, signed RD Instruction 1940-Q, Exhibit A-1, Certification for Contracts, Grants, and Loans.

I. Certification By Bidder Regarding Equal Employment Opportunity.

J. Certification, PL 111-5 American Recovery and Reinvestment Act of 2009 (ARRA).

K. Certification, Buy American Compliance.

L. Affidavit Concerning Performance Bond for Decanter Centrifuge.

ARTICLE 8 - DEFINED TERMS

8.01 The terms used in this Bid with the initial capital letters have the meanings indicated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 - BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____ SEAL, if required by State

By: _____

(Individual's signature)

Doing business as:

_____

A Partnership

Partnership Name: _____ SEAL, if required by State

By: _____

(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed):

_____

A Corporation

Corporation Name:

_____

State or Jurisdiction of Incorporation: _____

Type (General Business, Profession, Service, Limited Liability):

_____

By: _____

(Signature -- attach evidence of authority to sign)

Name (typed or printed):

_____

Title: _____ CORPORATE SEAL, if required by State

Attest _____

(Signature of Corporate Secretary)

Date of Qualification to do business in _____ [State or other jurisdiction where Project is located] is ___/___/_____

A Joint Venture

Name of Joint Venture:
_____

First Joint Venture Name: _____ SEAL, if required by State

By: _____
(Signature of joint venture partner -- attach evidence of authority to sign)

Name (typed or printed):
_____

Title: _____

Second Joint Venture Name:
_____ SEAL, if required by State

By: _____
(Signature of joint venture partner -- attach evidence of authority to sign)

Name (typed or printed):
_____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is party to the venture should be in the manner indicated above.)

Bidder's Business address: _____

_____

Business Phone No. (_____)_____

Business FAX No. (_____)_____

Business E-Mail Address
_____

State Contractor License No. _____. (If applicable)

Employer's Tax ID No. _____

Phone and FAX Numbers, and Address for receipt of official communications, if different from Business contact information:

_____

_____

9.02 Bid submitted on _____, 20___.

BID BOND

Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:

BID

Bid Due Date:

Description *(Project Name and Include Location)*:

BOND

Bond Number:

Date (Not earlier than Bid due date):

Penal sum _____ $ _____

(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder any difference between the total amount of Bidder's Bid and the total amount of the Bid of the next lowest, responsible Bidder who submitted a responsive Bid as determined by Owner for the work required by the Contract Documents, provided that:

1.1 If there is no such next Bidder, and Owner does not abandon the Project, then Bidder and Surety shall pay to Owner the penal sum set forth on the face of this Bond, and
1.2 In no event shall Bidder's and Surety's obligation hereunder exceed the penal sum set forth on the face of this Bond.
1.3 Recovery under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
3.2 All Bids are rejected by Owner, or
3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

BID SECURITY

(ATTACH BID SECURITY TO THIS PAGE IF CERTIFIED CHECK.)

STATEMENT OF SURETY'S INTENT

(To be completed if Bid Security is to be
Certified or Bank Cashier's Check)

To: _____
(Owner)

We have reviewed the Bid of _____
(Contractor)

of _____
(Address)

for _____

_____
(Project)

Bids for which will be received on _____
(Bid Opening Date)

and wish to advise that should this Bid of the Contractor be accepted and the Contract awarded to him, it is our present intention to become surety on the performance bond and labor and material bond required by the Contract.

Any arrangement for the bonds required by the Contract is a matter between the Contractor and ourselves and we assume no liability to you or third parties if for any reason we do not execute the requisite bonds.

We are duly authorized to do business in the State of _____.

Attest:

_____ _____

_____
Surety's Authorized Signature(s)

Attach Power of Attorney

(Corporate seal if any. If no seal, write "No Seal" across this place and sign.)

(This form must be completed prior to the submission of the bid.)

LIST OF PROPOSED SUBCONTRACTORS

Each Bidder shall complete this "List of Proposed Subcontractors" in its entirety for the identified categories of work listed below and for any other subcontract valued at greater than 1% of the total contract amount. Attach additional sheets if necessary to list all subcontractors. Failure to complete this list may render the Bid Form non-responsive. If Bidder intends to self perform the type of work indicated, write "Self Perform" under Subcontractor Name and leave the other columns empty.

Type of Work	Subcontractor Name & Address	Certified Disadvantage Business Enterprise?	Subcontract Amount	State Contractor License Number
Mechanical				
Electrical				
Controls				
Civil/Site				
Masonry				
Painting				
Roofing				
HVAC				
Concrete Formwork and Placement				
Concrete Reinforcing				
Secondary Clarifiers Tank Supplier				
Aerobic Digesters Tank Supplier				

Total Subcontracted Amount: $_____

Percent of Total Contract: _____%

BID FORM ATTACHMENT C

Not Used

REQUIRED BIDDER'S QUALIFICATION STATEMENT

To induce the making of this Contract, the Bidder represents to the Owner the following, as evidence of Bidder's Qualifications to perform the work herein specified:

1. How many years has your organization been in business under the name in which you propose to execute this Contract?
   ___Years

2. What projects of character similar to that proposed has your present organization completed? Give the information indicated by the following tabulations:

NAME, ADDRESS, AND PHONE NO. OF OWNER FOR WHOM WORK WAS DONE	DESCRIPTION OF WORK	APPROXIMATE AMOUNT OF CONTRACT	APPROXIMATE DATE WORK WAS DONE

3. Has your present organization ever failed to complete any work awarded to it? If so, state when, where and why.
   _____
   _____
   _____

4. Do you have, or can you procure the necessary personnel, equipment, facilities and financial resources to immediately undertake and satisfactorily complete the work contemplated in this Contract?

_____
_____
_____

5. (Other requirements as pertinent)

CONTRACTOR'S MARYLAND LICENSE NO.

OR

EVIDENCE OF BIDDER'S ABILITY TO OBTAIN MARYLAND STATE CONTRACTOR'S LICENSE

USDA
Form RD 400-6
(Rev. 4-00)

Form Approved
OMB No. 0575-0018

COMPLIANCE STATEMENT

This statement relates to a proposed contract with _____

_____
(Name of borrower or grantee)

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1. ☐ I have, ☐ have not, participated in a previous contract or subcontract subject to Executive 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.

2. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.

If the proposed contract is for $50,000 or more and I have 50 or more employees, I also represent that:

3. ☐ I have, ☐ have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.

4. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods): (See Reverse).

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays the valid OMB control number. The valid OMB control number for this information collection is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR CERTIFICATIONS OF NON-SEGREGATED FACILITIES

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date _____ _____

(Signature of Bidder or Prospective Contractor)

_____

Address (including Zip Code)

U.S. DEPARTMENT OF AGRICULTURE

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, **Federal Register** (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency with which this transaction originated.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Organization Name

PR/Award Number or Project Name

Name(s) and Title(s) of Authorized Representative(s)

Signature(s)

Date

Form AD-1048 (1/92)

Instructions for Certification

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out on the reverse side in accordance with these instructions.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transaction," "debarred," "suspended," "ineligible," " lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Form AD-1048 (1/92)

U.S. GPO: 1996-757-776/201 07

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____ _____

(name) (date)

_____

(title)

oOo

(08-21-91) PN 171

CERTIFICATION BY BIDDER REGARDING
EQUAL EMPLOYMENT OPPORTUNITY

Name of Bidder Project No.

INSTRUCTIONS

This certification is required pursuant to Executive Order 11246, Part II, Section 203(b), (30 C.F.R. 12319-25). Each bidder shall state in his Bid Proposal whether he has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether he has filed all compliance reports due under applicable filing requirements.

CONTRACTOR'S CERTIFICATION

Contractor's Name: _____

Address: _____

1. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause. YES___ NO

2. Compliance reports were required to be filed in connection with such contract or subcontract. YES___ NO
   If YES, state what reports were filed and with what agency.

3. Bidder has filed all compliance reports due under applicable instructions, including SF-100. YES___ NO

4. If answer to item 3 is "NO", please explain in detail on reverse side of this certification.

Certification - The information above is true and complete to the best of my knowledge and belief. A willfully false statement is punishable by law. (U.S. Code, Title 18, Section 1001.)

_____
(NAME AND TITLE OF SIGNER – PLEASE TYPE)

_____ _____
(SIGNATURE) (DATE)

Federally Assisted Projects

CERTIFICATION

PL 111-5 AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)

The CONTRACTOR acknowledges to and for the benefit of the Town of Emmitsburg ("OWNER") and the State of Maryland (the "State") that it understands the goods and services under this Contract are being funded with monies made available by the federal American Recovery and Reinvestment Act of 2009 (ARRA) and such law contains provisions commonly known as "Buy American;" that requires all of the iron, steel, and manufactured goods used in the project be produced in the United States ("Buy American Requirements") including iron, steel, and manufactured goods provided by the CONTRACTOR pursuant to this Agreement. The CONTRACTOR hereby represents and warrants to and for the benefit of the OWNER and the State that (a) the CONTRACTOR has reviewed and understands the Buy American Requirements, (b) all of the iron, steel, and manufactured goods used in the project will be and/or have been produced in the United States in a manner that complies with the Buy American Requirements, unless a waiver of the requirements is approved, and (c) the CONTRACTOR will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Buy American Requirements, as may be requested by the OWNER or the State. Notwithstanding any other provision of this Contract, any failure to comply with this paragraph by the CONTRACTOR shall permit the OWNER or the State to recover as damages against the CONTRACTOR any loss, expense or cost (including without limitation attorney's fees) incurred by the OWNER or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the OWNER). While the CONTRACTOR has no direct contractual privity with the State, as a lender to the OWNER for the funding of its project, the OWNER and the CONTRACTOR agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Company: _____

Authorized Signature: _____

Print Name: _____

Title: _____

Date: _____

CERTIFICATION
BUY AMERICAN COMPLIANCE

In accordance with the requirements of the American Recovery and Reinvestment Act of 2009, the Contractor hereby certifies to the following:

1. Identification of American-made Iron, Steel, and Manufactured Goods: Consistent with the terms of the Purchaser's bid solicitation and the provisions of ARRA Section 1605, the Bidder certifies that this bid reflects the Bidder's best, good faith effort to identify domestic sources of iron, steel and manufactured goods for every component contained in the bid solicitation where such American-made components are available on the schedule and consistent with the deadlines prescribed in or required by the bid solicitation.

2. Verification of U.S. Production: The Bidder certifies that all components contained in the bid solicitation that are American-made have been so identified, and if this bid is accepted, the Bidder agrees that it will provide reasonable, sufficient, and timely verification to the Purchaser of the U.S. production of each component so identified.

3. Documentation Regarding Non-American-made Iron, Steel, or Manufactured Goods: The Bidder certifies that for any component or components that are not American-made and are so identified in this bid, the Bidder has included in or attached to this bid one or both of the following, as applicable:

   (1) Identification of and citation to a categorical waiver published by the U.S. Environmental Protection Agency in the Federal Register that is applicable to such component or components, and an analysis that supports its applicability to the component or components;
   (2) Verifiable documentation sufficient to the Purchaser, as required in the bid solicitation or otherwise, that the Bidder has sought to secure American-made components but has determined that such components are not available on the schedule and consistent with the deadlines prescribed in the bid solicitation, with assurance adequate for the Bidder under the applicable conditions stated in the bid solicitation or otherwise.

4,. Information and Detailed Justification Regarding Non-American-made Iron, Steel, or Manufactured Goods: The Bidder certifies that for any such component or components that are not so available, the Bidder has also provided in or attached to this bid information, including but not limited to, the verifiable documentation and a full description of the bidder's efforts to secure any such American-made component or components, that the "Bidder believes are sufficient to provide and as far as possible constitute the detailed justification required for a waiver under section 1605 with respect to such component or components. The Bidder further agrees that, if this bid is accepted, it will assist the Purchaser in amending, supplementing, or further supporting such information as required by the Purchaser to request and, as applicable, implement the terms of a waiver with respect to any such component or components.

Authorized Signature: _____

Print Name: _____

Title: _____

Date: _____

AFFIDAVIT CONCERNING THE PERFORMANCE BOND FOR THE
DECANTER CENTRIFUGE
(SPECIFICATION SECTION 11360)

I DO SOLEMNLY DECLARE AND AFFIRM, the following:

1. That I understand that equipment design, manufacturing and assembly specifications are an integral part of the performance requirements stipulated in Section 11360.

2. That I have examined the Contract Documents and that the decanter centrifuge equipment to be provided by our company will meet in every way the performance requirements set forth in the Contract Documents.

3. That our company will provide the performance bond as specified in Section 11360.

4. That I have examined the payment schedule specified in Section 11360 and our company will agree to this payment schedule.

This Affidavit must be signed by an officer (vice president or higher) of the basic corporation, partnership or company manufacturing the equipment, and witnessed by a notary public.

_____
Signature

_____
Name and Title of Signer

_____
Company

_____
Brand Name of Centrifuge Equipment (if different than company name)

_____
Date

SUBSCRIBED TO AND SWORN TO BEFORE ME, A Notary Public of the State of_____,
County or City of _____ this year and date first above written.

_____
Notary Public

_____
My Commission Expires

SECTION 02270

TEXTURED HIGH DENSITY POLYETHYLENE (HDPE) GEOMEMBRANE

PART 1 GENERAL

1.01. SECTION INCLUDES

A. Requirements for manufacture, supply, storage, and installation of high density polyethylene (HDPE) geomembrane.

B. Requirements for the installation contractor.

C. Requirements for prefabricated boots at all penetrations through the geomembrane.

D. Qualifications for the manufacturer of the HDPE geomembrane.

E. Submittals and certifications for the polymer supplier and geomembrane manufacturer.

F. Quality control testing of geomembrane liners.

G. Installation requirements for geomembrane liners.

H. Warranties for the materials covered in this section.

1.02. RELATED SECTIONS

A. Section 01300 - SUBMITTALS

B. Section 01400 - QUALITY CONTROL

C. Section 02271 – QA/QC TESTING HDPE GEOMEMBRANE

D. Section 03301 - LIQUID TIGHTNESS TEST FOR CONCRETE STRUCTURES

1.03. REFERENCES

A. Documents

1. GRI Standard GM-13, “Test Properties, Testing Frequency and Recommended Warranty for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes.”

2. USEPA Technical Guidance Document - Inspection Techniques for the Fabrication of Geomembrane Field Seams, EPA/530/SW-91/051, May 1991.

3. USEPA Technical Guidance Document - The Fabrication of Polyethylene FML Field Seams, EPA/530/SW-89/069, September 1989.

B. Testing Standards

1. ASTM D-792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.

2. ASTM D-1004 - Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.

3. ASTM D-1238 - Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.

4. ASTM D-1505 - Standard Test Method for Density of Plastics by The Density Gradient Technique.

5. ASTM D-1603 - Standard Test Method for Carbon Black in Olefin Plastics.

6. ASTM D-3895 - Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Colorimetry.

7. ASTM D-4218 - Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.

8. ASTM D-4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

9. ASTM D-5199 - Standard Test Method for Measuring the Nominal Thickness of Geosynthetics.

10. ASTM D-5397 - Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.

11. ASTM D-5596 - Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.

12. ASTM D-5721 - Standard Practice for Air-Oven Aging of Polyolefin Geomembranes.

13. ASTM D-5885 - Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High Pressure Differential Scanning Colorimetry.

14. ASTM D-5994 - Standard Test Method for Measuring the Core Thickness of Textured Geomembranes.

15. ASTM D-6693 – Standard Test Method for Determining Tensile Properties of Non-Reinforced Polyethylene and Non-Reinforced Flexible Polypropylene Geomembranes.

16. ASTM D-7466 – Standard Test Method for Measuring Asperity Height of Textured Geomembranes.

17. FTMS 101C-2065, “Federal Test Method Standard for Puncture Resistance and Elongation Test (1/8-Inch Radius Probe Method).”

18. D6365-99, “Standard Practice for the Nondestructive Testing of Geomembrane Seams using the Spark Test.”

1.04. DEFINITIONS

A. Film Tearing Bond (FTB) - A failure in the ductile mode of one of the bonded sheets by tearing prior to complete separation to the bonded area.

B. Machine Direction (MD) - The direction parallel to the direction of movement.

C. Cross-Machine Direction (TD) - The direction perpendicular to the long, machine or manufactured direction.

D. Field Crew Foreman

1. Retained by the Installer.

2. Responsible for all activities associated with the installation of the geomembrane.

3. Shall be on-site during all aspects of geomembrane installation.

4. Shall be responsible for subgrade acceptance, handling, placement, seaming, testing, repairing and all other activities performed by the Installer.

5. Shall supervise the unloading of geomembrane materials and their storage and protection until used.

E. Seaming Foreman

1. Retained by the Installer.

2. May be the Field Crew Foreman.

3. Responsible for all seaming activities associated with construction of the geomembrane materials.

4. Shall be installer's representative at daily meetings.

F. Seaming Crew

1. Retained by the installer.

2. Responsible for the seaming of individual geomembrane sheets or panels.

1.05. SUBMITTALS

The General Contractor shall be responsible for the following submittals:

A. Submittals After Award, Prior to Manufacture

1. Manufacturer - A list documenting the number of completed facilities for which the manufacturer has manufactured geomembranes, including an approximate total for the square feet of geomembrane installed. The following information shall be provided for each facility:

a. Name and purpose of the facility.

b. The location and date of installation.

c. The name of the Owner, the project manager, designer, fabricator (if any), and the Installer.

d. The name and telephone number of the contractor at the facility who can discuss the project.

e. In addition, the geomembrane type, thickness, and total square footage of the installation surface should be included.

2. Installer

a. A list documenting the number of completed facilities for which the Installer has completed the installation of a geomembrane, including the total square feet of geomembrane installed per facility. For each facility, the following information shall be provided:

1) The name and purpose of the facility, its location, and the date of installation.

2) The name of the project manager, designer, manufacturer, and fabricator (if any).

3) The name and qualifications of the supervisor(s) of the Installer's crew(s).

4) The type(s) of seaming, patching, and tacking equipment.

5) Any available information on the performance of the lining system at the facility.

b. Certification indicating an approval or license from the manufacturer to install the manufacturer's materials.

3. Polymer Supplier - Documentation indicating that the polymer supplier has previously produced polymer of the same composition as that proposed for use in the manufacture of the 60 mil polyethylene geomembrane liner.

B. Submittals After Award, Prior to Shipping

1. Manufacturer

a. Copies of quality control certificates for each roll or panel of geomembrane. Each quality control certification shall include: (a) roll or panel number(s) and identification; and (b) certification that each roll was continuously inspected for uniformity, damage, imperfections, holes, cracks, thin spots and foreign materials. Additionally, the geomembrane liner must be inspected for tears, punctures and blisters.

b. Certification that the geomembrane supplied for this work was manufactured as consecutive rolls from a single lot or from consecutive lots.

c. Certification that the geomembrane and extrudate, if applicable, produced for this work have the same properties and are of the same resin.

d. Reports of tests conducted to verify conformance with Table 02270-1 (at end of section).

e. If requested by the Engineer, the quality control procedures utilized in the geomembrane manufacturing process.

f. Origin and identification of the resin, including the resin supplier's name and production plant and resin brand name and type.

g. Copies of quality control certificates issued by the resin supplier.

h. Reports of resin testing conducted to verify conformance with Table 02270-1.

2. Installer

a. Certification that the field crew foreman has actual geomembrane installation experience and supervisory experience for geomembrane installation projects.

b. Certification that the seaming foreman has actual geomembrane seaming experience and supervisory experience during the seaming of geomembrane materials.

c. Certification that each individual on the seaming crew has geomembrane seaming experience and seaming experience with 60 mil polyethylene geomembranes.

C. Submittals After Award, Prior to Installation

1. Installer

a. Documentation outlining installation quality control requirements and procedures.

b. Proposed Installation Panel Layout Drawing

1) Drawing shall show the location and reference number of all panels and expected seams.

2) Drawing shall include all necessary details, including the order of panel installation.

3) Panels shall be designed to meet the requirements of Articles 3.03 and 3.04.

D. Submittals During Installation

1. Copies of seaming quality assurance records which shall include apparatus temperature, extrudate temperature, if applicable, and ambient air temperature, for each apparatus in use.

2. Copies of quality assurance certificates which shall include:

a. Panel numbers and identification.

b. Quality assurance test locations, procedures and results.

c. Documentation of repairs, including location and retest results.

E. Submittals Upon Installation Completion

1. Record drawing(s) for each panel layout diagram (two prints, one reproducible).

2. Summary and log of all quality assurance testing performed.

3. Summary and log of the ambient temperature at which seaming was performed, in addition to geomembrane surface temperature and seam wedge temperature, recorded every two hours during placement and seaming.

4. A listing of any precipitation events occurring at the site, including time of such occurrences, the intensity and the amount of the event.

5. Liquid tightness test reports.

1.06. QUALITY ASSURANCE

A. Pre-installation Conference - The General Contractor shall convene a pre-installation conference with the Owner's representative a minimum of five days before installation begins.

1.07. DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. The geomembranes shall not be folded for shipment. They shall be rolled and covered with an appropriate material.

2. The geomembrane rolls shall be labeled with the following information:

a. Name of manufacturer.

b. Product type.

c. Product thickener.

d. Manufacturer's batch code.

e. Date of manufacture.

f. Physical dimensions.

g. Panel number.

h. Direction of unrolling.

3. Any damaged rolls shall remain on the transport vehicle for return to the point of origin.

4. The installation contractor shall be responsible for the off-loading of all geomembrane materials.

B. Storage

1. All geomembranes shall be stored so as to be protected from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, light, excessive heat, or other damage.

2. Rolls and panels shall be stored on a prepared surface (not wooden pallets) and shall not be stacked.

C. Handling

1. Provide adequate handling equipment for moving geomembrane rolls which do not pose any risk of damage to the rolls.

2. The installation contractor shall be responsible for the on-site handling of all geomembrane materials.

3. No geomembrane material shall be transported without the field crew foreman present.

4. Repair any damage to the protective wrapping on geomembrane rolls or panels and protect from ultraviolet light and weather.

5. Direct contact with geomembranes shall be minimized. Geomembrane in heavy traffic areas shall be protected by a geosynthetic overlay.

6. Equipment and tools shall not damage the geomembrane as a result of handling, trafficking, excessive heat or other means.

7. Personnel working on the geomembrane shall not smoke, wear damaging shoes, excessively traffic or engage in other activities which may damage the geomembrane.

8. No vehicular equipment shall be driven directly on a geomembrane.

1.08. ENVIRONMENTAL REQUIREMENTS

A. Adequate loading (e.g., sand bags, tires or similar items that will not damage the geomembrane) shall be placed to prevent uplift by wind. In case of high winds, continuous loading is recommended along edges of panels to minimize wind flow under the panels.

B. Geomembranes shall not be placed or seamed unless authorized by the Engineer:

1. During precipitation, during periods of fog, or in the presence of excess moisture (e.g., dew, ponded water).

2. During periods of when winds are in excess of 15 mph or when gusting wind conditions interfere with handling operations.

3. When ambient air temperature measured 2 feet above the liner is lower than 32 degrees F or higher than 120 degrees F.

4. When geomembrane sheet temperature is below 32 degrees F or above 150 degrees F.

1.09. WARRANTY

A. The manufacturer shall warranty materials for a minimum of 20 years after the date of Substantial Completion.

B. The installer shall warranty workmanship for a minimum of one year.

1.10. PROJECT RECORD DOCUMENTS

A. Record drawing(s) for each panel layout diagram (two prints, one reproducible).

B. Summary and log of all quality assurance testing performed.

C. Summary and log of the ambient temperature at which seaming was performed, in addition to geomembrane surface temperature and seam wedge temperature, recorded every two hours during placement and seaming.

D. A listing of any precipitation events occurring at the site, including time of such occurrences, the intensity and the amount of the event.

PART 2 MATERIALS

2.01. MANUFACTURER

A. The following is a list of manufacturers with the capacity to provide the geomembrane specified in this Section:

1. GSE Lining Technology, Inc.

2. Poly-Flex, Inc.

3. Agru-America, Inc.

4. Or equal.

B. The above is a short list and may not be the only manufacturer(s) that can provide acceptable materials.

2.02. MATERIALS

A. Geomembrane

1. The geomembrane shall be of 60 mil thickness.

2. Geomembrane - The textured HDPE geomembrane shall be manufactured of new, first-quality resin and shall be compounded and continuously manufactured specifically for this work. The resin manufacturer shall certify each batch for the acceptance criteria listed in Table 02270-1.

3. Shall meet or exceed the acceptance criteria in Table 02270-1.

4. Shall not contain more than 1 percent non-volatile pigment or fillers other than carbon black.

5. Factory seaming of geomembrane panels shall not be performed.

6. Pipe Boots - May be constructed in the factory or in the field in accordance with the detail shown on the Drawings.

2.03. SOURCE QUALITY CONTROL

A. The manufacturer and polymer supplier shall perform the material testing as specified in Table 1.

B. The geomembrane shall meet or exceed the applicable acceptance criteria in Table 02270-1.

2.04. PRODUCTS

A. None from this Section.

PART 3 EXECUTION

3.01. EXAMINATION

A. The installation contractor's field crew foreman shall examine all subgrades to receive geomembrane materials on a daily basis for projections or voids that may cause damage to the liner during installation. Any repairs to the subgrade shall be made by the Contractor.

B. Examine all geomembrane rolls or panels upon delivery.

1. Verify that rolls or panels are labeled as specified in Article 1.07.

2. Examine the surface of all rolls and/or panels for defects and damage. Rolls and/or panels with severe flaws shall be rejected.

3.02. PROTECTION

A. Direct contact with geomembranes shall be minimized. Geomembrane in heavy traffic areas shall be protected by a geosynthetic overlay.

B. Equipment and tools shall not damage the geomembrane as a result of handling, trafficking, excessive heat or other means.

C. Personnel working on the geomembrane shall not smoke, wear damaging shoes, excessively traffic or engage in other activities which may damage the geomembrane.

D. No vehicular equipment shall be driven directly on a geomembrane.

3.03. INSTALLATION

A. Place geomembrane rolls or panels as indicated on the panel layout drawing.

1. Geomembrane shall only be placed on subgrades which have been inspected and accepted in writing by the installation contractor's field crew foreman.

2. Any additional protective measures considered necessary by the geomembrane installer to provide a suitable surface for installation of the geomembrane, such as a geotextile buffer layer, shall be provided by the Contractor, and the cost of providing such measures shall be included in the Contractor's original bid.

3. Only those rolls or panels which can be placed and seamed or permanently anchored on at least two sides on the same day they are placed shall be removed from protective packaging on a daily basis.

4. Geomembrane rolls or panels should be placed in an orderly fashion which shall minimize or prevent surface water from flowing below an in-place geomembrane.

5. Field seams shall be oriented parallel to the line of slope.

6. No horizontal seams shall be allowed on slopes greater than 5 percent.

7. No horizontal seams shall be allowed within 5 feet of the toe of any side slope.

8. In corners and odd-shaped geometric locations, the number of field seams shall be minimized.

B. Unroll geomembrane and position for seaming.

1. The method used to unroll the geomembrane shall not cause scratches or crimps in the geomembrane and shall not damage the underlying natural or geosynthetic material.

2. The method used to place the geomembrane shall minimize wrinkles.

3. The geomembrane shall be cut from each roll with a hookblade knife.

3.04. SEAMS

A. All surfaces to be seamed including seams with the existing material shall be clean and free of moisture, dust, dirt, grease and other foreign substances.

1. If moisture is present in the area to be seamed, air blowers shall be used to remove the moisture.

B. Seams shall be aligned with the least possible number of wrinkles and “fishmouths.”

1. Wrinkles or fishmouths at seam overlaps shall be cut along the ridge of the imperfection, flattened and repaired.

2. After seaming, imperfections shall be repaired and tested as described in Article 3.09 of this Section.

3. Place a permanent mark next to each imperfection to aid in location of necessary repairs.

C. Seams shall have a finished overlap of a minimum of 5 inches for dual wedge fusion welding, but in any event, sufficient overlap shall be provided to allow peel tests to be performed on the seam.

D. If applicable, the procedure used to temporarily bond adjacent panels together shall not damage the geomembrane; in particular, the temperature of hot air at the nozzle of any spot welding apparatus shall be controlled such that the geomembrane is not damaged.

E. Seaming shall be accomplished using dual hot wedge fusion welding and extrusion (fusion) welding seams.

1. Dual hot wedge welding shall be used for all long, straight seams, where applicable.

2. Dual hot wedge welding equipment shall be automated vehicular-mounted devices with rubber niprollers and shall be equipped with instrumentation to indicate temperature, speed, and pressure.

3. Dual hot wedge welding equipment shall be cleaned twice daily, once in the morning and once in the afternoon.

F. A movable protective layer shall be used below each overlap of geomembrane during field seaming to prevent the buildup of moisture between the sheets.

G. All field seaming operations shall be supervised by the seaming foreman and no field seams shall be made without the seaming foreman present.

3.05. TRIAL SEAMS

A. Trial seams shall be performed on fragment pieces of geomembrane to verify that seaming conditions are satisfactory and to supply test specimens for the quality assurance program.

B. Trial seams shall be conducted at the beginning of each seaming period and at least once each four hours for each seaming apparatus used that day. Trial seams shall also be conducted for each 20 degrees F change in geomembrane temperature. Trial seams shall be made under the identical conditions as the actual seams.

C. Each seamer shall make at least one trial seam each day for each seam method.

D. Trial seams shall be a minimum of 42 inches in length and 1 foot in width, with the seam centered in the 1-foot width.

E. Two test specimens shall be cut from each trial seam at one-third the distance from each end. Specimen size shall satisfy testing requirements listed in Table 02271-1 of Section 02271, QA/QC Testing HDPE Geomembrane.

F. Both test specimens shall immediately be tested for peel and shear strength as outlined in Table 02771-1 of Section 02271, QA/QC Testing HDPE Geomembrane.

G. If either specimen does not meet the acceptance criteria, the seamer and seaming apparatus and/or methods shall not be accepted and shall not be used for seaming until the deficiencies are corrected and two consecutive trial seams are successful.

H. The remaining end sections shall be retained, one by the Owner and one by the Contractor.

3.06. FACTORY SEAMING

A. The geomembrane may be factory seamed to form pipe boots.

B. Factory seaming operations shall be performed in accordance with Articles 3.04 and 3.05 of this Section.

C. All factory seams shall be tested in accordance with Article 3.07 of this Section.

D. Any length of seam which is considered rejected as a result of a failed destructive test shall not be shipped for use on this project.

3.07. QUALITY ASSURANCE TESTING

A. Seams shall be quality assurance tested as described in Section 02271, QA/QC Testing HDPE Geomembrane, by a qualified, independent testing laboratory who shall be retained by the Installer.

B. For locations where seams cannot be non-destructively tested as determined by the Engineer, seaming operations shall be continuously observed by the seaming foreman for uniformity and completeness.

3.08. FAILED TESTS

A. If any test specimen does not meet the acceptance criteria listed in Table 02270-1 of this Section or Table 02771-1 of Section 02271, QA/QC Testing HDPE Geomembrane, the test series shall be considered unacceptable and all material or length of seam represented by the test series shall be rejected. The Contractor may, at no additional compensation, take

additional samples for quality assurance testing in an attempt to minimize the amount of material represented by the failed test.

B. An acceptable length of seam shall be defined as a length of seam which lies between acceptable destructive test locations and has passed non-destructive seam testing.

C. Quality Assurance Testing - Destructive Seam Tests

1. The Contractor has two options:

a. The seam may be reconstructed between any two acceptable test locations.

b. The acceptable length of seam may be retraced from the location of the previous acceptable test location to an intermediate point no less than 10 feet from the failed test location, where an additional field test sample shall be taken. If the field sample passes on-site peel and shear strength testing, a full test sample shall be taken for off-site laboratory testing. If the field test sample fails, the process may be repeated. All unacceptable lengths of seam shall be repaired as described in Article 3.09 of this Section.

D. Quality Assurance Testing - Non-destructive Seam Tests - All unacceptable lengths of seam shall be repaired in accordance with Article 3.09 of this Section.

3.09. DEFECTS AND REPAIRS

A. Place a permanent mark next to each defect to aid in location of necessary repairs. All seams and non-seam areas of the geomembrane shall be inspected by the field crew foreman for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter. Because light reflected by the geomembrane helps to detect defects, the surface of the geomembrane shall be clean at the time of inspection. The geomembrane surface shall be brushed, blown or washed by the installation contractor if the amount of dust or mud inhibits inspection. The Engineer shall decide if cleaning of the geomembrane is needed to facilitate inspection.

B. Each suspect location in seam and non-seam areas shall be non-destructively tested, as appropriate, in the presence of the field crew foreman. Each location that fails the non-destructive testing shall be marked by the field crew foreman and repaired accordingly.

C. No material shall be placed over a repaired section of geomembrane prior to completion of all destructive and non-destructive testing and acceptance of the repair.

D. Punctures, pin holes, small tears and localized imperfections shall be repaired using a patch.

E. Large tears and lengths of seam shall be repaired using a cap strip. No reseaming over existing seams shall be permitted.

F. Large wrinkles which exist at the end of seaming operations and which may become creased during backfilling shall be cut and reseamed.

G. Patches and cap strips shall have rounded edges (minimum radius of 3 inches), shall be made of the same geomembrane, and shall extend a minimum of 6 inches beyond the edge of defects. All patches shall be of the same compound and thickness as the geomembrane provided for this work. Patches shall be seamed using extrusion (fusion) welding.

1. Liester fusion welds shall not be allowed.

H. Tears which lie on slopes greater than 5 percent or which lie in areas of stress and have sharp ends shall have all sharp ends rounded prior to repair.

I. The geomembrane below large patches and cap strips shall be cut as necessary to prevent moisture or gas collection between sheets.

J. All repair seams shall be made in accordance with the requirements of Article 3.04 of this Section.

K. Each repair shall pass non-destructive tests. Large cap strips may require destructive testing, as directed by the Engineer.

3.10. OWNER'S INDEPENDENT QUALITY ASSURANCE

A. The Owner may retain a geosynthetic testing firm to perform additional independent testing of the material and seam performance and observe and document activities relative to the quality assurance of the geomembrane installation.

B. All test results shall be interpreted in the same manner as those received from the Contractor's independent testing firm.

C. In the event that any test does not meet the acceptance criteria for that specific test method, the test series shall be considered unacceptable and the material or length of seam represented by the test series shall be rejected.

1. The Contractor may elect to have additional samples taken and similar testing performed by the Owner's testing firm in an attempt to minimize the material represented by the failed test.

2. Any additional sampling and testing requested by the Contractor for this purpose shall be at the Contractor's cost.

D. In the event of discrepancies between the Owner's test results and the Contractor's test results, the Contractor will be responsible for arranging a third testing firm independent from all parties to verify test results. The cost of this third party testing will be paid for by the Contractor.

3.11. RECORDING QUALITY ASSURANCE TEST DATA

A. During the geomembrane installation process, the installation contractor shall record the following information on record drawings.

1. The location and identification number of each imperfection, the date found, the date repaired and the result of non-destructive testing on the seam (acceptable/unacceptable).

2. The location, date, sample number and test result (acceptable/ unacceptable) of each destructive test series.

3. The location, identification number and date of each non-destructive air pressure seam test, the length of the tested seam, and the result of the test (acceptable/ unacceptable), if applicable.

4. The location, date and lengths of non-destructive vacuum box seam testing performed on a daily basis.

3.12. HYDROSTATIC LEAK TESTING

A. Upon completion of geomembrane installation and lagoon construction, each lagoon shall be hydrostatically tested to identify potential leaks.

B. The general testing approach and procedures under Section 03301, Liquid Tightness Test for Concrete Structures, shall be used, as applicable with the following notes:

1. Water shall be clear and potable.

2. Test criterion shall be HST-050.

3. Reference point for measuring water level drop shall either be on a structure or made in china marker on the geomembrane.

4. Subsequent water level marks shall be made on the geomembrane with a china marker.

5. Repairs shall be made in accordance with this section.

3.13. PIPE BOOT LEAK TESTING

A. All pipe boot seam connections shall be tested under a 3-foot head of water for a minimum of 24 hours. Acceptable pipe boots shall show no leakage.

B. Alternative testing methods include spark testing described in ASTM D6365-99.

C. Additional alternative testing methods may be allowed, as determined by the Engineer.

3.14. GEOMEMBRANE ACCEPTANCE

A. The Contractor shall retain all ownership and responsibility for the geomembrane until final acceptance of all work under this contract by the Owner.

B. The geomembrane liner shall be accepted by the Owner when all of the following conditions are met:

1. Installation is finished.

2. Verification of the adequacy of all field seams and repairs, including associated testing, if complete.

3. Hydrostatic leakage testing is successfully completed.

4. Certification, including record drawing(s), is provided by the installation contractor to the Owner’s representative.

5. Required warranties are received.

TABLE 02770-1

QUALITY CONTROL TESTING REQUIREMENTS
HDPE GEOMEMBRANE

TEST DESCRIPTION	TEST METHOD	MINIMUM TEST FREQUENCY	MINIMUM AVERAGE TEST VALUES, TEXTURED
Raw Material Testing			
Melt flow index	ASTM D1238	1 per 40,000 lbs.	<1.0 grams/10 min.
Carbon black	ASTM D1603	1 per 20,000 lbs.	2.0-3.0%
Density	ASTM D1505/ ASTM D792	1 test series per 40,000 sq. ft.	0.940 g/cc

Manufacture Testing			
Thickness, mils (textured) Minimum average Lowest individual of 8 of 10 readings Lowest individual of 10 readings	ASTM D-5994	Per roll	 57 54 51
Asperity height, mils	ASTM D-7466	Every other roll	10
Sheet density, g/cc	ASTMD-1505/ ASTM D-792	1/60,000 SF	0.940
Tensile properties(1) Yield strength, lb/in Break strength, lb/in Yield elongation, % Break elongation, %	ASTM D-6693	1 test series each MD and XMD per 20,000 SF	 126 90 12 100
Tear resistance, lb	ASTM D-1004	1/45,000 lbs	42
Puncture resistance, lb	ASTM D-4833	1/50,000 SF	90
Stress crack resistance(2), hours	ASTM D-5397	Per GRI GM10	200
Carbon black content(3), %	ASTM D-1603	1/20,000 lbs	2.0 to 3.0
Carbon black dispersion(4)	ASTM D-5596	1/45,000 lbs	Category 1 or 2
Oxidation induction time (OIT)(5) (a) Standard OIT, minutes or (b) High pressure OIT, minutes	 ASTM D-3895 ASTM D-5885	1/200,000 lbs	 100 400
Oven aging at 85°C(5,6) (a) Standard OIT (% retained after 90 days) or (b) High pressure OIT (% retained after 90 days)	ASTM D-5721 ASTM D-3895 ASTM D-5885	Per each formulation	55 80
UV resistance(7) (a) Standard OIT or (b) High pressure OIT (% retained after 1,600 hours)(9)	GRI GM11 ASTM D-3895 ASTM D-5885	Per each formulation	 N.R.(8) 50

(1) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of five test specimens each direction.
Yield elongation is calculated using a gage length of 1.3 inches.
Break elongation is calculated using a gage length of 2.0 inches.

(2) The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.
(3) Other methods such as D4218 or microwave methods are acceptable if an appropriate correlation to D1603 (tube furnace) can be established.
(4) Carbon black dispersion (only near spherical agglomerates) for 10 different views: 9 in Categories 1 or 2 and 1 in Category 3.
(5) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.
(6) It is also recommended to evaluate samples at 30 and 60 days to compare to the 90-day response.
(7) The condition of the test should be 20-hour UV cycle at 75 degrees C followed by 4-hour condensation at 60 degrees C.
(8) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.
(9) UV resistance is based on percent retained value regardless of the original HP-OIT value.

END OF SECTION

SECTION 02723

STORM SEWER PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Gravity flow storm sewer, fittings and accessories, materials and installation.

B. Connection of storm sewers to manholes, catch basins and existing storm sewers.

C. Discharge to natural drainage channels and streams.

D. Connection to flared end sections and headwalls.

1.02 REFERENCES

A. Reinforced Concrete Pipe

ANSI/ASTM C76	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ANSI/ASTM C443	Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
AWWA C302	Reinforced Concrete Culvert, Storm Drain and Sewer Pipe with Steel Ring and Rubber Gasket Joint

B. ADS N-12 WT IB HDPE STORM PIPE

ASTM D3350/ASTM F2306 AASHTO M294 Type S	HDPE Corrugated (Smooth Interior) Storm Pipes, Culverts, Joints, Fittings
ASTM D2321	HDPE Installation Guidelines

1.03 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data - Provide data indicating conformance to ASTM/AWWA codes, pipe material, sizes, class, dimensions, joint type and pipe accessories.

C. Manufacturer's Installation Instructions - Indicate special procedures required to install products specified.

D. Results of Shop Tests, if required.

E. Manufacturer's Certificate - Certify that products meet or exceed specified requirements.

1.04 PROJECT RECORD DOCUMENTS

A. Submit documents under provisions of Section 01700.

B. Submit marked up record plans including record location if different from plan and actual measured length of pipe runs, connections, manholes, catch basins, rim and pipe invert elevations. Invert elevations to be the pipe invert at a point where the pipe inters or outlets a manhole or catch basin.

C. Identify and locate on Record Drawings the exposed unmapped utilities or services.

1.05 REGULATORY REQUIREMENTS

A. Conform to the requirements of Virginia Department of Transportation and other regulatory agencies having jurisdiction over the Work.

B. Conform with permit requirements obtained as part of this Contract attached to these Specifications.

C. Conform to applicable codes for material and installation of the work of this Section.

1.06 FIELD MEASUREMENTS

A. Prior to start of construction verify by field measurements and elevations that existing conditions and structures are as shown on Drawings. Notify Engineer of specific differences.

B. Prior to start of construction verify by exploratory excavations that existing underground utility locations and elevations are as shown on Drawings or to confirm locating and elevation of uncharted utilities. Notify Engineer of location and elevation.

C. Prior to installation of crossing connections from catch basin confirm location and elevation of existing utilities. If required, adjust grade of pipe connection as approved by Engineer.

1.07 COORDINATION

A. Coordinate field work under provisions of Sections 01010 and 01500, including field engineering, maintenance of traffic, access to private driveways and emergency vehicle access.

B. Coordinate the work with local utility companies (private and municipal), including the organization identified in Section 02205 for locating existing utilities and protection thereof.

1.08 TEST REQUIREMENTS

A. Leakage tests on storm sewer systems, manholes and catch basins are not required. However, visible cracked pipe shall be replaced. Visible leaks in pipes, manholes and catch basins shall be permanently repaired as approved by the Engineer. Pipe with grades exceeding tolerance requirements shall be replaced or relayed to meet requirements.

PART 2 PRODUCTS

2.01 REINFORCED CONCRETE PIPE

A. Reinforced Concrete Pipe - ANSI/ASTM C76, Class III with bell and spigot. Pipe joints shall be manufactured on machined equipment and joint surfaces shall be smooth and concentric with no diameter varying from the theoretical by more than 1/16 inch.

1. Materials incorporated in the pipe shall be those which meet the requirements of the VDOT both as to quality, source of supply and manufacturer.

2. Minimum laying length shall be 5 feet for sizes 12 inches and 15 inches and 7.5 feet for sizes 18 inches and above.

3. Shop tests are required if listed in pipe schedule.

4. Concrete mix design, wall thickness, amount of reinforcing steel, and position of reinforcing cages shall be such that the pipe's crushing strength (3 edge bearing) equals or exceeds the pipe classes outlined herein or in the schedule. The bell and spigot areas shall contain not less than two layers (inner and outer) of longitudinal and circumferential steel designed to withstand the compression of the gasket as well as all other forces with steel area and sizes to be not less than for the pipe barrel reinforcement or for single reinforcing layer designs. The second layer to extend not less than 12 inches each side of joint. At least two lines of circumferential steel to be placed in bell area over gasket as part of bell reinforcing. All inner longitudinal steel to be welded to the steel ring joints. For concrete joints, the bell and spigot reinforcing to be welded to the pipe barrel reinforcing.

5. Each section of pipe and fitting shall be steam cured in a moist atmosphere at uniform 110 degrees temperature for a minimum time period of 12 hours.

6. Lifting holes if used in the pipe shall be permanently sealed with non-shrink grout.

7. Fittings - Fittings and special shapes shall be manufactured in accordance with the above requirements, the schedule and the drawings.

8. Fittings and specials shall match the size and class of pipe with which they are to be used.

9. Fittings made for connection to catch basin laterals if not connected to manholes shall be wye or tee branch fittings, and shall be manufactured as follows. A scarified opening shall be made in the wall of the main pipe prior to curing. After curing is complete, the reinforcing steel in the opening shall be cut out. A short section of bell end pipe of required size shall then be inserted into the opening and the annular space tightly packed with an epoxy mortar; the mortar being built up around the pipe to a point just behind the bell in a neat workmanlike manner. The mortar shall be made up using dry sand and "Armor-Weld No. 178" epoxy material, or "Embeco 536" non-shrink grout, or equal, following the manufacturer's directions.

10. Joints - Joints for storm sewers shall be designed, manufactured and installed using O-ring rubber gasket joint conforming to ASTM C433. Steel spigot ring and steel bell ring with rubber O-ring gaskets of the "Snap-On" type (referred to as O-ring gaskets). Steel for joint rings shall conform to the requirements of AWWA Specification 302. The gasket shall be smooth, solid rubber of circular and uniform cross section conforming to Section 3.4 of AWWA Specification C302.

2.02 High Density Polyethylene Pipe

A. ADS N-12 WT IB HDPE storm pipe, or equal.

B. HDPE pipe shall have a smooth interior and annular exterior corrugations. Pipe shall meet AASHTO M294, Type S or ASTM F2306.

C. Pipe shall be joined with the N-12 WT IB joint meeting the requirements of AASHTO M294 or ASTM F2306. Pipe shall be watertight in accordance with ASTM D3212. Gaskets shall meet requirements of ASTM F477.

D. Fittings shall conform to AASHTO M252, M294 or ASTM F2306. Fabricated fittings shall be welded at all accessible interior and exterior junctions.

E. Pipe and fittings shall be made of virgin polyethylene compounds that comply with cell classification 435400C as defined in ASTM D3350. Virgin pipe material shall comply with notched constant ligament-stress (NCLS) test as specified in AASHTO M294 and ASTM F2306.

F. Installation shall be in accordance with ASTM D2321 and ADS installation guidelines. Minimum cover in traffic areas shall be 1 foot.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that trench cut, excavated base and pipe bedding are ready to receive pipe and excavations and pipe bedding dimensions and elevations are as shown on the Drawings.

B. All pipe, fittings and specials shall be carefully inspected in the field before lowering into the trench. Cracked, broken, warped, out-or-round, damaged joints including damaged pipe linings or coatings or otherwise defective pipe, fittings or specials as determined by the Engineer, shall be culled out and not installed. Such rejected pipe shall be clearly tagged in such manner as not to deface or damage it, and the pipe shall then be removed from the job site by the Contractor at his own expense.

C. Any pipe showing a distinct crack with no evidence of incipient fracture beyond the limits of the visible crack, if approved, may have the cracked portion cut off by, and at the expense of, the Contractor before the pipe is laid so that the pipe used is perfectly sound and will form an approved joint. The cut shall be made in the sound barrel at a point at least 12 inches from the visible limits of the crack.

D. If authorized, cutting of the pipe shall be done in a neat and workmanlike manner without damage to the pipe lining. All pipe cutting shall be done by means of an approved type of power cutter and in accordance with manufacturer's instructions. The use of hammer and chisel, or any other method which results in rough edges, chipped or damaged pipe, is prohibited.

3.02 PREPARATION

A. The Contractor shall have on the job site with each pipe laying crew, all the proper tools, gauges, pipe cutters, lubricants, etc. to handle, cut and join the pipe.

B. Prior to installing the foundation, trenches shall have all water removed and all work performed in a dry trench.

C. All pipes, fittings or specials that are to be installed in the open trench excavation shall be properly bedded in and uniformly supported on pipe foundation of the various types specified in Section 02225 and shown on the Contract Drawings.

D. Flat-bottom trenches of required width shall be excavated to the necessary depth as required and maintained in accordance with Section 02225.

E. Bedding material shall be spread in maximum of 8-inch layers for the pipe foundation and each layer shall be compacted until the required total depth of bedding has been built up.

F. Suitable holes or depressions shall be provided in the pipe bedding to permit adequate bedding of bells, couplings or similar pipe projections.

G. Compaction methods include hand tamping with T-bars, flat heads, shovel slicing, as well as mechanical compactors.

H. The Contractor shall perform his bedding operations with care to maintain line and grade.

3.03 CATCH BASIN CONNECTIONS

A. When shown on the Contract Drawings, or ordered by the Engineer, catch basin pipe connections shall be furnished and installed directly to the storm sewer pipe instead of a manhole connection.

B. Fittings made for connection to catch basin laterals if not connected to manholes shall be wye or tee branch fittings, and shall be manufactured as follows. A scarified opening shall be made in the wall of the main pipe prior to curing. After curing is complete, the reinforcing steel in the opening shall be cut out. A short section of bell end pipe or required size shall then be inserted into the opening and the annular space tightly packed with an epoxy mortar; the mortar being built up around the pipe to a point just behind the bell in a neat workmanlike manner. The mortar shall be made up using dry sand and “Armor-Weld No. 178" epoxy material, or “Embeco 536" non-shrink grout, or equal, following the manufacturer’s directions.

3.04 LINES AND GRADES

A. The Contractor shall furnish all labor, materials, surveying instruments, and tools to establish and maintain all lines and grades. The Contractor shall have personnel on duty or on standby call, at all times, who are qualified to set and check grades of storm sewers and manholes as they are installed.

B. The Contractor shall use this information to set line and use laser equipment to set line and grade. The Contractor shall check the grade of pipe by use of level instrument and rod at not more than 50-foot intervals.

C. The use of string levels, hand levels, carpenter’s levels or other crude devices for transferring grade or setting pipe are not permitted.

D. During construction, the Contractor shall provide the Engineer, at his request, all reasonable and necessary materials, opportunities, and assistance for setting stakes and taking measurements, including the furnishing of one or two rodmen or chainmen as needed at intermittent times.

E. The Contractor shall carefully preserve bench marks, reference points and stakes established by the Engineer or Owner, and in case of willful or careless destruction by his own operations he will be charged with the resulting expense to re-establish such destroyed control data and shall be responsible for any mistakes or delay that may be caused by the unnecessary loss or disturbance of such control data.

3.05 TOLERANCES

A. Pipes shall be laid to the lines and grades shown on the Drawings.

B. Pipes shall be straight between manholes or between points of connection to structures or pipes.

C. The grade of the sewer between manholes and pipe length to pipe length shall not vary from the design grade shown on the Contract Drawings by more than 0.15 times the design grade, unless a change in grade has been ordered by the Engineer, in which case the same tolerance shall apply.

D. Invert elevations at any location shall not vary from the design elevations by more than 0.05 feet, unless a change in invert elevation has been ordered by the Engineer, in which case the same tolerance shall apply.

E. Any sewer grade or invert elevation which exceeds these tolerances shall be corrected by the Contractor at his own expense in a manner prescribed, and to the extent ordered, by the Engineer.

3.06 INSTALLATION

A. The Contractor shall furnish slings, straps and/or approved devices to provide satisfactory support of the pipe when it is lifted. Transportation from storage areas to the trench shall be restricted to operations that can cause no damage to the pipe or lining or coatings.

B. The pipe shall not be dropped from trucks onto the ground or into the trench.

C. Pipe laying shall proceed upgrade with spigot ends pointing in the direction of flow.

D. Each pipe section shall be placed into position in the trench on the pipe bedding in such manner and by such means required to cause no injury to the pipe, persons, or to any property.

E. Pipe shall be installed so that a pipe joint occurs not more than 2 feet from the outside face of the wall manholes or structures to which the pipe connects.

F. The pipe fittings and specials shall be firmly bedded in the pipe foundation so that the pipe barrel is uniformly supported and cradled throughout its length.

G. Blocking will not be permitted under the pipe, except where the pipe is to be installed in concrete encasement or concrete cradle.

H. Holes and depressions in the pipe foundation shall be provided to receive bells, couplings, or similar projections to assure proper bedding of the pipe barrel.

I. When the pipe is in proper position it shall be joined or coupled to the mating end of the previously laid pipe, using the required joint and using the manufacturer's recommended assembly procedure. For reinforced concrete pipe with gasket-type joint, coat the rubber gasket with recommended lubricant and snap into place in the groove provided at the spigot end. Before the joint is shoved home, fill the outer joint space with a continuous loop of polyurethane foam and unhydrated portland cement or Butyl mastic recommended by manufacturer. When the joint is shoved home, the material should be squeezed firmly against the shoulder of the spigot to completely fill and seal the outer joint space.

J. After the pipe had been joined the pipe bedding material to be placed and spread in maximum 8-inch layers to the midpoint of the pipe.

K. Each layer compacted using mechanical compactors and hand tamping with T-Bars or shovel slicing so the pipe barrel is firmly embedded in the pipe bedding material.

L. If inspection of the pipe indicates that the pipe has been properly installed as determined by the Engineer, the Contractor may then continue to spread the pipe foundation material to 12 inches over the top of pipe.

M. The pipe foundation above the midpoint of the pipe shall be spread and compacted in 12-inch layers to 12 inches above the top of the pipe.

N. After completing the pipe foundation to 12 inches above the top of pipe the Contractor may then backfill the remainder of the trench in accordance with Sections 02225 and 02228 and the typical trench details shown on the Drawings.

O. The completed assembly of pipe sections shall form a storm sewer with uniform slope.

P. Manufactured pipe plugs or temporary bulkheads shall be placed in the open ends of sewer lines whenever pipe laying is stopped overnight, over weekends, or whenever dirt or debris could enter the pipeline during construction.

Q. At the end of each day's work or at intervals of length at the option of the Engineer, the Engineer, with the Contractor, will check the grade and inspect the pipe for alignment with lamps or mirrors. Defective work shall be dug up and reinstalled to the satisfaction of the Engineer.

3.07 CONNECTION TO EXISTING STRUCTURES

A. Where sewers are to be connected to existing manholes or other structures, and where no stub or opening has been provided for the connection, the Contractor shall cut an opening of minimum diameter through the side wall of the structure for inserting the pipe, at the required location and elevation.

B. After inserting the pipe, the annular space remaining outside the pipe shall be completely filled with an expanding joint sealer (activated oakum or compressed foam) and covered with non-shrinking watertight mortar and such joint made watertight so that leakage of water into the structure is prevented.

C. The pipe shall be positioned so that the finished or trimmed end of the pipe is flush with the inside wall surface of the structure. The mortar filler shall be struck off neatly to form a smooth, dense surface flush with inside wall surface of the structure.

D. Benchwalls in existing structures shall be altered to form a new trough so that the new connection will enter the existing flow channel at a 45 degree angle in the direction of flow.

E. Benchwalls to be extended upwards to the top of pipes as shown on the Drawings.

F. In making connections to existing manholes or structures, care shall be taken to avoid damage to the manhole or structure or allowing debris to enter the pipelines. Any damage resulting from the Contractor's operations shall be repaired and made good by the Contractor at his own expense.

3.08 HEADWALLS

A. Where shown on the Drawings the storm sewers shall be installed with a headwall at its discharge end. Headwall details are shown on the Drawings.

3.09 FINAL INSPECTION

A. Each section of installed storm sewer between manholes catch basins or structures will be inspected by the Engineer before final acceptance. Such inspection will be visual by traversing the inside of the pipe, or by sighting through the line from manhole to manhole with the aid of artificial light when the pipe is too small to be entered or by television inspection.

B. Any section of sewer or drain, or portions thereof, which do not comply with the inspection criteria defined above, shall be promptly corrected or repaired by the Contractor at his own expense.

C. Pipe that is cracked or collapsed shall be dug up and replaced with new pipe; pipe that is out of line or grade shall be dug up and relayed to the correct line and grade.

D. Connecting pipes that protrude into the line shall be dug up and the connection remade, or the protruding portion of the connecting pipe shall be trimmed back flush with the wall of the main sewer, if the main line can be entered.

E. Deposits of dirt and debris shall be flushed with water through to the downstream manhole and removed.

F. At points of leakage, the pipe shall be dug up and replaced or repaired with approved repair clamp couplings (stainless steel Type 304 with stainless steel bolts and nuts or cast iron coupling with stainless steel bolts and nuts) so as to permanently stop the leak in a manner that shall receive the prior approval of the Engineer.

G. All manholes shall be watertight. All joints between precast wall sections, between cast iron frame and brick, and between brick units themselves shall be neat, continuous, and flush with the adjacent surfaces. Dirt and debris shall be removed from all manholes.

END OF SECTION

SECTION 09920

SEAMLESS EPOXY MOSAIC COMPOSITION FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Decorative seamless epoxy flooring system with integral colored vinyl flakes and clear epoxy top coat(s).

B. Perimeter edging.

C. System to include surface preparation, crack isolation treatment, moisture vapor transmission testing and treatment, and primers.

D. One color and pattern selection will be used throughout the project.

1.02 REFERENCES

A. ASTM C307 - Tensile Strength
B. ASTM C413 - Water Absorption
C. ASTM C579 - Compressive Strength
D. ASTM C580 - Flexural Strength
E. ASTM D635 - Flammability
F. ASTM D2047 - Coefficient of Friction
G. ASTM D4060 - Abrasion Resistance
H. ASTM D4226 - Impact Resistance
I. ASTM D4541 - Bond Strength
J. ASTM D695 - Compressive Properties of Rigid Plastics

1.03 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data - Provide data on specified products, describing physical and performance characteristics and sizes, patterns and colors available.

C. Samples - Submit two samples, 2-inch by 2-inch in size, illustrating manufacturer’s full line of color and pattern.

D. Manufacturer's Installation Instructions - Indicate special procedures, perimeter conditions requiring special attention.

1.04 QUALIFICATIONS

A. Manufacturer - Company specializing in manufacturing the Products specified in this section with minimum five years’ documented experience.

B. Applicator - Company specializing in performing the work of this section with minimum three years’ documented experience; approved by manufacturer.

C. Supervisor - Trained by product manufacturer under direct full time supervision of manufacturer's own plant trained foreman.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable New York State code for flame/smoke rating requirements in accordance with ASTM E84.

1.06 MOCKUP

A. Provide mockup of flooring under provisions of Section 01400.

B. Provide mockup, 10 square feet of flooring.

C. Locate where directed.

D. Mockup may remain as part of the work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01600.

B. Store resin materials in a dry, secure area.

C. Maintain minimum temperature of 55 degrees F.

D. Store materials for three days prior to installation in area of installation to achieve temperature stability.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient temperature required by manufacturer three days prior to, during, and 24 hours after installation of materials.

1.9 WARRANTY

A. Provide one-year warranty under provisions of Section 01640.

B. Warranty - Include coverage against flooring delamination from substrate and degradation of surface finish.

1.10 MAINTENANCE DATA

A. Submit under provisions of Section 01640.

B. Maintenance Data - Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

1.11 EXTRA MATERIALS

A. Furnish under provisions of Section 01640.

B. Provide 2 gallons of flooring material of each color selected.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Niagara Protective Coatings - Product Kromotex or equal products by:
B. Stonhard.
C. Dex-O-Tex.
D. Tnemec/Strata Shield.
E. Or equal.

2.02 MATERIALS

A. Matrix - Catalyst cured epoxy resin, clear or colored base coats and clear top coats.

B. Chips - Crushed multi-colored vinyl flakes.

C. Flooring - Conform to the following:

1. Compressive Strength (ASTM C579) - 9,000 psi after seven days.

2. Tensile Strength (ASTM C307) - 1,400 psi.

3. Flexural Strength (ASTM C580) - 4,000 psi.

4. Hardness (ASTM D2240/Shore D Durometer) - 80 to 85.

5. Bond Strength (ASTM D4541) - >400 psi (100 percent concrete failure).

6. Impact Resistance (ASTM D4226) - >160 in lbs.

7. Abrasion Resistance (ASTM D4060, CS-17 wheel) - 0.06 gpm maximum weight loss.

8. Coefficient of Friction (ASTM D2047) - Medium texture 0.7.

9. Flammability (ASTM D635) - Self-extinguishing; extent of burning 0.60 inches maximum.

10. Water Absorption (ASTM C413) - 0.1 percent.

2.03 ACCESSORIES

A. Vapor Barrier - Type recommended by flooring material manufacturer.

B. Primers and Adhesives - Waterproof; types recommended by flooring manufacturer.

1. Colored primer/base coat as recommended by flooring manufacturer to achieve final color result.

2.04 COLORS

A. Matrix - Clear color.

B. Chips - Color blend and size to achieve match to color selected from manufacturer’s full range of standard colors.

C. Top Coats - Clear.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are smooth and flat with maximum variation of 1/4 inch in 10 feet and are ready to receive work.

B. Verify concrete floors have cured a minimum 28 days, are dry to a maximum moisture content of 7 percent, and exhibit negative alkalinity, carbonization, or dusting.

C. If moisture testing exceeds manufacturer’s limits, install manufacturer approved vapor barrier.

D. Verify floor is free of substances that may impair adhesion of new adhesive and finish materials.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with sub-floor filler.

B. Shot blast or mechanically abrade (scarify) to remove laitance, curing compounds, sealers, and other contaminants, and provide required surface profile per flooring manufacturer.

C. Vacuum clean substrate.

D. If required, apply liquid vapor retarder.

E. Apply primer to floor surfaces.

F. Apply crack isolation membrane.

3.03 INSTALLATION - FLOORING

A. Apply in accordance with manufacturer's instructions.

B. Apply to a minimum total thickness of 50 mils, including broadcast decorative flakes.

C. Apply top coat to a minimum thickness of 8 to 12 mils (dry).

D. Apply slip-resistant (orange peel texture) finish coat to a minimum thickness of 4 to 6 dry mils.

E. Finish to level surface with required texture.

3.04 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Section 01500.

B. Prohibit traffic on floor finish for 48 hours after installation.

C. Barricade area to permit uninterrupted curing.

D. Install base divider strips at all boundaries between sections of finish installed at different times.

END OF SECTION

3.04 PERFORMANCE WARRANTY

MANUFACTURER'S

PROCESS PERFORMANCE WARRANTY

for the

DENITRIFICATION FILTER SYSTEM

for

Emmitsburg WWTP ENR Upgrade

Town of Emmitsburg, MD

This document provides for a process performance warranty provided by the Denitrification Filter System Manufacturer (hereinafter referred to as MANUFACTURER) to the Town of Emmitsburg, MD (hereinafter known as the OWNER) for the Denitrification Filter System (hereinafter known as FILTER) for the Emmitsburg Wastewater Treatment Plant (hereinafter known as the WWTP).

PROCESS PERFORMANCE WARRANTY

A. **Statement of Warranty**: MANUFACTURER warrants to the OWNER that if the FILTER, supplied by MANUFACTURER, is erected, started up, operated and maintained in accordance with the manufacturer's drawings, manuals and instructions, and when the INFLUENT to the FILTER (hereinafter know as INFLUENT) for each calendar month of is within all of the following characteristics, the FILTER shall meet the "Effluent Wastewater Characteristics from the FILTER" as defined below. NOTE: All subsequent references to equipment or system in this document denotes the FILTER.

1. INFLUENT Characteristics

Influent Wastewater Characteristics:

Parameter	Minimum	Maximum	Units
DESIGN AVERAGE DAILY FLOW	**0.4**	**0.98**	MGD
DESIGN PEAK FLOW	**N/A**	**2.82**	MGD
Temperature	**12**	**24**	deg. C
TSS	**5**	**30**	mg/l
NO3-N	**3**	**8**	mg/l
TP	**0.2**	**1**	mg/l
pH	**6.5**	**8.5**	
DO	**1**	**4**	mg/L

Note: Maximum and minimum values may occur independently of each other.

2. Effluent Wastewater Characteristics from the FILTER:

a) EFFLUENT PERFORMANCE QUALITY:

Parameter	Maximum Value	Units
TSS	**10**	mg/l
NO3-N	**1**	mg/l
TP	**0.25**	mg/l

b) 1) Performance assumes chemical addition of methanol and alum

3. FILTER Operational Requirements

Methanol Dose Rate ..... Maximum of 4.5 lbs COD / lb NO3-N Removed

B. Definitions: The following defines the operational time periods associated with the FILTER performance warranty:

1. Mechanical Reliability Test: Minimum 14 days.

2. Acclimation Period: Minimum 30 days. Acclimation Period may not begin until FILTER 14-day Mechanical Reliability Demonstration is completed and approved by OWNER and ENGINEER.

3. Process Performance Test: Minimum 14-day operating period required to establish steady-state INFLUENT and FILTER Effluent characteristics and demonstrate initial compliance with process performance testing requirements. Performance Testing Period may not begin until the Acclimation Period is completed and the FILTER MANUFACTURER certifies that the FILTER is ready to begin the Process Performance Test.

4. Process Performance Warranty Period: 12-months following successful completion of the Process Performance Test.

C. Process Performance Test:

1. During the Process Performance Test, daily 24-hour composite filter influent and effluent samples shall be collected and analyzed by the Contractor for all of the monitoring parameters specified in Part A with the exception of temperature, pH, and DO. Contractor shall monitor temperature, pH, and DO based on grab samples taken at least three times per day at evenly spaced increments during normal plant operating hours.

2. The Process Performance Test shall be successfully completed when the 14 consecutive day average FILTER Effluent Wastewater Characteristics are within the Effluent Performance Quality stated in Part A regardless of whether the FILTER INFLUENT characteristics are within the range stated in Part A.

3. The requirement to complete the Process Performance Test shall be waived if the14 consecutive day average FILTER Influent Wastewater Characteristics do not fall within the range of Influent Wastewater Characteristics stated in Part A.

4. If the 14 consecutive day average FILTER Influent Wastewater Characteristics fall within the range of Influent Wastewater Characteristics stated in Part A and at the same period the 14 consecutive day average FILTER Effluent Wastewater Characteristics are not within the Effluent Performance Quality stated in Part A, the MANUFACTURER shall make modifications as necessary at no cost to the OWNER and then the Contractor shall repeat the 14-Day Performance Test. The MANUFACTURER shall bear all of the costs associated with repeating the 14 Day Performance Test.

5. Documentation of all operational settings and testing results shall be made available to the OWNER in a written report provided within 14 days of testing completion.

D. Process Performance Warranty Period

1. During the Process Performance Period, the OWNER will collect routine monitoring samples to track FILTER performance. Should the OWNER observe that the 30 consecutive day average FILTER Influent Wastewater Characteristics fall within the range of Influent Wastewater Characteristics stated in Part A and at the same period the 30 consecutive day FILTER Effluent Wastewater Characteristics are not within the Effluent Performance Quality stated in Part A, the MANUFACTURER shall suggest adjustments to operating parameters and make other modifications as necessary to improve performance at no cost to the OWNER until the 30 consecutive day FILTER Effluent Wastewater Characteristics are within the Effluent Performance Quality stated in Part A.

2. MANUFACTURER shall have thirty (30) days from the date of receipt of Notice from the OWNER to submit a written plan outlining the actions necessary to cure any alleged problems with the FILTER. Manufacturer shall have an additional thirty (30) days beyond the initial thirty (30) days (sixty (60) days total from the date of receipt of Notice) to cure any alleged problems with the Equipment. However, if MANUFACTURER deems that the alleged problems are not curable within sixty (60) days, then MANUFACTURER shall work in conjunction with the project engineer in developing an action plan to cure such problems within a reasonable time

3. The OWNER shall notify MANUFACTURER immediately, in writing, of the breach of warranty, at which time MANUFACTURER shall supply, at no additional cost to the OWNER, goods and services, as agreed upon by the OWNER and MANUFACTURER, not to exceed the limit of liability identified at the end of this Section.

E. Limit of Liability.

1. The total Warranty liability of MANUFACTURER for direct damages shall not exceed 100% of the equipment purchase price.

OWNER:

By:_____
Name

MANUFACTURER:

By: _____
Name

_____	_____
Title	Title
_____	_____
Date	Date

3.04. PERFORMANCE GUARANTEE

MANUFACTURER'S

PROCESS PERFORMANCE GUARANTEE

for the

PHASED AERATION LAGOON TREATMENT SYSTEM

For

Emmitsburg WWTP ENR Upgrade

Town of Emmitsburg, MD

This Performance Guarantee ("Performance Guarantee" or "Guarantee") is furnished and delivered by the manufacturer of the phased aeration lagoon treatment system ("Manufacturer") to the Owner (the Owner shall be the owner of the Equipment during the Guarantee Period) of the Equipment sold pursuant to the above-titled Project ("Equipment"). Manufacturer has also furnished a Mechanical Warranty on the Equipment pursuant to the requirements of the Project's Contract Documents. The terms and conditions of this Performance Guarantee are separate and distinct from the Mechanical Warranty and are set forth below:

A. Guarantee Period: Manufacturer guarantees the performance of the Equipment for **one (1)** year from the day of successful completion of the specified performance testing at the Project jobsite. An adjustment made per this Guarantee will not void the Guarantee, nor does it imply an extension of the Guarantee Period. Equipment serviced and/or parts replaced during the Guarantee Period carry the un-expired portion of the original Guarantee only.

B. Performance Parameters: Manufacturer will maintain the Effluent Performance Quality defined below only:

1. When the Equipment is operated per Manufacturer's instructions, manuals or other materials (i.e., O&M Manuals or other materials illustrating Equipment operation, installation, maintenance, etc.);
2. When the terms and conditions of this Guarantee are met;
3. When the Maximum Influent Values defined herein are not exceeded; and
4. When the Influent Water Characteristics (i.e., constituents, elements, etc. found in the Equipment's feedwater) do not change, or are not modified, in any way from those Influent Water Characteristics known by Manufacturer at the time this Guarantee is developed.

Design Influent Loadings per Phased Aeration Lagoon Including Process Recycles		
Parameter	**Average Month**	**Maximum Month**
Flow	0.48 mgd	0.895 mgd
Minimum Influent Temperature	12˚C	12˚C
Maximum Influent Temperature	24˚C	24˚C
BOD5	665 lbs/day	875 lbs/day
TSS	730 lbs/day	1005 lbs/day
TKN	140 lbs/day	180 lbs/day
NH3 – N	85 lbs/day	115 lbs/day
NO3	0 lbs/day	0 lbs/day
TP	30 lbs/day	35 lbs/day
pH	7	8.5

Note: Maximum and average values may occur independently of each other.

5. When Owner adds sufficient supplemental alkalinity to the Influent (if required) to maintain an effluent alkalinity from the Phased Aeration Lagoon Treatment System of at least 50 mg/L measured as CaCO3.

EFFLUENT PERFORMANCE QUALITY:

Parameter	Maximum Value	Units
BOD	**10**	mg/l
TSS(1)	**30**	mg/l
NH3-N	**1**	mg/l
TKN	**2**	mg/l
TN	**10**	mg/l
DO	**2**	mg/l
TP(2)	**1**	mg/l

1) Assuming the proper design, operation, and maintenance of secondary clarifiers not provided by the Lagoon System Supplier.

2) Assuming chemical addition for phosphorus removal.

C. Mandatory Data: In the event that Owner asserts that the Equipment is failing to meet the Effluent Performance Quality, the minimum data to be collected and reported by the Owner to Manufacturer in writing in a coherent and timely manner is as follows:

Performance Data: BOD, TSS, NH3-N, TKN, TN, TP, Alkalinity

Operating Data: Liquid temperature, MLSS, MLVSS, SVI, OUR

Failure to provide this minimum level of data will suspend the Cure Period until such time as all data reporting is brought up to date completely or the Effluent Performance Quality guaranteed herein is maintained. There shall be no liability borne by Manufacturer during the time Manufacturer must wait to receive this most important data from Owner.

D. Guarantee Requirements: In the event Owner believes that the Equipment is failing to meet the Effluent Performance Quality:

Owner shall:
1. Notify Manufacturer in writing of the suspected problem and provide all facts, data and information necessary to verify the problem;
2. Provide other information (i.e., plant operation data, feedwater characteristics, chemical usage, etc.) that may be required by Manufacturer to identify the cause of the suspected problem; and
3. Provide immediate access to the site with necessary utilities and manpower as required to assist Manufacturer in determining the cause of the suspected problem.

Manufacturer shall:
1. Review all facts, data and information provided by the Owner to determine the cause of the problem.
2. Recommend and perform any additional test work that may be required to determine the cause of the problem.
3. If, after review of existing data or performance of additional recommended test work, the results indicate that the Equipment is meeting the guaranteed Effluent Performance Quality, then the cost of reviewing the data and performing any additional test work, including engineering time, travel expenses and test costs, shall be borne by Owner.
4. If, after review of existing data or performance of additional recommended test work, the results indicate the Equipment is not meeting the guaranteed Effluent Performance Quality due to a factor outside the Manufacturer's control, then Owner and Manufacturer will work together to resolve the situation by a cooperative, good faith effort. However, no liability shall be borne by Manufacturer.

5. If, after review of existing data or performance of additional recommended test work, the results indicate that Manufacturer's Equipment is not meeting the guaranteed Effluent Performance Quality, and subject to all conditions of this Guarantee being met, charges incurred by Manufacturer in correcting the Equipment, including Manufacturer's engineering time and travel expenses, any recommended test work, modifications to existing equipment or addition of new equipment, shall be borne by Manufacturer.

E. Mitigation Requirements: If it is determined that the Equipment is not meeting the guaranteed Effluent Performance Quality, in no event shall any work be done, or services or material be purchased or expense otherwise incurred by the Owner for the account of Manufacturer until after full and complete particulars have been submitted and approved in writing by Manufacturer. Manufacturer must be given the opportunity to discuss and research alternative methods to lower the costs involved in such corrective work. Returned items will not be accepted unless Manufacturer has previously agreed to such return in writing and supplied written return-shipping instructions to Owner.

F. Maximum Liability: In the event Manufacturer expends any funds pursuant to this Guarantee during the Cure Period, Manufacturer's total aggregate liability under this Guarantee shall be no greater than 100% of the Purchase Order value between Manufacturer and Owner.

G. Cure Period: Manufacturer shall have thirty (30) days from the date of receipt of Notice (as outlined above) to submit a written plan outlining the actions necessary to cure any alleged problems with the Equipment. Manufacturer shall have an additional thirty (30) days beyond the initial thirty (30) days (sixty (60) days total from the date of receipt of Notice) to cure any alleged problems with the Equipment. However, if Manufacturer deems that the alleged problems are not curable within sixty (60) days, then Manufacturer shall work in conjunction with the project engineer in developing an action plan to cure such problems within a reasonable time.

H. Guarantee Nullification. This Performance Guarantee will be null and void, if:

(A) The Equipment is used for purposes other than those for which it was originally designed or intended;
(B) The Equipment is not used in accordance with generally approved practices;
(C) The Equipment is not stored in accordance with Manufacturer's specific instructions. (It is Owner's responsibility to request storage instructions from Manufacturer)
(D) A Disaster, Force Majeure and/or an Act of God occurs, whether natural or manmade, such as (but not limited to) fire, flood, wind, earthquake, cave-in, lightning, war, or vandalism;
(E) There are any unauthorized repairs, alterations or modifications of the Equipment not approved in writing by Manufacturer; validation
(F) Any abuses, neglect, or misuse of the Equipment, including without limitation, the operation of Equipment after a defect is discovered; valid
(G) The Equipment is operated by persons not properly trained for that purpose;
(H) The Equipment is repaired or in any way changed from the original condition as provided by Manufacturer;
(I) The Equipment is improperly installed, maintained, lubricated and/or exposed to elements that are detrimental to the materials of construction;
(J) Negligence, neglect, accident or other conditions beyond the control of Manufacturer occur;
(K) The Influent Water Characteristics change; and/or
(L) Decomposition of the Equipment by chemical action occurs.

Terms and Conditions

LIMITATION OF LIABILITY: Unless expressly agreed to in writing by Manufacturer, all damages not direct and actual in nature, including without limitation, consequential, incidental, exemplary and punitive damages, shall be expressly prohibited damages are not covered by this Guarantee. Such prohibited damages include, but are not limited to, lost rent or revenue; rental payments; costs (increased or not) of administration or supervision; costs or delays suffered by others unable to commence work or provide services as previously scheduled for which a party to this contract may be liable; increased costs of borrowing funds devoted to the Project (including interest); delays in selling all or part of the project upon

completion; termination of agreements to lease or buy all or part of the project, whether or not suffered before completion of services or work; forfeited bonds, deposits, or other monetary costs or penalties due to delay or halting of the Project; interest for any reason assessed to Owner; increased taxes (federal, state, local, or international) due to delay or recharacterization of the project; lost tax credits or deductions due to delay or halting; impairment of security; attorney and/or other legal fees for any reason assessed to Owner, loss of use of the Equipment or any associated Equipment, costs of substitute facilities or services, down time costs, claims of customers of Owner for such other damages; or any other indirect loss arising from the conduct of the parties.

DISPUTE RESOLUTION: Any issue, claim or dispute ("Action") that may arise out of or in connection with this Project and which Owner and Manufacturer are not able to resolve by good faith negotiations, shall be submitted to mediation. Both parties shall choose a mediator and said mediator will decide the forum most convenient for both parties. Both parties agree to reasonably attempt to resolve all Actions via this medium. If mediation shall fail, the Action shall be submitted to binding arbitration administered by the American Arbitration Association under its Construction Industry Arbitration Rules and Mediation Procedures (Including Procedures for Large, Complex Construction Disputes), and judgment on the award rendered by the arbitrator(s) may be entered in a court having jurisdiction thereof. The parties agree to use mediation then arbitration to resolve such Action in lieu of litigation. In the event that an Action is brought, the prevailing party shall be entitled to be reimbursed for, and/or have judgment entered with respect to, all of its costs and expenses, including reasonable attorney's fees' and legal expenses.

MISCELLANEOUS: This Guarantee does not cover onsite labor, freight or any failure of normal wearing parts unless said failure has resulted from defective materials and/or workmanship, which is governed by Manufacturer's Mechanical Warranty. The parties agree that the foregoing constitutes the entire Guarantee by Manufacturer and that there are no other guarantees, terms or conditions, expressed or implied, unless otherwise agreed to in writing. This document may not be modified or superseded other than by an instrument in writing signed by both Owner and Manufacturer. This document shall be binding upon and inure to the benefit of Owner and Manufacturer and their assignees. The invalidity or non-enforceability of any particular provision of this document shall not affect the other provisions hereof, and this document shall be construed in all respects as if such invalid or unenforceable provisions were omitted.

THIS GUARANTEE IS EXCLUSIVE AND IN LIEU OF ALL OTHER GUARANTEES AND WARRANTIES OF QUALITY, WRITTEN, ORAL OR IMPLIED; ALL OTHER WARRANTIES, UNLESS PROVIDED BY MANUFACTURER IN WRITING, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

OWNER:	MANUFACTURER:
By:_____	By: _____
Name	Name
_____	_____
Title	Title
_____	_____
Date	Date

END OF SECTION

Appendix A

NPDES Permit

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

Martin O'Malley
Governor

Anthony G. Brown
Lieutenant Governor

Robert M. Summers, Ph.D.
Acting Secretary

DISCHARGE PERMIT

NPDES Discharge Permit Number:	**MD0020257**	**State Discharge Permit Number:**	**09-DP-0113**
Effective Date:	**02-01-2011**	**Expiration Date:**	**01-31-2016**
Modification Date:	**(Not applicable)**	**Reapplication Due Date:**	**09/01/2014**

Pursuant to the provisions of Title 9 of the Environment Article, Annotated Code of Maryland, and regulations promulgated thereunder, and the provisions of the Clean Water Act, 33 U.S.C. Section 1251 et seq., and implementing regulations 40 CFR Parts 122, 123, 124 and 125, the Department of the Environment hereby establishes conditions and requirements pertinent to the wastewater treatment plant and collection system and authorizes:

Town of Emmitsburg
300 A South Seton Avenue
Emmitsburg, MD 21727

TO DISCHARGE FROM: Town of Emmitsburg WWTP

LOCATED AT: 16207 Creamery Road (east of Route 15)
Emmitsburg, Frederick County, MD 21727

THROUGH OUTFALL: 001 (WWTP Effluent)

TO: The Toms Creek, designated as Use IV-P Water protected for recreational trout water and as a public water supply; in accordance with the following special and general conditions and a map incorporated herein and made a part hereof.

THROUGH OUTFALL: 002 (Spray Irrigation)

TO: Ground water of the State in accordance with the following special and general conditions, including the attached maps made a part hereof.

I. DEFINITIONS

A. "Bypass" means the intentional diversion of pollutants from any portion of a treatment or collection facility.

B. "BOD_5 (Biochemical Oxygen Demand)" means the amount of oxygen consumed in a standard BOD_5 test without the use of a nitrification inhibitor at 20 degree centigrade on an unfiltered sample.

C. "Clean Water Act" means the Federal Water Pollution Control Act, as amended, 33 U.S.C. Section 1251 et seq.

D. "CFR" means the Code of Federal Regulations.

E. "COMAR" means the Code of Maryland Regulations.

F. "Composite sample" means a combination of individual samples obtained at hourly or smaller intervals over a time period. Either the volume of each individual sample is proportional to discharge flow rates or the sampling interval (for constant volume samples) is proportional to the flow rates over the time period used to produce the composite.

G. "Department" means the Maryland Department of the Environment (MDE).

H. "Grab sample" means an individual sample collected in less than 15 minutes.

I. "Measured flow" means any method of liquid volume measurement, the accuracy of which has been previously demonstrated in engineering practice, or for which a relationship to absolute volume has been obtained.

J. "Minimum or maximum value" means the lowest or highest value measured.

K. "Monthly average discharge" means the total mass (and concentration, if appropriate) of all daily discharges sampled and/or measured during a calendar month divided by the number of daily discharges sampled and/or measured during such month.

L. "Monthly average flow" means the total flow for a calendar month divided by the number of days in the same month.

M. "Monthly log mean (Monthly geometric mean)" means the logarithmic or geometric mean of all samples taken in the calendar month. The geometric mean is the antilogarithm of the mean of the logarithms.

N. "Nondetectable Level" for total residual chlorine means a residual concentration of less than 0.10 mg/l as determined using either the DPD titrimetric or chlorimetric method or an alternative method approved by the Department.

O. "NPDES (National Pollutant Discharge Elimination System)" means the national system for issuing permits as designated by the Clean Water Act.

P. "Outfall 001" means the location in outfall line where the effluent is discharged into the receiving waters of the State.

I. DEFINITIONS

Q. "Overflow" means any loss of wastewater or discharge from a sanitary sewer system, combined sewer system or wastewater treatment plant bypass (as defined in I.A) which results in the direct or potential discharge of raw, partially treated wastewater into the waters of the State.

R. "Permittee" means an individual or organization holding the discharge permit issued by the Department.

S. "POTW" means a publicly owned treatment works.

T. "Sampling Point" means the effluent sampling location in outfall line 001 downstream from the last addition point or as otherwise specified.

U. "Sanitary Sewer Overflow (SSO)" means a discharge of untreated or partially treated sewage from a separate sewer system before the sanitary wastewater reaches the headworks of a wastewater treatment facility, pursuant to COMAR 26.08.10.01.

V. "Significant Industrial User (SIU)" is defined as any industrial user (IU) that:

1. is subject to national categorical standards; and
2. any other IU that:

   a. discharges an average of 25,000 gallons per day or more of process wastewater (excluding sanitary, non-contact cooling and boiler blowdown wastewater); or

   b. contributes a process wastestream that makes up 5% or more of the average dry weather hydraulic or organic capacity of the POTW; or

   c. is designated as such by the POTW on the basis that the IU has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement; or

   d. is found by the POTW, the Department, or the Environmental Protection Agency (EPA) to have significant impact either individually or in combination with other contributing industries to the POTW, on the quality of the sludge, the POTW's effluent quality, or air emissions generated by the system.

W. "TKN (Total Kjeldahl Nitrogen)" means organic nitrogen plus ammonia nitrogen.

X. "TSS (Total Suspended Solids)" means the residue retained on the filter by an analysis done in accordance with Standard Methods or other approved methods.

Y. "Upset" means the exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include

I. DEFINITIONS

noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Z. "**Maximum weekly average**" means the highest individual weekly average of the calendar month. Each individual weekly average of a parameter shall be calculated by dividing the total mass (and concentration, if appropriate) for each calendar week by the number of samples collected and measured that week. The calendar week runs from Sunday through Saturday. If a week spans two calendar months, the individual weekly average for that week shall be included as the first weekly average in the second month Discharge Monitoring Report (DMR). For example, the weekly average for Sunday, June 27 through Saturday, July 3 will be included in the DMR for July).

I. DEFINITIONS, Outfall 002

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

2. The weekly average shall be determined by the summation of all the required measurements divided by the number of days during the week when the measurements were made.

II. SPECIAL CONDITIONS

A.1 Effluent Limitations, Outfall 001 [1][2][3][4]

The quality of the effluent discharged by the facility at a discharge point location- 001 shall be limited at all times as shown below:

Effluent Characteristics		Maximum Effluent Limits: Monthly Average Loading Rate, Pounds/day	Weekly Average Loading Rate, Pounds/day	Daily Average Loading Rate, Pounds/day	Monthly Average Concentration, mg/l	Weekly Average Concentration, mg/l	Daily Average Concentration, mg/l
BOD_5	(5/1 to 9/30)	75	113	N/A	12	18	N/A
	(10/1 to 4/30)	188	282	N/A	30	45	N/A
TSS		188	282	N/A	30	45	N/A
TKN[5]	(5/1 to 9/30)	31	47	N/A	5.0	7.5	N/A
Total Ammonia Nitrogen as N	(10/1 to 10/31)	31	N/A	63	4.9	N/A	10
	(11/1 to 4/30)	59	N/A	94	9.5	N/A	15
Beginning 3/1/2015:	(5/1 to 10/31)	13	N/A	51	2.1	N/A	8.2

Effluent Characteristics	Maximum Effluent Limits: Total Monthly Loading Rate[8], Pounds/Month	Annual Maximum Loading Rate[9], Pounds/Year	Monthly Average Concentration, mg/l
Total Phosphorus-P [6][7][10]	REPORT	685	REPORT
Total Nitrogen-N [6][7][10]	REPORT	9,137	REPORT

Effluent Characteristics	Effluent Limits: Maximum	Minimum
Fecal Coliform [11]	200 MPN/100 ml monthly log mean value	N/A
E. Coli [11]	126 MPN/ 100 ml monthly geometric mean value	N/A
Total Residual Chlorine [12]	0.04 mg/l	N/A
Beginning 3/1/2015	0.02 mg/l	N/A
pH	8.5	6.5
Dissolved Oxygen		
(5/1 to 9/30)	N/A	7.0 mg/l at anytime
(10/1 to 4/30)	N/A	5.0 mg/l at any time

II. SPECIAL CONDITIONS

A.1 Effluent Limitations, Continued:

An annual average flow of 0.75 million gallons per day (mgd) for Outfalls 001+002 was used in waste allocation calculations and this unit should be used when reporting on the Discharge Monitoring Report (EPA Form 3320-1, Rev. 01/06). Notification is to be provided to the Department at least 180 days before the annual average flow is expected to exceed this flow level. If a permit modification is required, the Department will initiate the public participation NPDES process.

Footnotes for effluent limitations:

(1) When this permit is renewed, the new limitations may not be equal to the above limitations. There shall be no discharge of floating solids or visible foam other than trace amounts.

(2) The permit may also be reopened in accordance with the requirements of MDE's Watershed Permitting Plan under which all discharge permits in a watershed are issued the same year.

(3) Until the facility's upgrade to the Enhanced Nutrient Removal (ENR) treatment is complete and fully operational (with schedule as listed below), the discharge of effluent from 5/1 to 9/30 is allowed only when the wastewater treatment plant has exhausted at least 95% of all available storage capacity for the treatment of the effluent and the flow upstream of discharge in Toms Creek is greater than 25 cfs. If the discharge occurs then the flow in Toms Creek upstream of the discharge shall be monitored daily and reported to MDE on the DMR.

(4) The Toms Creek empties into the Upper Monocacy River (watershed 02-14-03-03) is on the 303(d) list of the impaired waters for sediments, nutrients, bacteria, and impacts to biological communities. A Total Maximum Daily Load (TMDL), approved by the EPA on 12/03/2009, allocated suspended solids (TSS) limits of 34.20 (ton/yr) to this facility; and the parameter limits are in conformance with this TMDL. The parameter limits for Fecal Coliforms and E. coli are also in conformance with the fecal bacteria TMDL, approved by the EPA on 12/03/2009. When TMDLs for other parameters are completed and approved by EPA, limits may be imposed, after the public participation process, to incorporate any TMDL requirements.

(5) The monthly and weekly TKN limits remain in effect until 02/28/2015.

(6) The ENR upgrade shall be completed according the following schedule:

- Design Completion- 11/01/2011
- Start Construction - 07/01/2012
- Construction Completion- 07/01/2014
- Optimization Completion 03/01/2015

II. SPECIAL CONDITIONS

A.1 Effluent Limitations, Continued

Footnotes for effluent limitation, Continued:

Upon completion of the upgrade, the permittee shall operate the ENR facility in a manner that optimizes the nutrient removal capability of the facility. Until the facility's upgrade to the ENR treatment is complete and fully operational (with schedule as listed below), the permittee is to operate the Biological Nutrient Removal (BNR) process on a year round basis and undertake best efforts to meet the TN load goal of 9,137 pounds/year for this facility. Total Nitrogen is the sum of ammonia-N, organic-N and (nitrite + nitrate)-N based on samples collected on the same day.

(7) The permit Annual Maximum Loading Rate Limits for TN and TP shall become effective 03/01/2015. The loading cap for the year 2015 shall be prorated on the ten months from 03/01/2015 through 12/31/2015, and shall be 7,614 pounds for TN and 571 pounds for TP. The total ten months TN allocation for surface water discharge is 7,614 pounds. The first exceedance of the permit limit shall be counted and reported as daily exceedances beginning from the first exceedance, determined to the nearest day, through December 31. In addition, after any such exceedance, the permittee shall demonstrate to the Department's satisfaction that the facility is optimizing its nutrient removal capability, and neither the arrival of the next calendar year nor the issuance of a permit renewal during a period of noncompliance shall obviate continuance of any noncompliance status related to treatment optimization requirements.

(8) Total monthly loading rate (in pounds/month) for nutrients is a calculated parameter to be reported for each calendar month. It is equal to {(monthly average concentration, mg/l) x (Total flow in a calendar month, Million Gallons) x 8.34}.

(9) The Annual Maximum Loading Rate (in pounds/year) for nutrients is a calculated parameter to be reported monthly as the sum of the Total Monthly Loading Rates from January through December of the current calendar year. At the end of each calendar year, beginning 03/01/2015, the permittee shall calculate, report and comply with the *concentration-based* Annual Maximum Loading Rate limitation(s) defined below or the *Tributary Strategy-based* loading rate limitation in the above table, whichever is lower:

(a) TN Limitation (lbs/year): 4.0 mg/l x annual total flow (calendar year based in million gallons per year surface discharge) x 8.34. To the extent that the permittee alleges that temperature levels of 12 degrees C or lower have diminished the treatment system's capability of complying with this *concentration-based* loading rate limitation for Total Nitrogen, the permittee shall provide notification beginning with the calendar year report under the "Upset" provision in Section III.B.6 of this permit. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

(b) TP Limitation (lbs/year): 0.30 mg/l x annual total flow (calendar year based in million gallons per year) x 8.34. Discharge by spray irrigation does not count towards the annual TP loading.

II. SPECIAL CONDITIONS

A.1 Effluent Limitations, Continued

Footnotes for effluent limitation of Page # 4, Continued

The details and results of all required annual calculations shall be submitted to the Department with the Discharge Monitoring Report for December.

The *concentration-based* loading requirements may be revised if the limits or schedule are determined to be impracticable based on actual performance and the Department re-opens the permit as a major modification (which requires public participation) to impose (an) alternate effluent limitation(s) or revised schedule.

(10) The permittee may request that the permit be reopened and modified to include nutrient trading consistent with the most current "Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed" in effect at that time.

(11) The fecal coliform limit shall be in effect until the E. coli limit becomes effective. The E. coli limit shall take effect one year after the issuance date of the permit. However, the permittee may request in writing that the E. coli limitation become effective sooner.

(12) The minimum level (quantification level) for total residual chlorine is 0.10 mg/l. The permittee may report all results below the minimum level as <0.10 mg/l. All results reported below the minimum level shall be considered in compliance.

II. SPECIAL CONDITIONS

II. SPECIAL CONDITIONS

A.2. Effluent Limitations, Outfall 002

1. This Permittee is authorized to discharge treated sewage via spray irrigation to ground waters of the State at the site shown on the attached Maps A&B.

2. Prior to discharge at the spray irrigation site, all wastewaters shall be treated to produce an effluent, which does not exceed the following maximum limitations.

Parameter	Monthly Average	Weekly Average	Monitoring Frequency	Sample Type
BOD_5	70 mg/l		Twice/Week+	Grab*
Suspended Solid	90 mg/l		Twice/week+	Grab*
Total Nitrogen	10 mg/l		Twice/week+	Grab*
PH	6.5-9.5		Twice/day+	Grab*
Fecal Coliform	<200 MPN/100ml		Weekly+	Grab*
Flow++	0.75 MGD average for the discharge period of May through September 54.5 MG maximum for discharge period of May through September.			

* Grab samples shall be obtained from the effluent line just prior to spray irrigation.

\+ During spray irrigation operation only.

++ Discharge volume to spray irrigation areas shall not exceed vegetative consumption needs and shall be determined by a soil moisture monitoring system. The maximum of 54.5 MG for the season (May through September) may be adjusted upon approval of the Department if indicated by operational and monitoring data.

II. SPECIAL CONDITIONS

B.1 Minimum Monitoring Requirements:

The effluent characteristics listed below shall be monitored as follows:

Effluent Characteristics [1]	Measurement Frequency	Sample Type
BOD_5	Two per week	8 hr. composite
Total Suspended Solids	Two per week	8 hr. composite
TKN[2] Until 2/28/2015: (5/1 to 9/30)	Two per week	8 hr. composite
Total Ammonia Nitrogen as N	Two per week	8 hr. composite
Total Phosphorus as P [3] [4] Until 2/28/2015 Beginning 3/1/2015	Two per month Two per week	8 hr. composite
Total Nitrogen as N [3] [4] Until 2/28/2015 Beginning 3/1/2015	Two per month Two per week	8 hr. composite
(Nitrite + Nitrate) as N [3] Until 2/28/2015 Beginning 3/1/2015	Two per month Two per week	8 hr. composite
Organic Nitrogen as N [3] Until 2/28/2015 Beginning 3/1/2015	Two per month Two per week	8 hr. composite
Orthophosphate as P [3]	Two per month	8 hr. composite
Fecal Coliform [5]	One per week	Grab
E. Coli [5]	One per week	Grab
Total Residual Chlorine [6]	Two per day	Grab
Dissolved Oxygen	Two per day	Grab
pH	Two per day	Grab
Flow [7]	Continuous	Recorded [8]
Total Monthly Flow [9]	Monthly	Calculated [9]

II. SPECIAL CONDITIONS

B.1 Minimum Monitoring Requirements, Continued:

Footnotes for the monitoring requirements, continued:

(1) "STORET" (short for STOrage and RETrieval) is a widely-used repository for water quality data reporting and monitoring. The corresponding STORET codes for the effluent characteristics specified in Special Conditions II.A and II.B are: BOD5 (00310), Total Suspended Solids (00530), TKN (00625), Total Ammonia Nitrogen as N (00610), Total Phosphorus as P (00665), Total Nitrogen as N (00600), (Nitrite + Nitrate) as N (00630), Orthophosphate as P (70507), Fecal Coliform (74055), E. Coli (51040), Total Residual Chlorine (50060), Dissolved Oxygen (00300), pH (00400), Flow (50050), and Total monthly flow (82220) .

(2) TKN monitoring and reporting are required until 2/28/2015.

(3) Monitor only; parameters shall be reported on the monthly operating report as individual results and on the Discharge Monitoring Report (EPA Form 3320-1) as a 0monthly average concentration and monthly loading values.

(4) On each monthly *Discharge Monitoring Reports(EPA Form 3320-1, Rev. 01/06)*, the permittee shall calculate and report the TN and TP **total monthly loads** plus **year-to-date cumulative loads** for the calendar year in question.

Total monthly load (pounds/month) for nutrients is a calculated parameter equal to {(monthly average concentration, mg/l) x (Total flow in a calendar month, Million Gallons) x 8.34}. **The cumulative load** for the respective nutrient is also a calculated parameter equal to the sum of total monthly loads for each month in that calendar year.

TN and TP concentrations will be reported as a monthly average. Total nitrogen is the sum of Total Ammonia- N, Organic-N and (nitrite + nitrate)-N. All nitrogen parameters shall be measured on the same daily samples.

(5) The fecal coliform limit shall be in effect until the E. coli limit becomes effective. Thereafter, E. coli monitoring requirement shall be in effect.

(6) The minimum detection level (quantification level) for total residual chlorine is 0.10 mg/l. The permittee may report all results below the minimum level as <0.10 mg/l. All results reported below the minimum level shall be considered in compliance

(7) Flows shall be reported in millions gallons per day (mgd) to at least the nearest **1,000** gallons per day. (Example: A flow of **524,699** gallons per day shall be reported as **0.525** mgd.). For each calendar month, flows shall be reported on the *Monthly Operating Reports* as daily individual results, and on the *Discharge Monitoring Reports(EPA Form 3320-1, Rev. 01/*06 as monthly average (mgd) and daily maximum (mgd)).

(8) Continuous electronic flow measurement and recording which can produce a permanent record are acceptable to the Department.

(9) **"Total monthly flow"** is a calculated parameter equal to sum of the daily flow results in a calendar month. It shall be reported on the *Discharge Monitoring Reports(EPA Form 3320-1, Rev. 01/06)* as Total monthly flow in millions gallons (MG) to at least the nearest 1,000 gallons. (Example: A flow of 524,699 gallons shall be reported as 0.525 MG).

II. SPECIAL CONDITIONS

B.2 Monitoring Requirements of the Land Application System, Outfall 002

1. The entire sewage system, including the spray irrigation area, shall be operated by a wastewater works superintendent certified by the Maryland State Board of Waterworks and Waste Systems Operators. All treatment, control and monitoring facilities used by the Permittee are to be maintained in good working order and operated efficiently.

2. The Permittee is responsible for the operation and maintenance of fourteen (14) groundwater monitoring wells to be used for obtaining grab or pumped samples of the ground water. Locations of the wells are shown on the attached Map B.

(1) The Permittee shall take and analyze one sample every three (3) months from all 14 groundwater monitoring wells (see attached Map B).

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

(3) The water sample shall be analyzed for the following parameters:

i.	NO 3-N + TKN	iv.	Total Dissolved Solids
ii.	pH	v.	Chloride
iii.	PO 4-(Total)	vi.	Fecal Coliform

3. The permittee shall maintain four (4) surface water sampling stations shown on the attached Map B. Water samples shall be taken quarterly from each station and analyzed for the parameters listed in D.2.(3).

B.3. Groundwater Quality Limitations and Monitoring Report Requirements, Outfall 002

1. Groundwater Quality Limitations

As specified below, Groundwater Monitoring Well samples taken per requirements of Section I.D.2.b. shall be monitored by the permittee according to the following limitations.

II. SPECIAL CONDITIONS

a. Unless the average groundwater quality in the background upgradient wells (MWs 1, 5, 8, and 11) already exceeds the groundwater discharge standards, the discharge of the treated wastewater, which is authorized in this permit, shall not cause an exceedance of the groundwater quality standards adopted by the Department of the Environment in COMAR 26.04.01, and 26.08.02.09.

Discharge of treated wastewater shall not cause an exceedance of the parameters listed below, as measured in the 'designated mixing zone'. In this permit, this mixing zone is defined as the designated downgradient monitoring well(s) (MWs, 2, 3. 4, 6, 7, 9, 10, 12, 13, and 14) where ambient groundwater mixes with discharged wastewater. The "Groundwater Quality Limitation Table" below includes the water quality standards for NO3, Total nitrogen, Total Dissolved Solids, Chloride, and Fecal Coliform as an annual average. This list is a subset of the water quality standards of COMAR 26.04.01. For the purpose of this permit, an exceedance of any other water quality standard in the downgradient monitoring well(s) is also a violation of this permit.

Parameter	Groundwater Quality Limitations	Measurement Frequency	Type of Sample
NO3	10 mg/l	Once every 3 months	Grab
TKN	(1)	Once every 3 months	Grab
Total Nitrogen ($TKN + NO_3$)	10 mg/l	Once every 3 months	Grab
pH	(1)	Once every 3 months	Grab
PO4 (Total)	(1)	Once every 3 months	Grab
Total Dissolved Solids	500 mg/l	Once every 3 months	Grab
Chloride	250 mg/l	Once every 3 months	Grab
Fecal Coliform	Non-detectable	Once every 3 months	Grab

(1) Monitoring required without limitation

II. SPECIAL CONDITIONS

b. If the average groundwater quality in the background upgradient wells already exceeds the groundwater discharge standards, the Department will evaluate the cause of exceedance on a case by a case basis and determine the groundwater discharge standards.

2. Groundwater Monitoring Report Requirements

Groundwater monitoring data required by this permit shall be summarized on a yearly report. Each report shall be submitted on or before the 28th day of the month following the end of each calendar year to:

Attention: Discharge Monitoring Reports
WMA- Compliance Program
Maryland Department of the Environment
1800 Washington Boulevard Ste-425
Baltimore, Maryland 21230 -1708

II. SPECIAL CONDITIONS

C. Land Application Requirements and Limitations

1. The Permittee shall apply the treated wastewaters by spray irrigation only on the sites outlined on the attached Maps A&B.

2. At no time shall spray irrigation be conducted on areas with bare unvegetated soils, except in limited amounts on cultivated areas as required to germinate and establish crop growth immediately after planting. At no time shall overland flow be conducted on area with bare, unvegetated soils.

3. Irrigation of treated wastewater shall not take place during periods of precipitation, high winds, freezing conditions, or saturated soil. The permittee shall provide a storage facility designed to hold treated wastewater during periods when irrigation cannot take place. The storage facility shall be capable of containing 20.1 million gallons of wastewater. The storage facility shall be sealed or constructed to prevent the direct seepage of stored waters into ground waters beneath the site.

4. The permittee shall install or provide a storage facility capable of containing wastewater generated during no less than ten days of normal operation of the wastewater facility for periods when the overland flow slopes cannot be utilized. The storage facility shall be sealed or constructed to prevent the direct seepage of stored waters into ground waters beneath the site.

5. The average weekly hydraulic loading rate over the spray irrigation season (i.e. May through September) shall be limited to 0.5 inches per week. The instant application rate shall be limited to an average of 0.3 inches per hour over the length of the distribution pipe.

6. The Permittee shall provide adequate means to prevent spray droplets from entering adjacent properties, either by direct application or wind carry-over. These means shall include a buffer zone that is:

   a. Two hundred feet (200) from the wetted perimeter of the spray irrigation site to property lines in open area or one hundred feet (100) in area with tree buffer.

   b. Five hundred feet (500) from the wetted perimeter of the spray irrigation site to houses or other occupied structures in open area or two hundred fifty feet (250) in area with tree buffer.

   c. Fifty feet from the wetted perimeter of a surface application overland flow site.

II. SPECIAL CONDITIONS

C. Land Application Requirements and Limitations, Continued

d. Or such alternate means which are approved by the Maryland Department of the Environment as suitable to control the movement of spray onto adjacent land (i.e., wind break of tightly placed trees; etc.)

7. The permittee shall install a soil moisture monitoring system in spray irrigation areas and use data on soil moisture to determine the need to initiate and cease irrigation.

8. Daily logs of the response of each disposal area to the application of treated effluent shall be kept by the plant operator. Subjects to be included in the log are:

a. Area(s) or section(s) under irrigation.

b. Application rates (hourly and weekly).

c. Instances of ponding or runoff.

d. Weather conditions.

The log shall be kept at the waste treatment facility and be available for inspection by the Department personnel upon request.

9. Within 3 months of the effective date of this permit, the Permittee shall submit to the department for approval a nutrient management plan for the spray irrigation system. The plan shall include procedures to minimize nitrogen discharge to the groundwater system. The plan shall be prepared in accordance with COMAR 15.20.08.05 with applicable effluent characteristics. The plan shall be updated annually and submitted to the Department prior to January 15 and implemented upon Department approval.

10. In addition to the approximately 210 acres required for spray fields, an additional 25% of the wetted field area shall be reserved for use in the event that application rates need to be adjusted.

11. In additional to the approximately 26.5 acres to be used for overland flow terraces, an additional 25% of the wetted slope area shall be reserved for use in the event that the treatment area must be expanded.

II. SPECIAL CONDITIONS

D. Capacity Management Plan

The permittee shall report the total cumulative flow for Outfalls 001+002 for the each calendar year for the above referenced facility. The total cumulative flow should be reported in million gallons for the entire calendar year to the nearest thousand gallons. The annual total cumulative flow determination shall be provided to the Department by January 28 of the following year to the address below:

Attention: Calendar Year Total Cumulative Flow
WMA – Wastewater Discharge Permits Program
Maryland Department of the Environment
1800 Washington Boulevard, STE-455
Baltimore, MD 21230-1708

A Wastewater Capacity Management Plan must be submitted by January 28 of each calendar year if the most recent three year average flow is over 80% of its design capacity or if it is anticipated to exceed 80 % in the following year. (The Department has published a "Wastewater Capacity Management Plans" guidance document, which can be found on the Department's web site as indicated below):

http://www.mde.state.md.us/assets/document/water/WastewaterCapacityMgmtGuidance.pdf.

E. Wastewater Influent Restrictions

The permittee is not authorized to receive the discharge of any type or quantity of substances which may cause interference with the operation of the treatment works. The permittee is required to comply with COMAR 26.08.08 upon accepting any such discharge for treatment. The permittee is required to notify the Pretreatment Section of the Department, in writing, within thirty days if any user discharges such wastes to the permittee for treatment without prior notification. Prior to allowing a significant industrial user to discharge to the POTW regulated by this permit, the permittee shall notify the Pretreatment Section of the Department, in writing.

Under no circumstances shall the permittee allow introduction of the following wastes into the waste treatment system:

1. Pollutants which cause pass through or interference;
2. Pollutants which create a fire hazard or explosion hazard in the sewerage system, including, but not limited to waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21;

II. SPECIAL CONDITIONS

E. Wastewater Influent Restrictions, Continued

3. Pollutants which will cause corrosive structural damage to the sewerage system; but in no case, discharges with pH less than 5.0, unless the works is specifically designed to accommodate such discharges;
4. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the sewerage system resulting in interference;
5. Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment plant;
6. Heat in amounts which will inhibit biological activity in the treatment plant resulting in interference; but in no case, heat in such quantities that the temperature at the treatment plant exceeds 104 degrees Fahrenheit (40 degrees Centigrade) unless the Pretreatment Section of the Department, upon request of the permittee, approves alternate temperature limits;
7. Pollutants which result in the presence of toxic gases, vapors or fumes within the sewerage system in a quantity that may cause acute worker health and safety problems; and
8. Any trucked or hauled pollutants, except for domestic septage, wastewater transported by truck from within the collection system due to blockage or breaks in the system or from other systems when approved by the Department, and drinking water plant wastewater.

F. Protection of Water Quality

It is a violation of this permit to discharge any substance not otherwise listed under the permit's "Effluent Limitations and Monitoring Requirements" special conditions at a level which would cause or contribute to any exceedance of the numerical water quality standards in COMAR 26.08.02.03 unless the level and the substance were disclosed in writing in the permit application prior to the issuance of the permit. If a discharge regulated by this permit causes or contributes to an exceedance of the water quality standards in COMAR 26.08.02.03, including but not limited to the general water quality standards, the Department is authorized to exercise its powers to modify, suspend or revoke this permit.

II. SPECIAL CONDITIONS

G. Reapplication for a Permit

No later than 9/1/2014, unless permission for a later date has been granted by the Department, the permittee shall submit a new application for a permit or notify the Department of the intent to cease discharging by the expiration date. In the event that a timely and complete reapplication has been submitted and the Department is unable, through no fault of the permittee, to issue a new permit before the expiration date of this permit, the terms and conditions of this permit continue and remain fully effective and enforceable. The renewal application is required by that date in accordance with the requirements of MDE's Watershed Permitting Plan under which all discharge permits in a watershed should be issued in the same year.

III. GENERAL CONDITIONS

A. Monitoring and Reporting

1. Representative Sampling

Samples and measurements shall be taken at times that are representative of the quantity and quality of the discharge, and at evenly spaced intervals.

2. Monthly Monitoring Results

a. Discharge Monitoring Reports

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

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

A signed copy of these reports shall also be sent to:

U.S. Environmental Protection Agency, Region III
NPDES Enforcement Branch (3WP42)
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

b. Monthly Operating Reports

The permittee shall submit monthly operating reports on a form supplied or approved by the Compliance Program. A signed original plus a copy of these reports shall be submitted to the Compliance Program postmarked no later than the 28th day of the month following the reporting month.

c. Toxic Chemical Reporting

Any data collected according to MDE's Water Management Administration "Toxic Pollutant Analytical Protocol and Reporting Requirements for Toxic Chemical Testing Analytical Data" being submitted to the Department, either in fulfillment of Special Conditions II.B or pursuant to the toxic chemical testing requirement, pretreatment requirements or toxic metals or organic data collected on a voluntary basis, must be accompanied by laboratory data reports. At a minimum,

III. GENERAL CONDITIONS

these reports shall include, the name of the facility, the date(s) of sampling, beginning and description (influent or effluent), the preservation method, the analytical method used for each parameter, the analytical method detection limit, the date of analysis, the name of person performing the analysis, the analytical result, and the name and address of the laboratory performing the analyses. Chain-of-custody forms shall also be submitted. This information, along with the supporting documentation, shall be submitted to:

Attention: Toxic Chemical Data
WMA – Compliance Program
Maryland Department of the Environment
1800 Washington Boulevard, STE 420
Baltimore, Maryland 21230-1708

3. Sampling and Analysis Methods

Analytical and sampling methods shall conform to test procedures for the analysis of pollutants as identified in 40 CFR Part 136 - "Guidelines Establishing Test Procedures for the Analysis of Pollutants."

4. Monitoring Equipment Maintenance

a. The permittee shall calibrate and maintain all monitoring and analytical instrumentation to ensure accuracy of measurements.

b. Environment Article, Section 9-343 provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

5. Recording of Results

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

a. the date, exact place and time of sampling or measurement;

b. the person(s) who performed the sampling or measurement;

c. the dates analyses were performed;

d. the person(s) who performed each analysis;

e. the analytical techniques or methods used; and

III. GENERAL CONDITIONS

f. the results of such analyses.ending sample time, place of sampling collection, the sample type (grab, composite, etc.), the sample

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report form (EPA No. 3320-1). The increased frequency shall also be reported. The results of any other monitoring performed by the permittee shall be made available to the Department upon request.

7. Record Retention

All data used to complete the permit application and all records and information resulting from the monitoring activities required by this permit, including all records of sampling and analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instruments, shall be retained for a minimum of three years. This period shall be extended automatically during the course of litigation or when requested by the Department.

B. General Requirements

1. Permit Noncompliance - Notification Requirements

All discharges authorized herein shall be consistent with the terms and conditions of this permit. If, for any reason, the permittee does not comply with or will be unable to comply with any permit condition, the permittee shall, within 24 hours, notify the Department by telephone at (410) 537-3510 during work hours or at (866) 633-4686 during evenings, weekends, and holidays. The permittee shall provide the Department with the following information in writing within five days of such oral notification.

a. a description of the noncomplying discharge including the name of the stream and the impact upon the receiving waters;

b. cause of noncompliance;

c. the duration of the period of noncompliance and the anticipated time the condition of noncompliance is expected to continue;

d. steps taken by the permittee to reduce and eliminate the noncomplying discharge;

e. steps to be taken by the permittee to prevent recurrence of the condition of noncompliance;

III. GENERAL CONDITIONS

f. a description of the accelerated or additional monitoring to determine the nature and impact of the noncomplying discharge; and

g. the results of the monitoring described in f. above.

2. Change in Discharge

The permittee shall report any anticipated facility expansions, production increases, or process modifications which will result in new, different or an increased discharge of pollutants by submitting a new application at least 180 days prior to the commencement of the changed discharge or, if such changes will not violate the effluent limitations specified in this permit, by providing prior written notice to the Department. Following such notice, the permit may be modified by the Department to specify and limit any pollutants not previously limited.

3. Facility Operation and Quality Control

All waste collection, control, treatment and disposal facilities shall be operated in a manner consistent with the following:

a. Facilities shall be operated efficiently to minimize upsets and discharges of excessive pollutants.

b. The permittee shall provide an adequate operating staff qualified to carry out operation, maintenance and testing functions required to ensure compliance with this permit. Superintendents and operators must be certified by the Board of Waterworks and Waste Systems Operators located at Montgomery Park Business Center, 1800 Washington Boulevard, STE- 410, Baltimore, Maryland 21230 in accordance with Title 12 of Environmental Article, Annotated Code of Maryland.

c. Facility maintenance work, which adversely affects or may adversely affect the discharge quality shall be scheduled during non-critical water quality periods. The permittee shall follow the reporting procedures listed in General Condition III.B.1 of this permit, Noncompliance Notification.

4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to waters of this State, human health or the environment resulting from noncompliance with any effluent limitations specified in this permit, and must perform accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

III. GENERAL CONDITIONS

5. Bypassing

Any bypass of treatment facilities is prohibited unless the bypass does not cause any violations of the effluent limitations specified in Special Condition II.A, and is for essential maintenance to assure efficient operation, or unless the permittee can prove that:

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

b. there are no feasible alternatives to the bypass; and

c. the Department receives notification pursuant to General Condition III.B.1 above. Where the need for a bypass is known (or should have been known) in advance, this notification shall be submitted to the Department for approval at least ten days before the date of the bypass or at the earliest possible date if the period of advance knowledge is less than ten days; and

d. the bypass is allowed under conditions approved by the Department to be necessary to minimize adverse effects.

6. Conditions Necessary for Demonstration of Upset

An upset shall constitute an affirmative defense to an action brought for noncompliance with technology-based effluent limitations only if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence, that:

a. an upset occurred and that the permittee can identify the specific cause(s) of the upset;

b. the permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;

c. the permittee submitted a 24-hour notification of upset in accordance with the reporting requirements of General Condition III.B.1 above;

d. the permittee submitted, within five calendar days of becoming aware of the upset, documentation to support and justify the upset; and

e. the permittee complied with any remedial measures required to minimize adverse impact.

III. GENERAL CONDITIONS

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

7. Sewage Sludge Requirements

The permittee shall comply with all existing State and federal laws and regulations that apply to sewage sludge monitoring requirements and utilization practices, and with any regulations promulgated pursuant to Environment Article, Section 9-230 et seq. or to the Clean Water Act, Section 405 (d). The permittee is responsible for ensuring that its sewage sludge is utilized in accordance with a valid sewage sludge utilization permit issued by the Department. If the sludge is hauled out of the State for disposal, a transportation permit must be obtained from the Department.

8. Power Failure

The permittee shall maintain compliance with the effluent limitations and all other terms and conditions of this permit in the event of a reduction, loss or failure of the primary source of power to the wastewater collection and treatment facilities.

9. Right of Entry

The permittee shall allow the Secretary of the Department, the Regional Administrator of the Environmental Protection Agency, and their authorized representatives, upon the presentation of credentials to enter upon the permittee's premises and:

a. to have access to and to copy any records required to be kept under the terms and conditions of this permit;

b. to inspect any monitoring equipment or monitoring method required in this permit;

c. to inspect any collection, treatment, pollution management, or discharge facilities required under this permit; or

d. to sample any discharge of pollutants.

10. Property Rights/Compliance With Other Requirements

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

III. GENERAL CONDITIONS

11. Reports and Information

a. Upon request, the permittee shall provide to the Department, within a reasonable time, copies of records required to be kept by this permit. The permittee shall also furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit; or to determine compliance with this permit.

b. All applications, reports or information submitted to the Department shall be signed and certified as required by COMAR 26.08.04.01 and 40 CFR 122.22.

c. Except for data determined to be confidential under COMAR 26.08.04.01, all data shall be available for public inspection at the Department and the Office of the Regional Administrator of the Environmental Protection Agency. Effluent data shall not be considered confidential.

d. Environment Article, Section 9-343 provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall upon conviction be punished by a fine of not more than $10,000 or by imprisonment for not more than six months or by both.

12. Transfer of Ownership or Control

In the event of any change in ownership or control of facilities from which the authorized discharge emanates, the permit may be transferred automatically to another person only if:

a. the current permittee notify the Department, in writing, of the proposed transfer at least 30 days prior to the proposed transfer date;

b. the notice includes a written agreement between the existing permittee and a new permittee containing the specific date of proposed transfer of permit coverage, and of responsibilities and liabilities under the permit; and

c. neither the current permittee nor the new permittee receive notification from the Department, within 30 days of the Department's receipt of the agreement, of its intent to modify, revoke, reissue or terminate the existing permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 12(b) above.

III. GENERAL CONDITIONS

13. New Effluent Standards

This permit shall be revoked and reissued or modified to meet any effluent standard, water quality standard or prohibition established under the Environment Article, the Clean Water Act, or regulations promulgated thereto, and the permittee shall be so notified.

14. Industrial Users

The permittee shall require all industrial users of the wastewater treatment facility to comply with user charges as established by the permittee, pursuant to Section 9-326(a)(i) of the Environment Article.

15. Noncompliance

Nothing in this permit shall be construed to preclude the institution of any legal action for noncompliance with State, federal or local laws and regulations.

16. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action against the permittee or to relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act or under the Environment Article.

17. Waterway Construction and Obstruction

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

18. Construction Permit

This permit is not a permit to construct. For a new facility, in order to make this permit valid, a construction permit shall be obtained to meet the requirements of COMAR 26.03.12.03(A) and Environment Article, Section 9-204(d).

19. Severability

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

C. Wastewater Collection System

This permit shall not authorize discharges from the wastewater collection system for this facility.

III. GENERAL CONDITIONS

1. Reporting Requirements

Pursuant to Environment Article Sub title 9-331.1, the permittee must report sanitary sewer overflows (SSOs) which result in the direct or potential discharge of raw or diluted sewage into the surface waters or ground waters of the State to the Water Management Administration's Compliance Program. Such reports must be made via telephone as soon as practicable, but no later than 24 hours after the time that the permittee became aware of the event. Reportable SSOs include, but are not limited to, overflows into the surface of the ground, into waterways, storm drains, ditches or other manmade or natural drainage conveyances to surface or ground waters which are reasonably likely to reach waters of the State. Overflows that are wholly contained within buildings and not likely to discharge to waterways need not be reported. Treatment plant bypasses shall be reported under General Condition III.B.1. Telephone reports shall be made to (410) 537-3510 on weekdays between 8:00 a. m. and 5:00 p.m. After hours telephone notification shall be made to emergency response number at (866) 633-4686.

When the incident is reported to the Department, the following information needs to be included:

a. the location of the overflow, including city or county,

b. the name of the receiving water, if applicable;

c. an estimate of the volume of sewage discharged;

d. a description of the sewer system or treatment plant component from which the overflow was released (such as manhole, crack in pipe, pumping station wet well or constructed overflow pipe);

e. an estimate of the overflow's impact upon public health and to waters of the State;

f. the cause or suspected cause of the overflow;

g. the estimated date and time when the overflow began and stopped or the anticipated time the overflow is expected to continue;

h. if known at the time of reporting, the steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps; (if unknown at the time the telephone report is made, the steps must be included in the written reports submitted under general conditions III.C.2).

i. if known at the time of reporting, measures taken or planned to mitigate the adverse impact of the overflow and a schedule of major milestones for those steps (if unknown at the time the telephone report is made, the

III. GENERAL CONDITIONS

steps must be included in the written reports submitted under general conditions III.D.2); and

j. whether there has already been a notification to the public and other City or County Agencies or Departments and how notification was done.

2. Written Reports

Within 5 calendar days following telephone notification of the event, the permittee shall provide MDE with a written report regarding the incident that includes, at a minimum, the information cited above.

The permittee shall maintain copies of all overflow records and reports, work orders associated with investigation of overflows, a list and description of complaints from customers or others related to overflows (including backups of sewage in to houses or businesses), and documentation of performance and implementation measures for minimum period of three years and shall make this information available to MDE for review upon written request.

This wastewater collection system provision may be superseded by a general permit for collection systems, when such a permit is issued by MDE and the permittee have been accepted for registration under the permit.

D. Permit Expiration, Modification, or Revocation

1. Expiration of Permit

This permit and the authorization to discharge shall expire at midnight on the expiration date of the permit unless the permittee has submitted a timely and complete reapplication pursuant to Section II.I.

2. [Reserved.]

3. Permit Modification - Request of Responsible Permittee

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

4. Permit Modification, Suspension, Revocation - Violation of Laws

A permit may also be modified, suspended or revoked by the Department, in the event of a violation of the terms or conditions of the permit, or of State or federal laws and regulations and in accordance with the provisions set forth in COMAR 26.08.04.10. This permit may be suspended or revoked upon a final, unreviewable determination that the permittee lacks, or is in violation of, any federal, state, or local approval necessary to conduct the activities authorized by this permit.

IV. CIVIL AND CRIMINAL PENALTIES

A. Civil Penalties for Violations of Permit Conditions

In addition to civil penalties for violations of State water pollution control laws set forth in Section 9-342 of the Environment Article, Annotated Code of Maryland, the Clean Water Act provides that any person who violates Section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the Act or in a permit issued under Section 404 of the Act, is subject to a civil penalty not to exceed $32,500 per day for each violation.

B. Criminal Penalties for Violations of Permit Conditions

In addition to criminal penalties for violations of State water pollution control laws set forth in Section 9-343 of the Environment Article, Annotated Code of Maryland, the Clean Water Act provides that:

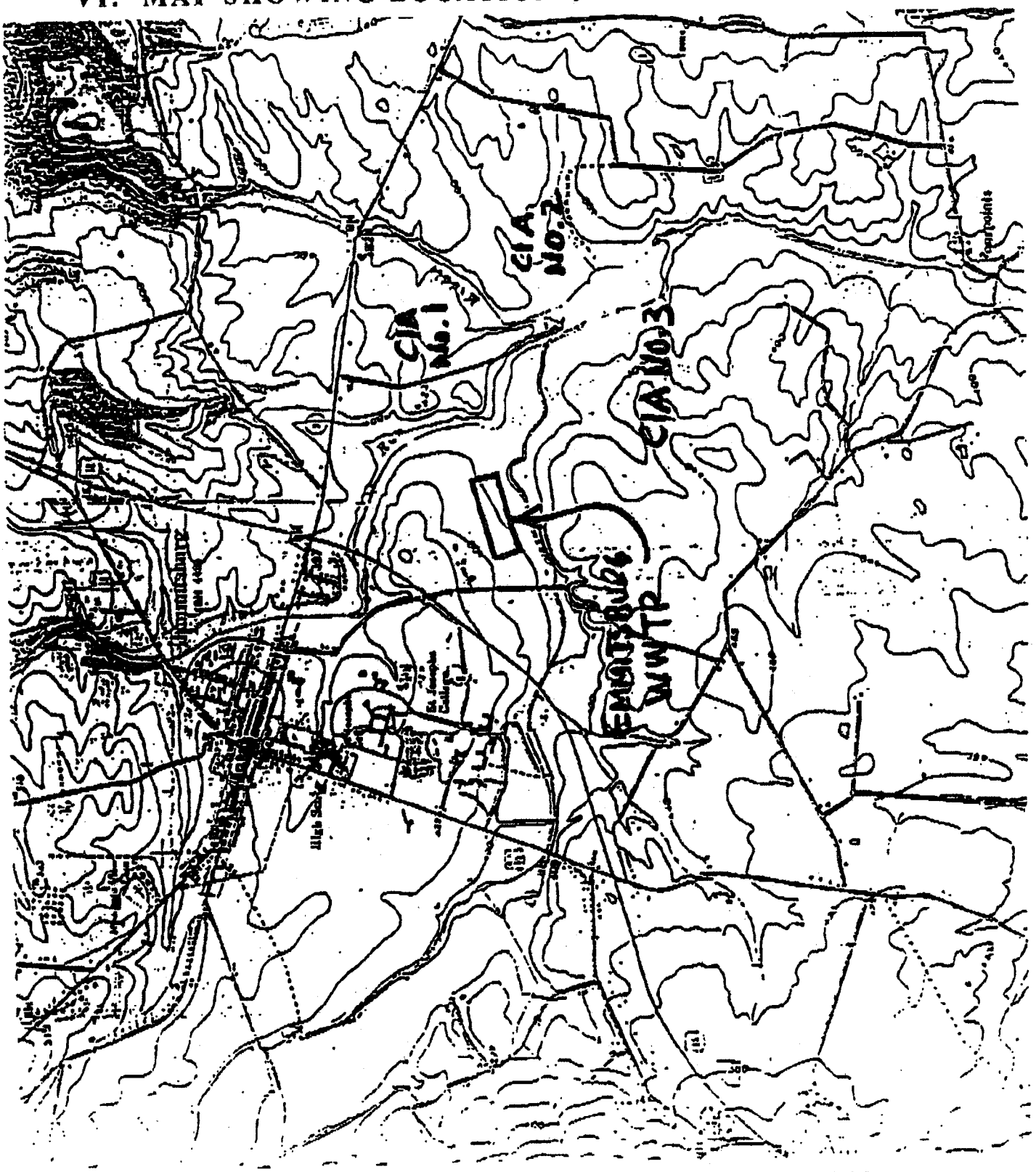
1. any person who negligently violates Section 301, 302, 306, 307, 308, 318, or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the Act, or in a permit issued under Section 404 of the Act, is subject to a fine of not less than $2,500 nor more than $27,500 per day of violation, or by imprisonment for not more than one year, or by both.

2. any person who knowingly violates Section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the Act, or in a permit issued under Section 404 of the Act, is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than three years, or by both.

3. any person who knowingly violates Section 301, 302, 306, 307, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the Act, or in a permit issued under Section 404 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, is subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both.

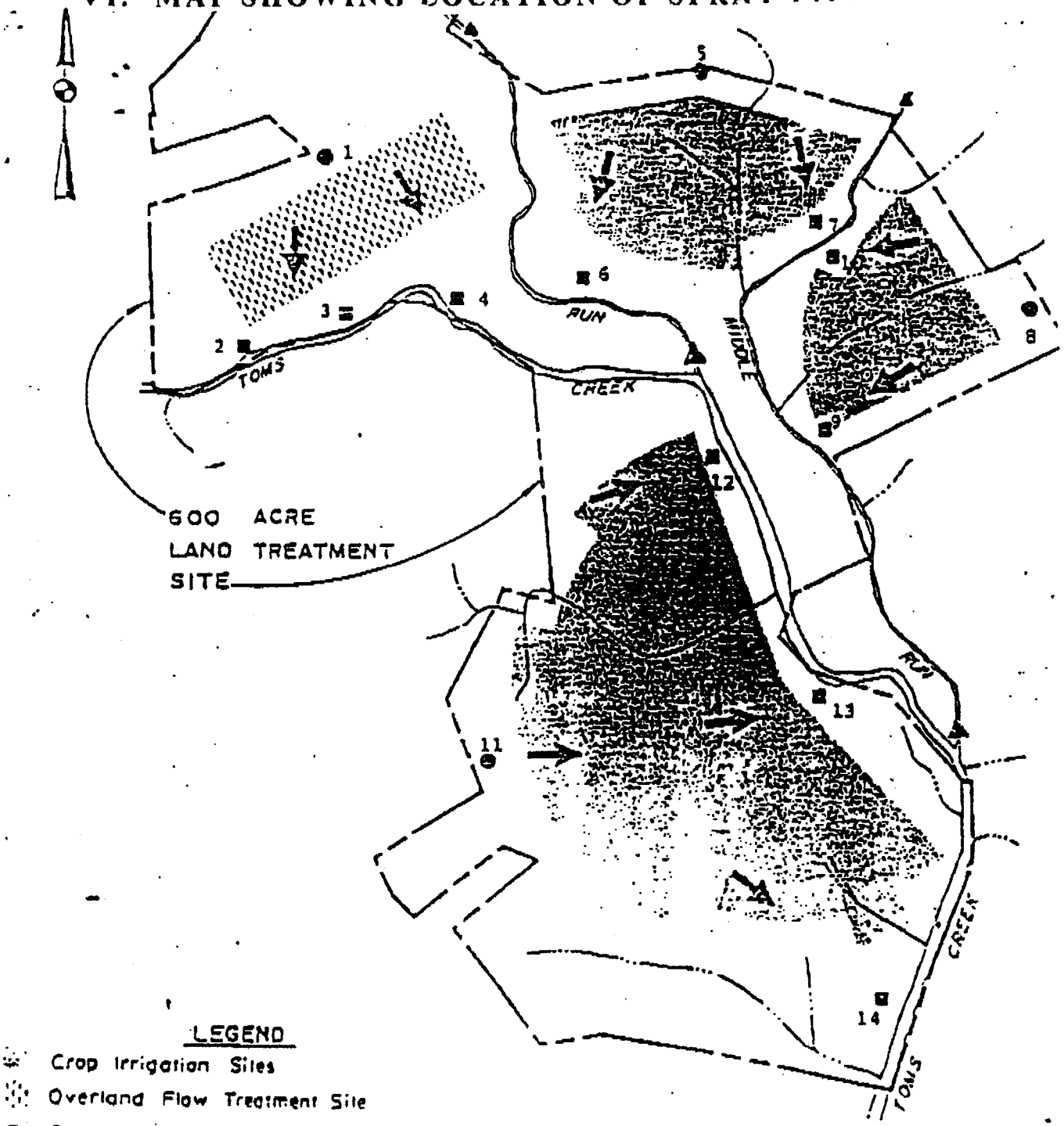
4. any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with or renders inaccurate any monitoring device or method required to be maintained under the Act, is subject to a fine of not more than $10,000 or by imprisonment for not more than two years, or by both.

VI. MAP SHOWING LOCATION OF SPRAY FIELDS



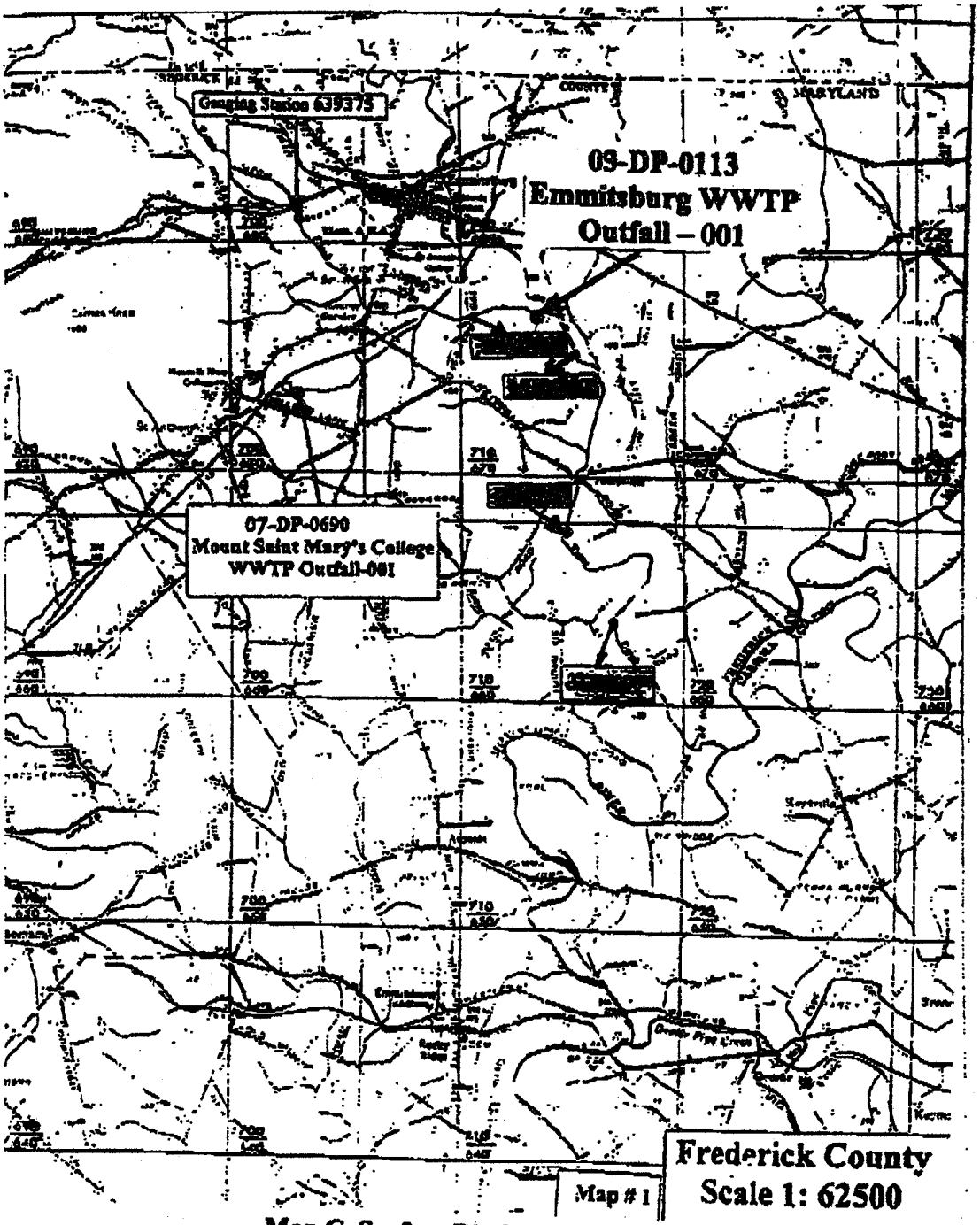
Map A. Locations of Emmitsburg WWTP and Spray Fields

VI. MAP SHOWING LOCATION OF SPRAY FIELDS



Map B. Locations of Spray Fields and Monitoring Wells

VI. MAP SHOWING DISCHARGE POINT LOCATION



Map C. Surface Discharge Point Location

VII. NPDES PROGRAM

On September 5, 1974, the Administrator of the U.S. Environmental Protection Agency approved the proposal submitted by the State of Maryland for the operation of a permit program for wastewater discharges pursuant to Section 402 of the Clean Water Act.

Pursuant to the aforementioned approval, this discharge permit is both a State of Maryland discharge permit and an NPDES permit.

Jay G. Sakai, Director
Water Management Administration