John Ellas Baldacci
Governor

Maine Department of Health and Human Services

Maine Center for Disease Control and Prevention
286 Water Street, 3rd Floor
11 State House Station
Augusta, ME 04333-0011

Brenda M. Harvey,
Acting Commissioner

Dora Anne Mills, MD, MPH
Public Health Director
Maine CDC Director

April 6, 2006

PSA, Inc.
Attn.: Dick Bachelder
71 Orchard Street
York, ME 03909

Subject: Product Registration, ADS-BioDiffuser ARC 36 and ARC 36HC Plastic Leaching Chambers

Dear Mr. Bachelder:

The Division of Health Engineering has completed a review of a registration application for your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The ADS-BioDiffuser ARC 36 and ARC 36HC consist of plastic leaching cambers as follows:

Product	W/L/H inches	Sizing, Beds	Sizing, Trenches
EnviroChamber Pro ARC 36	34.5 x 60 x 13	29 sq. ft./unit	35 sq. ft./unit
EnviroChamber Pro ARC 36HC	34.5 x 60 x 16	29 sq. ft./unit	40 sq. ft./unit

Claim

According to the information you provided, the ARC 36 and ARC 36HC are rated for an H-10 load bearing capacity; and they have received NSF/IAPMO Standard PS 63-2004a approval for load bearing.

Determination

On the basis of the information and sample product submitted, the Division has determined that the [product] is acceptable for use in the State of Maine, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions.

In the event that the product fails to perform as claimed by the applicant, use of the new or experimental technology in Maine, including all installations approved pursuant to Section 1801.7 of the Rules, shall cease. Use of the new or experimental technology shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of [product]. Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File

Maine Center for Disease Control and Prevention
An Office of the Department of Health and Human Services
John E. Baldacci, Governor Brenda M. Harvey, Commissioner

Department of Health and Human Services
Maine Center for Disease Control and Prevention
286 Water Street
11 State House Station
Augusta, Maine 04333-0011
Tel: (207) 287-8016
Fax: (207) 287-9058; TTY: 1-800-606-0215

February 9, 2009

PSA, Inc.
Attn.: Dick Bachelder
4640 Trueman Blvd.
Hilliard, OH 43026

Subject: Product Registration, ADS ARC 18 and ARC 24 and Side Port Coupler

Dear Mr. Bachelder:

The Division of Environmental Health has completed a review of a registration application for your company's products, pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The ADS ARC 18 and ARC 24 are plastic wastewater effluent leaching chambers. These would replace the BioDiffuser Bio 2 and Bio 3 models, respectively. The ADS ARC 18 and ARC 24 have the same effective sizing as the models they replace.

The Side Port Coupler consists of a plastic arch configured similarly to the plastic chambers for which they are intended, e.g., the ARC 24, ARC 36m, and ARC 36HC. The arches accommodate curving chamber layouts, and each of the two sidewalls has knockout provisions for pipe connections.

Claim

According to the information you provided, the ADS ARC 18 and ARC 24 have been certified by the National Sanitation Foundation (NSF) for H-10 load rating.

Determination

On the basis of the information submitted, the Division has determined that the ADS ARC 18 and ARC 24, and Side Port Coupler are acceptable for use in the State of Maine, provided that they are installed, operated, and maintained in conformance with the manufacturer's directions. They following sizing criteria apply to the ARC 18 and ARC 24:

ARC 18, trench configuration: 4.0 square feet per linear foot,

ARC 18, cluster configuration: 2.5 square feet per linear foot,

ARC 24, trench configuration: 6.0 square feet per linear foot, and

ARC 24, cluster configuration: 3.7 square feet per linear foot.

The following sizing criteria apply to the Side Port Couplers, pursuant to the requests on pages 3, 4, and 5 of the letter dated 01/06/09:

ARC 24 SPC: 3.2 square feet per unit,

ARC 36 SPC: 6.0 square feet per unit, and

ARC 36HC SPC: 6.0 square feet per unit.

In the event that the products fail to perform as claimed by the applicant, use of the product in Maine, including all installations approved pursuant to Chapter 18 of the Rules, shall cease. Use of the products shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of ADS ARC 18 and ARC 24 and the Side Port Coupler. Further, registration of these products for use in the State of Maine does not represent Division preference or recommendation for this product over similar or competing products.

This letter supersedes all prior versions regarding the subject products. If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File
Steve Miner via e-mail
Chris Stewart via e-mail

John Elias Baldacci
Governor

Maine Department of Health and Human Services

Maine Center for Disease Control and Prevention
286 Water Street, 3rd Floor
11 State House Station
Augusta, ME 04333-0011

Brenda M. Harvey,
Acting Commissioner

Dora Anne Mills, MD, MPH
Public Health Director
Maine CDC Director

April 6, 2006

PSA, Inc.
Attn.: Dick Bachelder
71 orchard Street
York, ME 03909

Subject: Product Registration, ADS-BioDiffuser ARC 36 and ARC 36HC Plastic Leaching Chambers

Dear Mr. Bachelder:

The Division of Health Engineering has completed a review of a registration application for your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The ADS-BioDiffuser ARC 36 and ARC 36HC consist of plastic leaching cambers as follows:

Product	W/L/H inches	Sizing, Beds	Sizing, Trenches
EnviroChamber Pro ARC 36	34.5 x 60 x 13	29 sq. ft./unit	35 sq. ft./unit
EnviroChamber Pro ARC 36HC	34.5 x 60 x 16	29 sq. ft./unit	40 sq. ft./unit

Claim

According to the information you provided, the ARC 36 and ARC 36HC are rated for an H-10 load bearing capacity; and they have received NSF/IAPMO Standard PS 63-2004a approval for load bearing.

Determination

On the basis of the information and sample product submitted, the Division has determined that the [product] is acceptable for use in the State of Maine, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions.

In the event that the product fails to perform as claimed by the applicant, use of the new or experimental technology in Maine, including all installations approved pursuant to Section 1801.7 of the Rules, shall cease. Use of the new or experimental technology shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of [product]. Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File

PSA, Inc.

4640 Trueman Blvd.
Hilliard, OH 43026
PH: 800-821-6710
Fax: 614-658-0204

A subsidiary of
ADS
Advanced Drainage Systems, Inc.

Manufacturers of **BioDiffuser™** Leaching Chambers

August 15, 2005

Mr. James A. Jacobsen, Manager
State of Maine
Department of Public Health
Division of Environmental Health
Wastewater and Plumbing Control Program
10 State House Station
Augusta, ME 04333-0010

Re: Request for Approval for Use
BioDiffuser ARC 36 and ARC 36HC Model Plastic Leaching Chambers

Dear Jim,

On behalf of PSA, Inc. (PSA) and Advanced Drainage Systems, Inc. (ADS), I write to formally request Departmental review and approval for use of our new BioDiffuser ARC 36 and ARC 36HC model plastic leaching chamber in the State of Maine in accordance with 10 CMR 241.

We respectfully submit the enclosed memorandum with attachments for your consideration. This memorandum includes a detailed description of these new chamber parts, third party certifications of any claims we make (product dimensions, load bearing capability), as well as our recommendations for sizing criteria.

Thank you in advance for your consideration of our request. If, during the course of your review, any questions or concerns arise, please know that I will welcome your call. (Please note that my office is located in Maine. I can be most conveniently reached via the phone numbers, and at the address, listed on the attached business card. If you could direct any calls to me at 207-363-2528, as well as send a copy of your formal response to our request to me at the address on this card, it would be greatly appreciated.)

Sincerely,

Dick Bachelder
PSA, Inc.

cc: Mr. Russ Martin, ME DHE
Mr. Steve Minor, ADS, Inc.

MEMORANDUM

To: **Jim Jacobsen** **ME DEH**

From: **Dick Bachelder** **PSA, Inc./ADS, Inc.**

Date: **February 27, 2006**

RE: **BioDiffuser ARC 36 and ARC 36HC Plastic Leaching Chambers Request for Approval for Use**

Product Specifications

The ARC 36 and ARC 36 model BioDiffuser plastic leaching chambers have the following critical dimensions:

Product/Model	Outside Width (in.)	Total Height (in.)	Laying Length (in.)	Height To Peak Louver Opening (in.)	Average Open Bottom Area (sf/lf)
ARC 36	34.5"	13.0	60	7.13	2.43
ARC 36HC	34.5"	16.0	60	10.74	2.45

Enclosed please find two (2) two-page letters from ZUKONPLAN of Gahanna, Ohio. ZUKONPLAN is an independent, third party engineering firm that PSA uses to assist our company in product development. The first letter, dated June 3, 2005 and labeled "A1" herein, summarizes the critical dimensions and calculations of the new ARC 36 chamber. The second letter, dated February 7, 2006 and labeled "A2" herein, summarizes the critical dimensions and calculations of the new ARC 36HC chamber.

These documents – the ZUKONPLAN letters dated June 3, 2005, and February 7, 2006, and labeled "A1", and "A2" herein – contain ***confidential business information*** *and as such are private company documents. We respectfully ask that they remain undisclosed to any parties not directly involved in the review of our products.*

Load Bearing

We submit for your review a report from NSF International on the H-10 in ground load testing of the ARC 36 for your review, labeled "A3". The product passed H-10 loading with 12" of compacted cover, when installed in conformance with our installation instructions.

Request

We respectfully request that the BioDiffuser ARC 36 and ARC 36HC plastic leaching chambers be approved for use in Maine in accordance with 10 CMR 241.

Sizing:

Chamber product sizing is included in Appendix B of 10 CMR 241.

The ARC 36 has been developed to replace the BioDiffuser 11" Standard model chamber. The 11" Standard is allowed for use as follows:

Product	Product Length (engaged)	Sizing in Bed Application (sq.ft.)	Bed Rating per Linear Foot (sq.ft./lin.ft.)	Sizing in Trench Application (sq.ft.)	Trench Rating per Linear Foot (sq.ft./lin.ft.)
11' Standard	6.21'	36	5.8	44	7.0

The ARC 36 is 5' long when engaged. If issued equivalent sizing to the 11" Standard model BioDiffuser, we suggest that it would be sized as follows:

Product	Product Length (engaged)	Bed Rating per Linear Foot (sq.ft./lin.ft.)	Sizing in Bed Application (sq.ft.)	Trench Rating per Linear Foot (sq.ft./lin.ft.)	Sizing in Trench Application (sq.ft.)
ARC 36	5'	5.8	**29**	7.0	**35**

The ARC 36HC has been developed to replace the BioDiffuser 16" High Capacity model chamber. The 16" High Capacity is allowed for use as follows:

Product	Product Length (engaged)	Sizing in Bed Application (sq.ft.)	Bed Rating per Linear Foot (sq.ft./lin.ft.)	Sizing in Trench Application (sq.ft.)	Trench Rating per Linear Foot (sq.ft./lin.ft.)
16" High Capacity	6.21'	36	5.8	50	8.0

The ARC 36HC is 5' long when engaged. If issued equivalent sizing to the 16" High Capacity model BioDiffuser, we suggest it would be sized as follows:

Product	Product Length (engaged)	Bed Rating per Linear Foot (sq.ft./lin.ft.)	Sizing in Bed Application (sq.ft.)	Trench Rating per Linear Foot (sq.ft./lin.ft.)	Sizing in Trench Application (sq.ft.)
ARC 36HC	5'	5.8	**29**	8.0	**40**

Line Drawings

We enclose as well the following line drawings of the new ARC 36 and ARC 36HC chambers, for your files:

- an overhead view of the ARC 36 part, labeled "A4";
- an overheadview of the ARC 36 part, showing product labeling, labeled "A5";
- an overhead view of the ARC 36HC part, labeled "A6".

ZUKUNPLAN

A1

June 3, 2005

Dick Bachelder
71 Orchard Farm Road
York, ME 03909
207.363.2528
Fax 3634943

Subject
ADS ARC-36

Dear Mr. Bachelder

The following specification sheet and drawing summarize the measurements and calculations of the new ARC-36 chamber.

These figures are based on the computer data created by Zukun Plan from which production tooling is produced.

Best regards,
Zukun Plan LLC By:

Terry Birchler
Director

171 N. High Street, Gahanna, OH 43230 ph-614.470.9858 fx-614.470.9855

ARC-36 Specification Sheet

June 3, 2005

ARC 36		
Total Length	63.16	IN
Laying Length	60.00	IN
Width	34.50	IN
Height	13.00	IN
Height to highest louver opening	7.13	IN
	Sq. In.	**Sq. Ft.**
Chamber Volume (Lay Length)	13896.4	8.04
Total Bottom Area	2070.00	14.38
Open Bottom Area	1747.32	12.13
Footprint Area	322.68	2.24
Sidewall Infiltrative Surface Area	462.77	3.21
Chamber Volume per LF	2779.28	1.61
Total Bottom Area per LF	414.00	2.88
Open Bottom Area per LF	349.46	2.43
Footprint Area per LF	64.54	0.45
Sidewall Infiltrative Surface Area per LF	92.55	0.64
Total Infiltrative Surface	442.02	3.07

171 N. High Street, Gahanna, OH 43230 ph-614.470.9858 fx-614.470.9855

A2

ZUKUN PLAN
171 North High Street
Gahanna, Ohio 43230
614.470.9858

February 7, 2006

Dick Bachelder
71 Orchard Farm Road
York, ME 03909

>Subject
ADS ARC-36HC

Dear Mr. Bachelder,

The following specification sheet and drawing summarize the measurements and calculations of the ADS ARC-36HC chamber.

These figures are based on the computer data created by Zukun Plan from which production tooling is produced.

Best regards,
Zukun Plan LLC By:

Terry Birchler
Director

ARC 36HC Specifications Sheet

February 7, 2006

ARC 36HC			
Weight	16.95	LBS	
Weight per Lineal Foot (LF)	3.39	LBS	
Total Length	63.27	IN	
Laying Length	60.00	IN	
Width	34.50	IN	
Height	16.00	IN	
Height to highest louver opening	10.74	IN	
Invert Height	10.75	IN	
	Sq. In.	**Sq. Ft.**	
Total Bottom Area	2070.00	14.38	
Open Bottom Area	1761.17	12.23	
Footprint Area	308.83	2.14	
Sidewall Infiltrative Surface Area	705.65	4.90	
Total Infiltrative Area (Lay Length)	2466.82	17.13	
Total Bottom Area per LF	414.00	2.88	
Open Bottom Area per LF	352.23	2.45	
Footprint Area per LF	61.77	0.43	
Sidewall Infiltrative Surface Area per LF	141.13	0.98	
Total Infiltrative Surface per LF	493.36	3.43	
	Cu. In.	**Cu. Ft.**	**Gal.**
Chamber Volume (Lay Length)	18491.32	10.70	80.04
Chamber Volume per LF	3698.26	2.14	16.01

A3

ENGINEERING & RESEARCH SERVICES

FINAL REPORT

Witness Testing:
ARC 36 Chamber to IAPMO Standard PS 63-2004a

by

Cheryl J. Bunagan, Project Manager
Engineering & Research Services
NSF International

Test Facility:
Carson Industries, Inc.
1675 Industrial Road
Napoleon, OH 43545

Sponsor:
ADS, Inc.
4640 Trueman Blvd.
Hilliard, OH 43026

November 30, 2005

Scope of Testing:

NSF International was contracted by ADS, Inc. to witness testing of the ARC 36 Chamber against Section 6.1 of IAPMO Standard PS 63-2004a and prepare a report of the results.

Off-site Testing Information:

Load rating testing was conducted at Carson Industries, Inc. in Napoleon, Ohio. An excavation was dug according to the contractor's specifications in native clay soil. The test samples (a series of 4 interlocked chamber units, with chambers three and four fully articulated) were installed according to the manufacturer's instructions. One end of the assembly was left open for observation and evaluation. Course sand was used as a fill-in on each side of the interlocked chamber series and then compacted by a "walk-in" process. Finally, the entire trench was backfilled with sand to a compacted depth of twelve inches above the highest point of the chamber.

A single axle dump truck with multiple rear axle weights was used for the test loads. Dielman, Inc. in Napoleon, OH weighed each test load on November10, 2005. The NSF representative verified all official weight slips.

Deflection was recorded during each pass (Table 1) over three different sections of the test samples. Passes were conducted over the following chamber locations in accordance with Section 6.1 of the IAPMO Standard:

1. Joint section between two fully articulated chambers
2. Joint section between two engaged chambers
3. Midpoint section of a single chamber

Truck Weight (lbs)	Joint at Angle Section Deflection (inches)	Joint Between Two Chambers Deflection (inches)	Midpoint Section Deflection (inches)
	Pass 1	Pass 1	Pass 1
9870	0.5	0.5	0.5
9870	0.5	0.5	0.5
12770	1.0	1.0	1.5
15320	1.0	1.0	1.5
17030	1.5	1.5	1.5

Table 1: Deflection at each Truck Weight

The passenger side rear wheel of the truck was lined up to pass over each of the three sections of the assembly at each truck weight. One pass was made over each section at each truck weight as the NSF representative observed at the open end. The chambers were then uncovered and exposed for visual inspection.

Testing Results:

Each evaluated section of the chamber returned to its original geometry despite experiencing some deflection during each pass at each test load. There was no sign of damage or deformation to the joints or center of the assembly upon inspection. This complies with the requirements of section 6.1.1 of the IAPMO Standard.

Annex A
Product Description

ARC-36 Specification Sheet

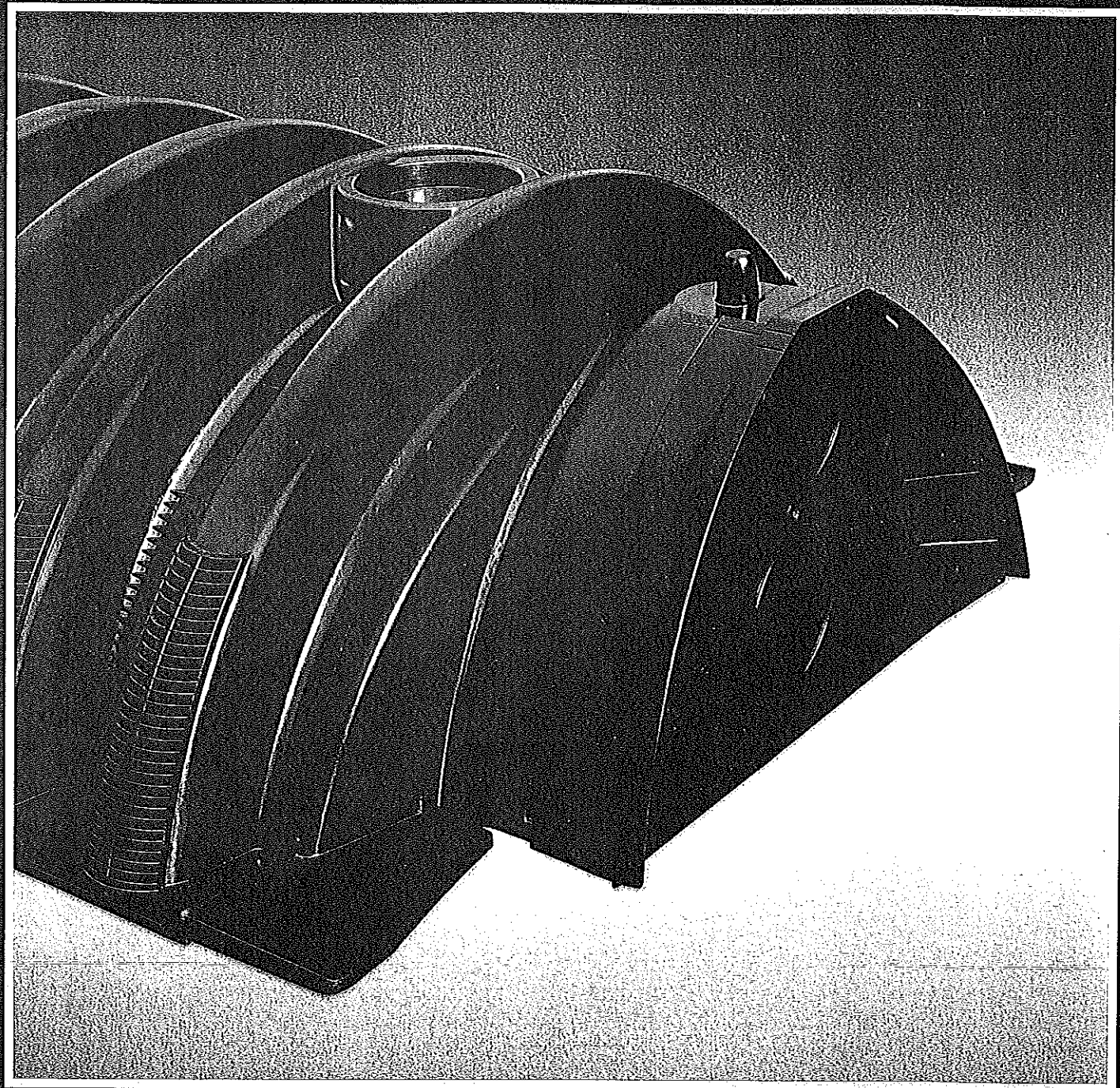
August 9, 2005

ARC 36		
Total Length	63.16	IN
Laying Length	60.00	IN
Width	34.50	IN
Height	13.00	IN
Height to highest louver opening	7.13	IN
	Sq. In.	**Sq. Ft.**
Chamber Volume (Lay Length)	13896.4	8.04
Volume Below Invert (Lay Length)	10150.9	5.87
Total Bottom Area	2070.00	14.38
Open Bottom Area	1747.32	12.13
Footprint Area	322.68	2.24
Sidewall Infiltrative Surface Area	462.77	3.21
Chamber Volume per LF	2779.28	1.61
Volume Below Invert per LF	2030.18	1.17
Total Bottom Area per LF	414.00	2.88
Open Bottom Area per LF	349.46	2.43
Footprint Area per LF	64.54	0.45
Sidewall Infiltrative Surface Area per LF	92.55	0.64
Total Infiltrative Surface	442.02	3.07

Arc™

BioDiffuser® Leachfield Chamber

BioDiffuser® ARC™ 36 Leaching Chamber



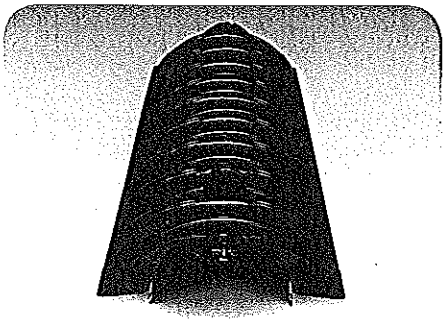
Save time and labor with the ARC 36 Septic Leaching Chamber.

ADS®

BioDiffuser ARC 36 Leaching Chamber

Save time and labor with the ARC 36 Septic Leaching Chamber.

Leaching chambers are successfully replacing gravel and pipe in septic leach field installations. Their lightweight construction offers lower installed costs and less intrusive installations.



Injection-molded, lightweight and sturdy design.

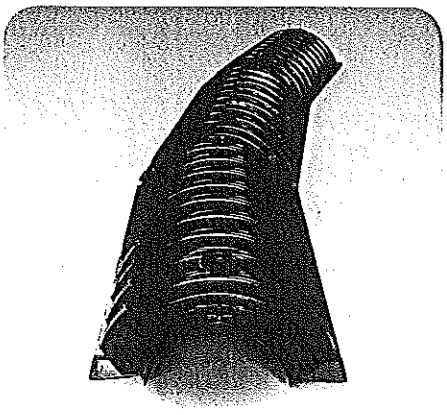
Engineered for optimal performance.

The new ARC 36 septic leaching chamber is a sturdy, lightweight plastic unit that combines maximized infiltrative surface area and storage capacity with an improved structural design to handle most any conventional leach field system challenge.

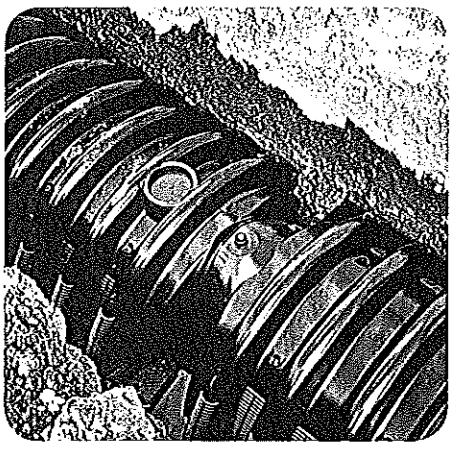
This unique combination allows for increased effluent dispersal performance and improved structural integrity as well as ease of installation and simplified contouring capabilities.

The result is an effective solution for both new onsite wastewater system installations and existing septic leach field repairs.

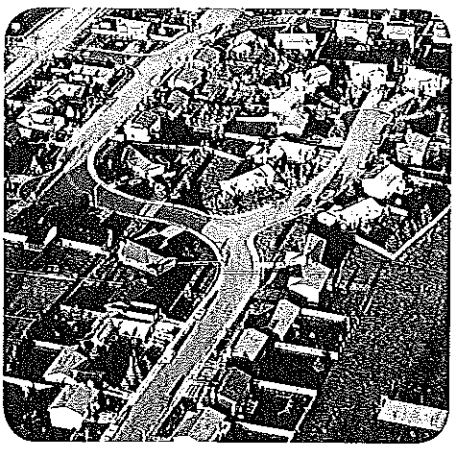
Now you can save labor, time on the job, and materials with the ARC 36 chamber without sacrificing performance.



Integral articulating joint.



Superior joint design that gets stronger during backfill.



Innovative design for maximum flexibility.

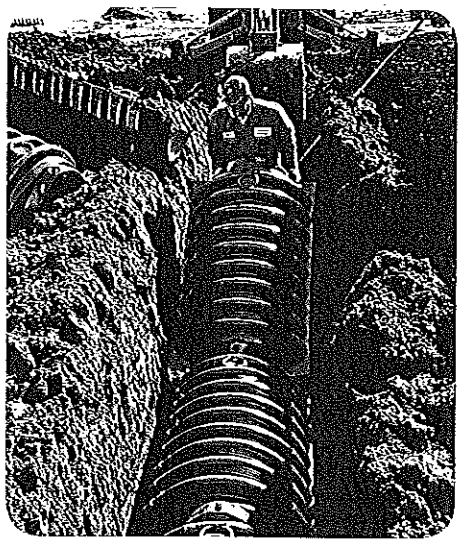
An effective solution for new onsite wastewater installations and existing leach field system repairs.

Design features

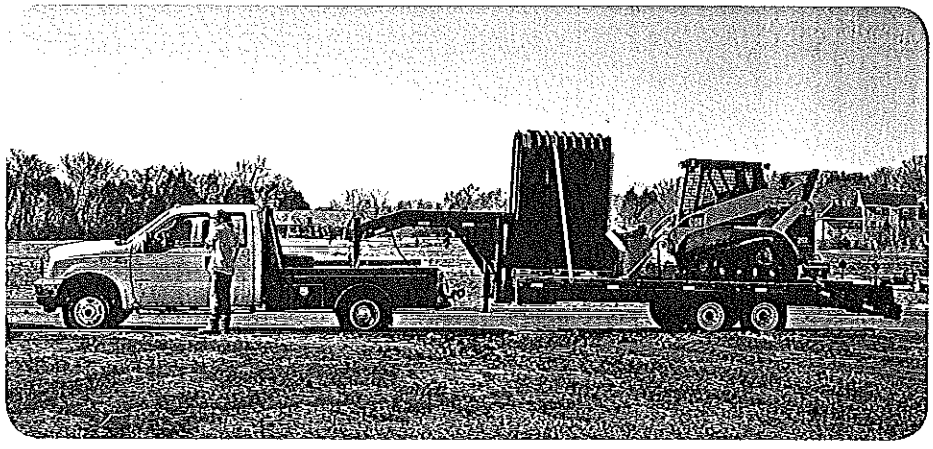
- Injection-molded, lightweight and sturdy design.
- 20-degree integral articulating joint that is ideal for either straight or contoured septic leach field applications.
- True corrugated chamber design eliminates flat surfaces and provides increased load bearing capability in the trench.
- Design also incorporates a modified post and dome engagement mechanism for added strength at critical joint connections.
- Designed to accommodate both gravity-fed and pressure-dosed systems.

Maximum job site flexibility. Easy installation.

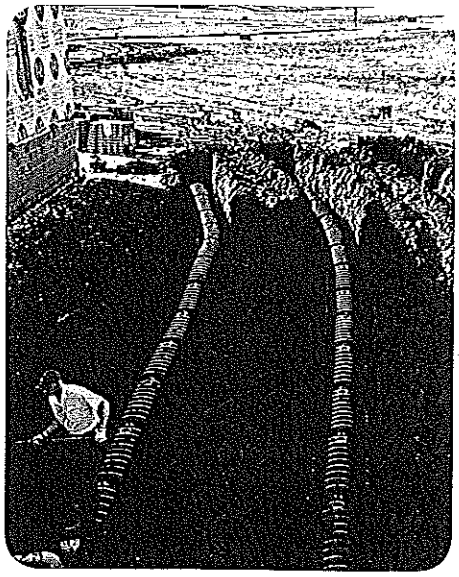
- Integral articulating joint.
- A universal inlet/outlet end cap.
- Inspection vent ports on every unit with easy-to-remove knockouts for maximum job site flexibility.
- Convenient five-foot lengths are easy to handle.
- Quickly installed by one person into three-foot wide trench or bed applications.
- Unique stacking post feature for increased pallet stability.



Convenient five-foot lengths are easy to handle.



Easily transported to the job site.



Ideal for contoured applications.

Arc™

BioDiffuser® Leachfield Chamber

Product Specs

BioDiffuser® Leachfield Chamber

ADS BioDiffuser ARC 36
Leaching Chamber Specification

Scope
This specification describes the BioDiffuser ARC 36 chamber unit for use in onsite wastewater disposal applications.

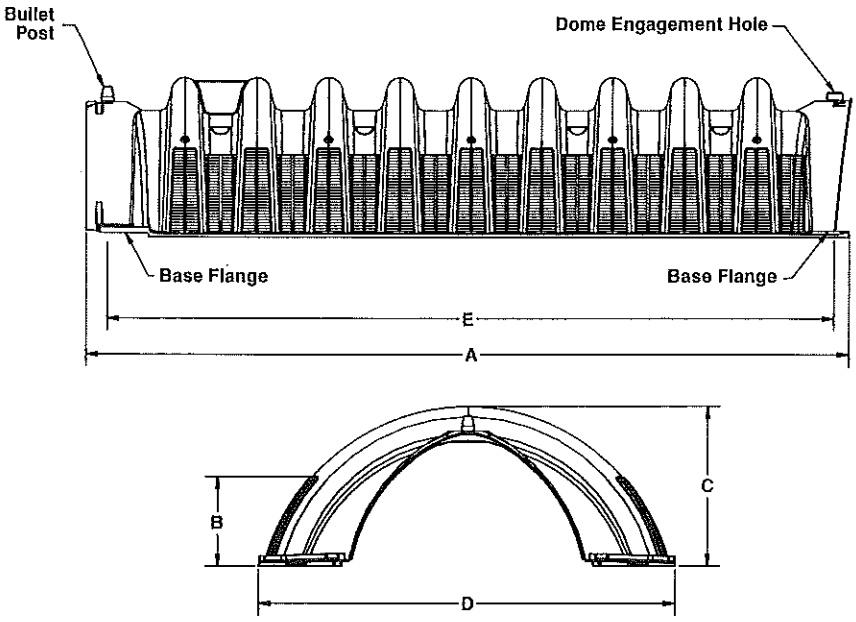
Material properties
Each chamber shall be manufactured from high-density polyethylene as defined and described in IAPMO PS 63.

Installation
Installation shall be in accordance with ADS installation procedures and those issued by the local health department regulations.

Chamber requirements
BioDiffuser ARC 36 chambers are manufactured from high-density polyethylene with an open bottom, solid top and louvered sidewalls. Sidewall louvers shall be designed to minimize soil intrusion.

Chamber shall meet the load rating of H-10 (16,000 lbs. per axle) with a minimum of 12 inches of cover when tested in accordance with IAPMO PS 63 and installed in accordance with manufacturer's installation procedures.

Chamber connection
Each chamber shall interlock with an integral articulating joint. Articulating joints shall have a free range of horizontal rotation of 20 degrees, with a maximum of 10 degrees in either direction. Articulating joint shall be constructed by placing the dome engagement hole of the incoming chamber over the bullet post of the previously-installed chamber, with final engagement occurring when the base flanges of the incoming chamber underlap the base flanges of the previously-installed chamber.



BioDiffuser ARC 36 Nominal Dimensions and Specifications	
Length (A)	63"
Repeat Length (E)	60"
Side Wall Height (B)	7.13"
Overall Height (C)	13"
Overall Width (D)	34.5"
Invert Height of inlet pipe	6.5"
Capacity	8 cu. ft.
Weight	16 lbs.

ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD., HILLIARD, OH 43026
800-821-6710 www.ads-pipe.com

THE MOST ADVANCED NAME IN DRAINAGE SYSTEMS®