February 22, 2011

Genny Donart, P.E.
Isaacson & Arfman, P.A.
128 Monroe St. NE
Albuquerque, NM 87108

Re: Brunacini Journal Center Tracts A-2-A and A-3-A
Preliminary Grading and Drainage Plan
Engineer's Stamp dated X-X-XX (D17/D003AA7)

Dear Ms Donart,

Based upon the information provided in your submittal received 2/10/2011, the above referenced plan can not be approved for Site Development for Building Permit action by the DRB until the following comments are addressed.

- We need the plans to be stamped, signed and dated.
- We would like for the valley gutter to be extended to the treatment pond area, or more of a slope in the internal access road.
- I believe that a curb opening in the access road just east of the bend would be much more beneficial in accepting flows from the east parking lots.
- The concrete rundown to the North Diversion Channel side inlet is required to be on an Infrastructure List.

As discussed, additional information will be required on your submittal for Building Permit.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Curtis A. Cherne, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: file
Brad Bingham

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: Brunacini Journal Center ZONE MAP/DRG. FILE D-17/D003-AA7
DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: TRACTS A-2-A AND A-3-A, JOURNAL CENTER, PHASE 2, UNIT 2, ALBUQUERQUE, NM
CITY ADDRESS: 9721 RUTLEDGE ST. NE

ENGINEERING FIRM: ISSACSON & ARFMAN, PA CONTACT: ~~FRED C. ARFMAN~~ Genny Donart
ADDRESS: 128 MONROE NE PHONE: 268-8828
CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87108

OWNER: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

ARCHITECT: CLAUDIO VIGIL ARCHITECTS CONTACT: EDWARD AVILA
ADDRESS: 1801 RIO GRANDE BLVD. NW PHONE: 842-1113
CITY, STATE: Albuquerque, NM ZIP CODE: _____

SURVEYING FIRM: SURV-TEK CONSULTING SURVEYORS LICENSED SURVEYOR: RUSS P. HUGG
ADDRESS: 9384 VALLEY VIEW DR. NW PHONE: 897-3366
CITY, STATE: Albuquerque, NM ZIP CODE: 87114

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:
_____ DRAINAGE REPORT
_____ DRAINAGE PLAN 1st SUBMITTAL
__X__ DRAINAGE PLAN RESUBMITTAL
_____ CONCEPTUAL G & D PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
_____ ENGINEER'S CERT (HYDROLOGY)
_____ CLOMR/LOMR
_____ TRAFFIC CIRCULATION LAYOUT
_____ ENGINEER/ARCHITECT CERT (TCL)
_____ ENGINEER/ARCHITECT CERT (DRB S.P.)
_____ ENGINEER/ARCHITECT CERT (AA)
_____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:
_____ SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
_____ S. DEV. PLAN FOR SUB'D APPROVAL
__X__ S. DEV. FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY (PERM)
_____ CERTIFICATE OF OCCUPANCY (TEMP)
_____ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
_____ WORK ORDER APPROVAL
_____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:
_____ YES
_____ NO
_____ COPY PROVIDED

RECEIVED
FEB 10 2011
HYDROLOGY SECTION

SUBMITTED BY: ISAACSON & ARFMAN: ~~Fred Arfman~~ Genny Donart DATE: March 1, 2010

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.

2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.

3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

Cherne, Curtis

From: Genny Donart [gennyd@iacivil.com]
Sent: Monday, February 07, 2011 1:58 PM
To: 'Mazur, Lynn'
Cc: Cherne, Curtis
Subject: RE: Brunacini at Journal Center
Attachments: 1765 Brunacini at North Pino.pdf; 1756 CG-101-SDP.pdf

Hi Lynn,

Thanks for the letter and markups.
In response to your comments on 02/04/11:

"I will need to see the site plan to determine the site drainage pattern."
- **I apologize, I should have included the full site plan with my earlier email. I've included it as an attachment this time.**

"On the detail sheet, it appears that only the loading dock area and the internal access road drain to the water quality pond. The intent of the water quality treatment is to take the first flush rainfall over the entire site through the pond."
- **While you are correct that the treatment pond collects all its water from the loading docks and access road, what you couldn't see on that detail sheet is that the access road collects all the offsite water from the east and south. The pond is set up to treat storm water from the entire area.**

"The [Essayons Boulevard] project is a few years out and has not been approved by the AMAFCA Board of Directors or the U.S. Army Corps of Engineers. Therefore, we will require a concrete rundown connection to the existing NDC rundown structure as you have shown on the plan."
- **Thanks for the information about the Essayons Blvd project. My plan was to make that rundown shotcrete to help keep skateboarders off of it and to reduce costs. I mis-labeled it in the notes. Does that create any difficulties?**

"We will also require it to extend to the south to capture the flow in the existing side inlet channel."
- **When you say we need to extend the rundown to the south, how far does that extension need to go? Will a dip extending 5' to 10' to the south in the side of the channel be sufficient?**

"a Turnkey Agreement will be required for the work within the NDC right-of-way."
- **I'll make sure the owner is informed about the turnkey agreement.**

"Another issue I would like to reiterate is the new FEMA requirement to have a 15-foot clear access a the toe of slope of our drainage facilities."
- **The existing topo from the surveyor shows spots at least 20' north of the North Pino right-of-way line that indicate a flat area at least 20' wide. (Please see attached.) We don't show where the slope begins, but since it's flat that far out, we should be OK for the 15' access requirement to be within the AMAFCA R/W. Please let me know if this information is sufficient.**

Genny Donart, P.E.

Design Engineer
Isaacson & Arfman, P.A.
Consulting Engineering Associates
128 Monroe St. N.E.
Albuquerque, NM 87108
Phone: (505)268-8828
Fax: (505)268-2632
Email: gennyd@iacivil.com

From: Mazur, Lynn [mailto:lmazur@amafca.org]
Sent: Friday, February 04, 2011 1:09 PM
To: Genny Donart
Cc: Curtis Cherne
Subject: Brunacini at Journal Center

Attached are my review letter and mark-ups.

Albuquerque Metropolitan Arroyo Flood Control Authority
Lynn M. Mazur, P.E., C.F.M.
Development Review Engineer
Phone: (505) 884-2215
www.amafca.org

Cherne, Curtis

From: Mazur, Lynn [lmazur@amafca.org]
Sent: Tuesday, March 23, 2010 10:31 AM
To: Cherne, Curtis
Subject: RE: Tract A-2-A and A-3-A Brunacini Journal Center

A water quality feature similar to the one on the Brunacini @ Journal Center plans, dated August 2004, will be required on the final plans. I gave Isaacson & Arfman a copy of it when we met earlier this year. There may be some slight modifications to the detail. AMAFCA can provide a detail of the outlet drain from the water quality sump.

Albuquerque Metropolitan Arroyo Flood Control Authority
Lynn M. Mazur, P.E., C.F.M.
Development Review Engineer
Phone: (505) 884-2215
www.amafca.org

From: Cherne, Curtis [mailto:CCherne@cabq.gov]
Sent: Monday, March 22, 2010 1:17 PM
To: Mazur, Lynn
Subject: Tract A-2-A and A-3-A Brunacini Journal Center

Lynn,

Did Fred Arfman give you a plan for these two tracts? Ours is stamp date 3-1-10.

I figure there is about 85 cfs going to the northwest corner at the outfall
Looks OK to me. We will have him include his channel to your side inlet on an IL.

I would like to hear from you before I write Fred a letter.

Curtis

FEBRUARY 10, 2011

SUPPLEMENTAL INFORMATION

FOR

BRUNACINI JOURNAL CENTER
OFFICE BUILDING
TRACTS A2 & A3

BY

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 Fax. 505-268-2632

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HYDROLOGY SECTION

BASIN NO. AMAFCA INLET AREA | **DESCRIPTION** Entire basin that drains to inlet

Area of basin flows = 728955 SF = 16.7 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 118698 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 74.0 cfs

BASIN NO. OFFSITE 1 | **DESCRIPTION**

Area of basin flows = 324289 SF = 7.4 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 52805 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 32.9 cfs

BASIN NO. OFFSITE 2 | **DESCRIPTION**

Area of basin flows = 46703 SF = 1.1 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 7605 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 4.7 cfs

BASIN NO. OFFSITE 3 | **DESCRIPTION**

Area of basin flows = 122343 SF = 2.8 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 19921 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 12.4 cfs

BASIN NO. A | **DESCRIPTION** South portion of site

Area of basin flows = 46417 SF = 1.1 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 7558 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 4.7 cfs

BASIN NO. B | **DESCRIPTION** North Portion of site

Area of basin flows = 66546 SF = 1.5 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 10836 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 6.8 cfs

BASIN NO. C		DESCRIPTION		
Area of basin flows =	64541	SF	=	1.5 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 10509 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 6.6 cfs

BASIN NO. D		DESCRIPTION		
Area of basin flows =	58116	SF	=	1.3 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 9463 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 5.9 cfs

BASIN NO. 1/4" flows		DESCRIPTION	Backs into calcutations of 1/4" flows. Matches volume of 1/4" x Area.	
Area of basin flows =	93264	SF	=	2.1 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.95 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 15187 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 9.5 cfs

BASIN SUMMARY

Basin No.	Description	Discharge (Q)	AP1	AP2	AP3	AP4	Comments
MAFCA INLET ARE	Entire basin that drains to inlet	74.0					
OFFSITE 1		32.9	32.9	32.9		32.9	
OFFSITE 2		4.7		4.7		4.7	
OFFSITE 3		12.4			12.4	12.4	
A	South portion of site	4.7	4.7	4.7		4.7	
B	North Portion of site	6.8		6.8		6.8	
C		6.6		6.6		6.6	
D		5.9			5.9	5.9	
1/4" flows	lacks into calcutations of 1/4" flows. Matches volume of 1/4" x Are:	9.5					

		AP1	AP2	AP3	OVERALL	
TOTAL DISCHARGE	74.0	37.6	55.7	18.3	74.0	CFS

83.5

AP1

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. Thursday, Feb 10 2011

Brunacini Building Drive Aisle Basin A

User-defined

Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.017

Calculations

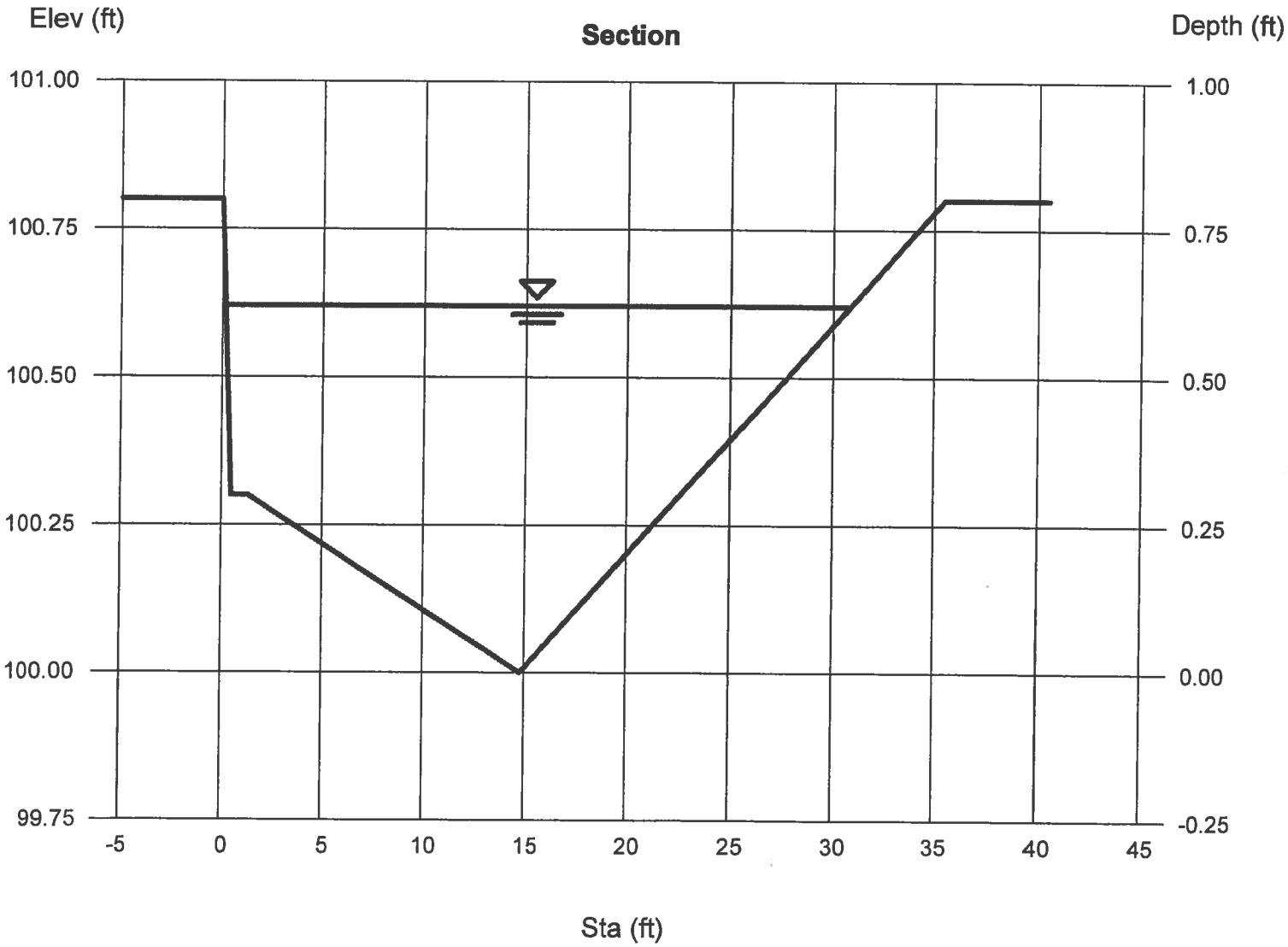
Compute by:	Known Q
Known Q (cfs)	= 37.60

Highlighted

Depth (ft)	= 0.62
Q (cfs)	= 37.60
Area (sqft)	= 11.62
Velocity (ft/s)	= 3.24
Wetted Perim (ft)	= 30.81
Crit Depth, Yc (ft)	= 0.60
Top Width (ft)	= 30.66
EGL (ft)	= 0.78

(Sta, El, n)-(Sta, El, n)...

(0.00, 100.80)-(0.50, 100.30, 0.013)-(1.33, 100.30, 0.013)-(14.80, 100.00, 0.017)-(35.50, 100.80, 0.017)



AP2

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. Thursday, Feb 10 2011

Brunacini Building drive aisle in Basin C

User-defined

Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.017

Calculations

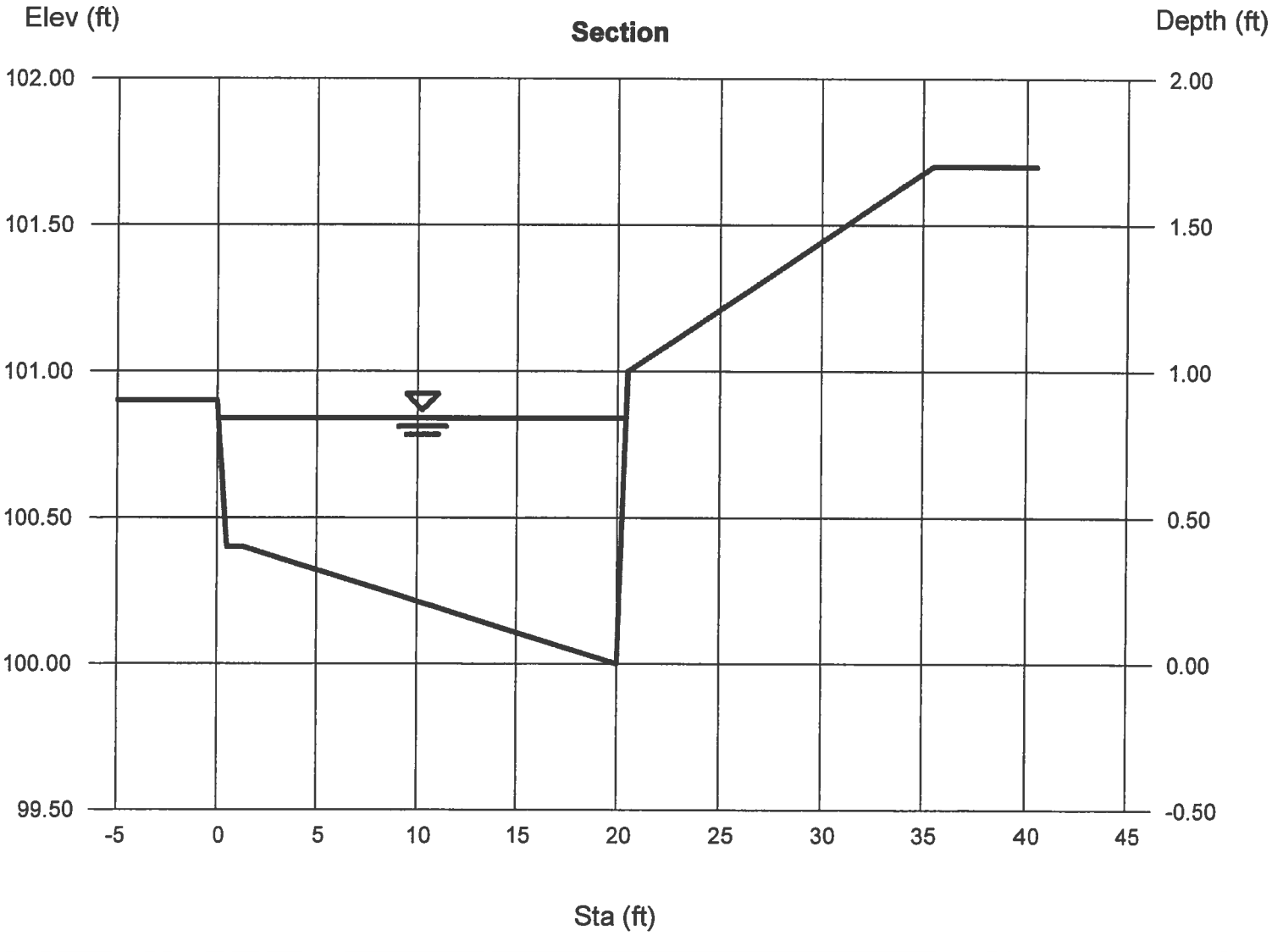
Compute by:	Known Q
Known Q (cfs)	= 55.70

Highlighted

Depth (ft)	= 0.84
Q (cfs)	= 55.70
Area (sqft)	= 12.59
Velocity (ft/s)	= 4.43
Wetted Perim (ft)	= 21.07
Crit Depth, Yc (ft)	= 0.84
Top Width (ft)	= 20.36
EGL (ft)	= 1.14

(Sta, El, n)-(Sta, El, n)...

(0.00, 100.90)-(0.50, 100.40, 0.013)-(1.33, 100.40, 0.017)-(20.00, 100.00, 0.017)-(20.50, 101.00, 0.013)-(35.50, 101.70, 0.017)



AP4

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. Thursday, Feb 10 2011

1756 Brunacini Building - Shotcrete Rundown in AMAFCA R/W

Trapezoidal

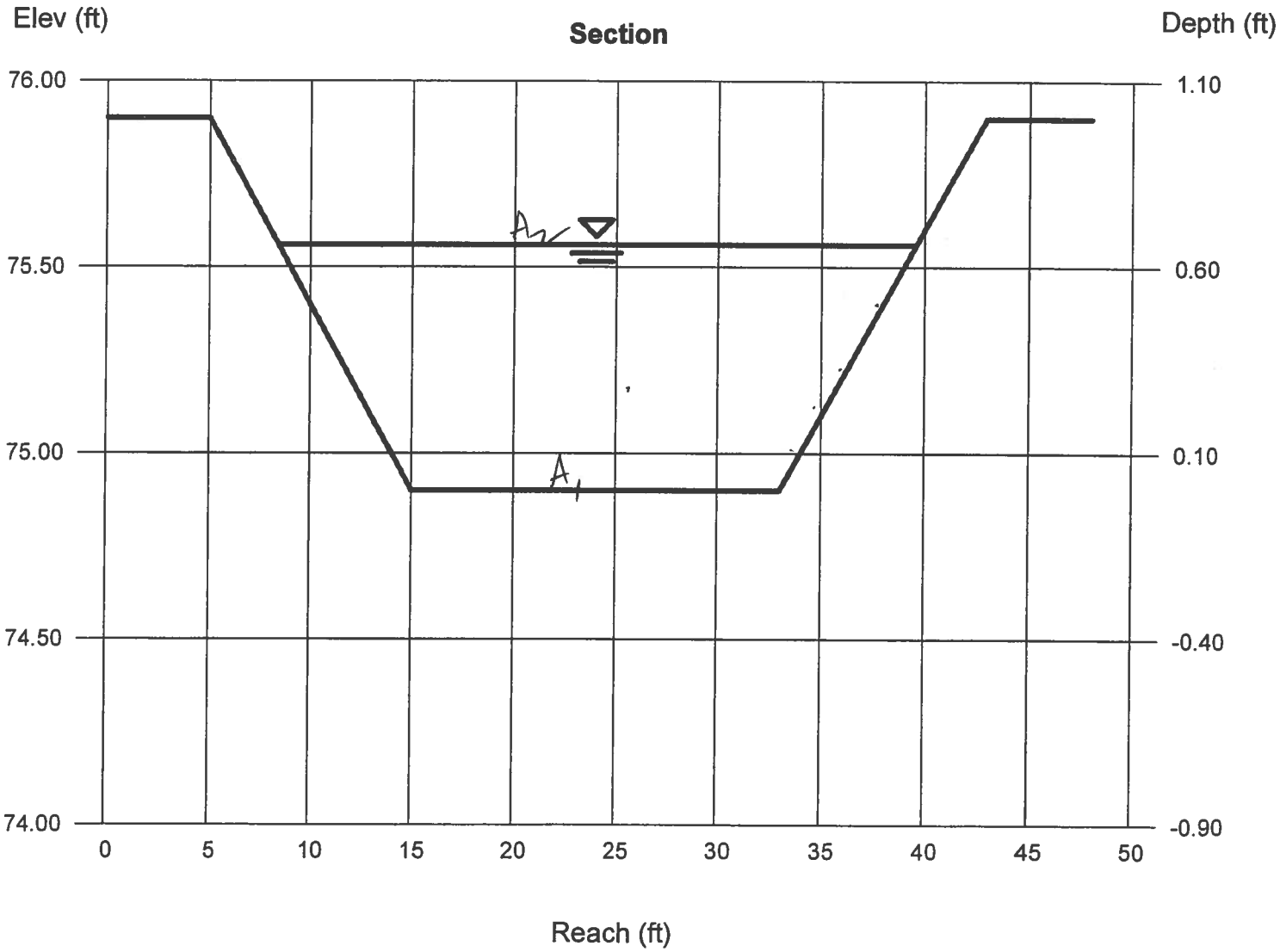
Bottom Width (ft)	= 18.00
Side Slopes (z:1)	= 10.00, 10.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 74.90
Slope (%)	= 0.75
N-Value	= 0.018

Calculations

Compute by:	Known Q
Known Q (cfs)	= 74.00

Highlighted

Depth (ft)	= 0.66
Q (cfs)	= 74.00
Area (sqft)	= 16.24
Velocity (ft/s)	= 4.56
Wetted Perim (ft)	= 31.27
Crit Depth, Yc (ft)	= 0.71
Top Width (ft)	= 31.20
EGL (ft)	= 0.98



SEDIMENT CONTROL POND

0.25" OVER TOTAL AREA OF ONSITE AND OFFSITE BASINS

Maximum Pond Volume = 0.25 inches x 728954.53 SF = **15,187** **CF**

TREATMENT POND VOLUME
BRUNACINI JOURNAL CENTER
1/24/2011

ELEV	AREA (SF)	VOLUME (CF)	ADD'L VOL (CF) [1]	SUM VOL (CF)	SUM VOL (Ac-ft)
70.7	2542.874				
		769.6	1,726.0 ✓		
71	2587.673			2,495.6	0.057292
		2,656.1	28.3		
72	2724.47			5,180.0	0.118916
		2,783.5	28.3		
73	2842.545			7,991.8	0.183465
		2,892.6	28.3		
74	2942.615			10,912.6	0.250519
		2,984.0	28.3		
75	3025.387			13,924.9 ✓	0.319671

NOTES:

(1) Additional volume based on 30% voids in gravel bed, and capacity in perforated pipes, 6' dia manhole, 24" SD and sump for pump. See calcs below.

Gravel bed volume:			
3' deep x 1516.4 sf area x 30% voids =	1,364.8		
Perforated pipes			
8" dia x 60 lf x 3 pipes =	62.8		
6' dia manhole			
3' deep x 6' dia =	84.8		
24" storm drain			
24" dia x 32 lf =	100.5		
6' dia sump for pump at 71.0 elev			
4' deep x 6' dia =	113.1		
	1,726.0	total below bottom of pond	
6' dia sump for pump for each addn'l foot of elev			
1' deep x 6' dia =	28.3		

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. Thursday, Feb 10 2011

1756 Brunacini Building - Stormwater Treatment Pond Inlet Weirs (Divide Width by 3

Rectangular

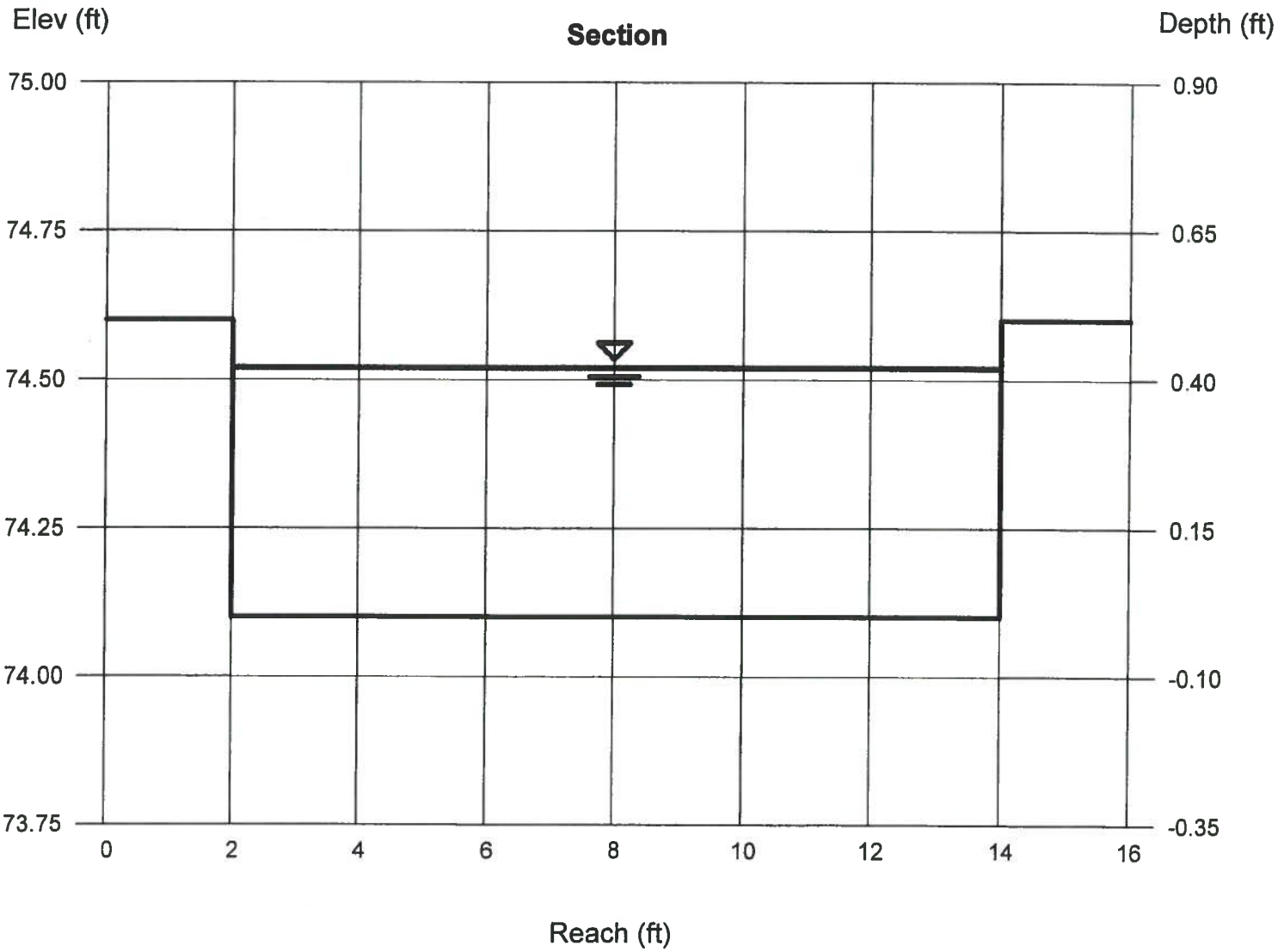
Bottom Width (ft)	= 12.00
Total Depth (ft)	= 0.50
Invert Elev (ft)	= 74.10
Slope (%)	= 0.10
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 9.50

Highlighted

Depth (ft)	= 0.42
Q (cfs)	= 9.500
Area (sqft)	= 5.04
Velocity (ft/s)	= 1.88
Wetted Perim (ft)	= 12.84
Crit Depth, Yc (ft)	= 0.27
Top Width (ft)	= 12.00
EGL (ft)	= 0.48



PERFORATED PIPE CALCULATIONS

(Using Orifice Equation)

Project Name: **Brunacini**

Project #: **1756**

100-year WSEL =	5074.9	ft
Bottom of Gravel Pit ELEV =	5071.9	ft
Maximum discharge (Q_{max}) =	2.5	cfs
Diameter of pipe =	8	in

Orifice Equation: $Q = CA(2gH)^{1/2}$

C = 0.60 (sharp edged hole)

g = 32.2 ft/s^2

HOLE CALCULATIONS

ELEVATION AT CENTER OF HOLE	HOLE DIAMETER (in.)	HOLE AREA (sq. ft.)	# OF HOLES AT THIS LEVEL	H (ft)	Q PER HOLE (cfs)	TOTAL Q AT THIS LEVEL (cfs)
5069.73	0.5	0.001	177	5.17	0.01	*2.64*
5069.44	0.5	0.001	177	5.46	0.02	*2.71*

TOTAL Q WITHOUT CLOGGING = 5.35

TOTAL Q WITH 50% CLOGGING = ***2.68***

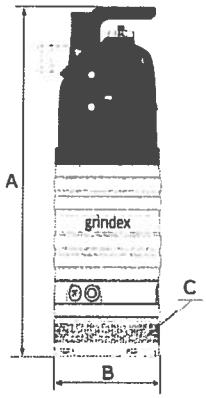
Convert to GPM for pump calcs = ***1201.73***

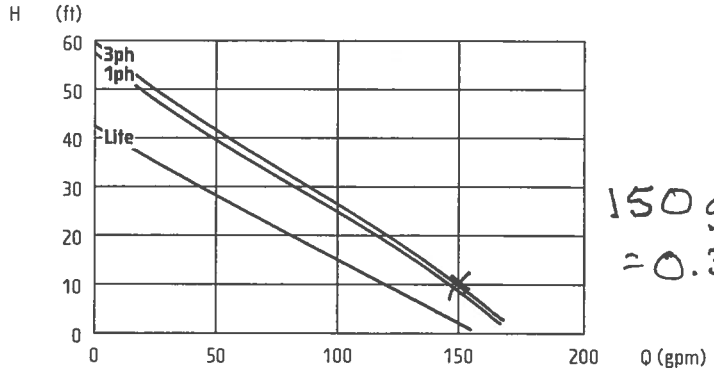
No: PD601171-INT | Revision 7 2009.09 | 60 Hz 8101.171

Minex

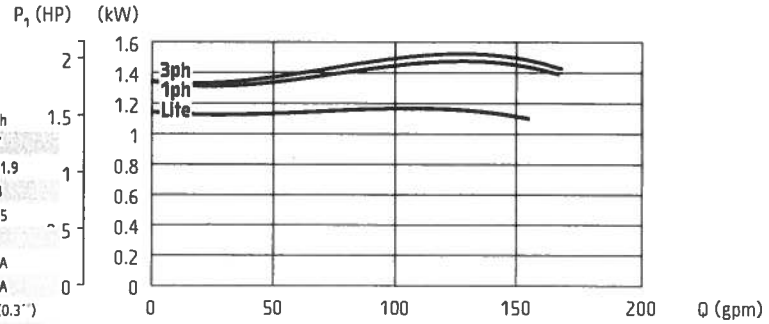
Electrical submersible drainage pump

grindex





150 gpm
= 0.33 cfs



60 Hz	Lite 1-ph	1-ph	3-ph
Discharge connection	2"	2"	2"
Rated power P_2 [kW/HP]	0.97 / 1.3	1.5 / 2	1.4 / 1.9
Max. power consumption P_1 [kW]	1.3	1.8	1.8
Shaft speed [r.p.m.]	3400	3460	3335
Rated current at 115V	11 A	-	-
Rated current at 230V	5.6 A	8.2 A	5.2 A
Rated current at 460V	-	-	2.6 A
Solids passage	7.5 mm (0.3")	7.5 mm (0.3")	7.5 mm (0.3")
Dimensions A / B / C	570 / 195 / 7.5 mm	610 / 195 / 7.5 mm	570 / 195 / 7.5 mm
Dimensions A / B / C	22½ / 7¾ / 0.3"	24 / 7¾ / 0.3"	22½ / 7¾ / 0.3"
Weight	21 kg (47 lbs)	24 kg (54 lbs)	21 kg (47 lbs)

Other voltages on request

ISO 9906/A

Classification
Electrical submersible drainage pump
Protection class: IP 68

Electrical motor
1-phase: Squirrel cage induction motor with start and run capacitor
3-phase: Squirrel cage induction motor
Insulation class: F (IEC 85)

Motor protection
1-phase: Temperature guard with a thermal contact in stator opening temperature 125°C (257°F), air valve
3-phase: Phase sequence control, phase failure guard, temperature guard with thermal contacts in the stator opening temperature 125°C (257°F) (= SMART system), air valve

Cable - SubCab
1-phase: 3G1,5mm², 20 m (66 ft) / 14AWG/3, 53 ft
3-phase: 4G1,5mm², 20 m (66 ft) / 14AWG/4, 53 ft

Limitations
Max. submersion depth: 20 m (66 ft)
Max. liquid temperature: 40 °C (104 °F)
Allowed pH range: 5 - 8
Maximum liquid density: 1100 kg/m³ (68 lbs/ft³)

Shaft seals
Cartridge seal: pre-assembled double mechnical seal running in an oil compartment
Material lower seal: *tungsten carbide - tungsten carbide*
Material upper seal: *tungsten carbide - tungsten carbide*

Bearings
Ball bearings with C3 clearance

Discharge connection
2" hose, ISO-G or NPT

Materials
Casted parts: *Aluminium*
Outer casing: *Stainless steel*
Motor shaft: *Stainless steel*
Impelier: *Hard-Iron™*
Diffusers: *Nitrile rubber*
Screws and nuts: *Stainless steel*
O-rings: *Nitrile rubber*

Accessories
Float switch (max 400 V)
Zinc anodes
Low suction collar
Pump raft

Specifications can be changed without notice

POND SIZING

9.5 cfs IN
0.33 cfs OUT

```
    AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02d
         RUN DATE (MON/DAY/YR) = 02/09/2011
         START TIME (HR:MIN:SEC) = 14:29:23     USER NO.= AHYMO-I-9702dIsa-Arfman1
         INPUT FILE = 17561stf.txt

*S**************************************************************************
*S          BRUNACINI
*S          FIRST FLUSH STORM
*S          17561STF.DAT
*S          FEB 09,2011
*S          GENNY DONART
*S          ISAACSON & ARFMAN, P.A.
*S**************************************************************************
*S          HYDROLOGIC MODEL FOR FIRST FLUSH TREATMENT
*S          100-year, 6-hour storm
*S
*S          PRECIPITATION:
*S          P15 =       1.06"
*S          P60 =       1.77"
*S          P360 =      2.37"
*S          P1440 =     2.68"
*S
*S          LAND TREATMENT ASSUMPTIONS:
*S          DEVELOPED AREAS:
*S          DETERMINE THE PERCENT OF IMPERVIOUS AREA (LAND TREATMENT TYPE "D")
*S          FROM SECTION 22.2 OF THE D.P.M. FOR ALBUQUERQUE, VOL. 2, TABLE 5
*S**************************************************************************
START               RAINFALL BEGINS AT 0.0 HRS
RAINFALL            TYPE=1
                    RAIN QUARTER=1.06
                    RAIN ONE=1.77
                    RAIN SIX=2.37
                    RAIN DAY=2.68
                    DT=0.033333 HRS

               COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =    .033333 HOURS       END TIME =     5.999940 HOURS
                  .0000   .0055   .0110   .0167   .0225   .0284   .0345
                  .0406   .0470   .0534   .0600   .0668   .0737   .0808
                  .0881   .0956   .1033   .1113   .1195   .1279   .1366
                  .1456   .1550   .1646   .1747   .1851   .1961   .2075
                  .2194   .2319   .2452   .2501   .2553   .2609   .2729
                  .2998   .3412   .4006   .4818   .5884   .7243   .8935
                 1.1000  1.2911  1.3710  1.4385  1.4986  1.5532  1.6035
                 1.6502  1.6938  1.7347  1.7732  1.8095  1.8438  1.8763
                 1.9071  1.9363  1.9639  1.9902  2.0152  2.0215  2.0276
                 2.0335  2.0392  2.0447  2.0501  2.0553  2.0603  2.0653
                 2.0701  2.0748  2.0794  2.0839  2.0883  2.0926  2.0969
                 2.1010  2.1051  2.1091  2.1131  2.1170  2.1208  2.1246
                 2.1283  2.1320  2.1356  2.1392  2.1427  2.1462  2.1497
                 2.1531  2.1564  2.1597  2.1630  2.1663  2.1695  2.1726
                 2.1758  2.1789  2.1820  2.1850  2.1881  2.1910  2.1940
                 2.1969  2.1999  2.2027  2.2056  2.2084  2.2113  2.2140
                 2.2168  2.2196  2.2223  2.2250  2.2277  2.2303  2.2330
                 2.2356  2.2382  2.2408  2.2433  2.2459  2.2484  2.2509
                 2.2534  2.2559  2.2584  2.2608  2.2633  2.2657  2.2681
                 2.2705  2.2729  2.2752  2.2776  2.2799  2.2822  2.2845
                 2.2868  2.2891  2.2914  2.2937  2.2959  2.2981  2.3004
                 2.3026  2.3048  2.3070  2.3091  2.3113  2.3135  2.3156
                 2.3177  2.3199  2.3220  2.3241  2.3262  2.3283  2.3303
                 2.3324  2.3345  2.3365  2.3385  2.3406  2.3426  2.3446
                 2.3466  2.3486  2.3506  2.3526  2.3545  2.3565  2.3584
                 2.3604  2.3623  2.3643  2.3662  2.3681  2.3700

*  ENTIRE TREATMENT AREA
COMPUTE NM HYD      ID=1  HYD NO=101  AREA=0.02614766 SQ MI
                    PER A=0  PER B=5  PER C=10  PER D=85
                    TP=-0.1333 HR   MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   87.748    CFS   UNIT VOLUME =    .9992       B =   526.28      P60 = 1.7700
     AREA =      .022226 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


     K =   .114076HR    TP =   .133300HR    K/TP RATIO =   .855787     SHAPE CONSTANT, N =  4.156993
     UNIT PEAK =   10.754    CFS   UNIT VOLUME =    .9990       B =   365.50      P60 = 1.7700
     AREA =      .003922 SQ MI    IA =    .40000 INCHES    INF =    .97000 INCHES PER HOUR
```

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.92881 INCHES = 2.6898 ACRE-FEET
PEAK DISCHARGE RATE = 65.66 CFS AT 1.500 HOURS BASIN AREA = .0261 SQ. MI.

DIVIDE HYD ID=1 Q=9.5 CFS ID ONE=2 HYD ONE=102
ID TWO=3 HYD TWO=103

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.92880 INCHES = 1.2578 ACRE-FEET
PEAK DISCHARGE RATE = 9.50 CFS AT 1.300 HOURS BASIN AREA = .0122 SQ. MI.

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.92880 INCHES = 1.4320 ACRE-FEET
PEAK DISCHARGE RATE = 56.16 CFS AT 1.500 HOURS BASIN AREA = .0139 SQ. MI.

* TREATMENT POND WITH SUMP PUMP
ROUTE RESERVOIR ID=10 HYD NO=110 INFLOW ID=2 CODE=5

OUTFLOW(CFS)	STORAGE(AF)	ELEV(FT)
0	0	70.7
0.326	0.057292	71.0
0.328	0.118916	72.0
0.330	0.183465	73.0
0.332	0.250519	74.0
9.5	0.319671	75.0

1 hours
.33 cfs/sec 2 ft.

? .332

* * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	70.70	.000	.00
.17	.00	70.70	.000	.00
.33	.00	70.70	.000	.00
.50	.00	70.70	.000	.00
.67	1.47	70.73	.006	.03
.83	2.94	70.89	.036	.21
1.00	3.88	71.35	.079	.33
1.17	2.89	72.10	.125	.33
1.33	9.50	73.43	.212	.33
1.50	9.50	74.72	.300	6.92
1.67	9.50	74.96	.317	9.09
1.83	9.50	74.99	.319	9.44
2.00	9.50	75.00	.320	9.49
2.17	7.09	74.94	.316	8.97
2.33	3.56	74.52	.287	5.14
2.50	2.38	74.30	.272	3.13
2.67	1.73	74.20	.264	2.12
2.83	1.36	74.14	.260	1.58
3.00	1.13	74.10	.258	1.26
3.17	.98	74.08	.256	1.07
3.33	.89	74.07	.255	.94
3.50	.83	74.06	.255	.86
3.67	.79	74.05	.254	.81
3.83	.77	74.05	.254	.78
4.00	.75	74.05	.254	.76
4.17	.74	74.05	.254	.75
4.33	.74	74.04	.254	.74
4.50	.73	74.04	.254	.73
4.67	.73	74.04	.254	.73
4.83	.74	74.04	.254	.73
5.00	.74	74.04	.254	.74
5.17	.75	74.04	.254	.74
5.33	.76	74.05	.254	.75
5.50	.76	74.05	.254	.76
5.67	.78	74.05	.254	.77
5.83	.79	74.05	.254	.78
6.00	.81	74.05	.254	.80
6.17	.32	74.03	.253	.60
6.33	.09	73.98	.249	.33
6.50	.04	73.93	.246	.33
6.67	.02	73.86	.241	.33
6.83	.01	73.80	.237	.33
7.00	.00	73.73	.232	.33
7.17	.00	73.66	.228	.33
7.33	.00	73.60	.223	.33
7.50	.00	73.53	.219	.33
7.67	.00	73.46	.214	.33
7.83	.00	73.39	.210	.33
8.00	.00	73.32	.205	.33
8.17	.00	73.26	.201	.33
8.33	.00	73.19	.196	.33
8.50	.00	73.12	.192	.33
8.67	.00	73.05	.187	.33
8.83	.00	72.98	.182	.33
9.00	.00	72.91	.178	.33
9.17	.00	72.84	.173	.33
9.33	.00	72.77	.169	.33
9.50	.00	72.70	.164	.33
9.67	.00	72.63	.160	.33
9.83	.00	72.56	.155	.33
10.00	.00	72.49	.151	.33
10.17	.00	72.42	.146	.33
10.33	.00	72.35	.142	.33
10.50	.00	72.28	.137	.33
10.67	.00	72.21	.133	.33
10.83	.00	72.14	.128	.33
11.00	.00	72.07	.124	.33
11.17	.00	72.00	.119	.33
11.33	.00	71.93	.114	.33

1.5 hrs into storm Pond is full

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)	TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
11.50	.00	71.85	.110	.33	15.67	.00	70.81	.020	.11
11.67	.00	71.78	.105	.33	15.83	.00	70.80	.019	.11
11.83	.00	71.71	.101	.33	16.00	.00	70.79	.017	.10
12.00	.00	71.63	.096	.33	16.17	.00	70.78	.016	.09
12.17	.00	71.56	.092	.33	16.33	.00	70.78	.015	.08
12.33	.00	71.49	.087	.33	16.50	.00	70.77	.014	.08
12.50	.00	71.42	.083	.33	16.67	.00	70.77	.013	.07
12.67	.00	71.34	.078	.33	16.83	.00	70.76	.012	.07
12.83	.00	71.27	.074	.33	17.00	.00	70.76	.011	.06
13.00	.00	71.20	.069	.33	17.17	.00	70.75	.010	.06
13.17	.00	71.12	.065	.33	17.33	.00	70.75	.009	.05
13.33	.00	71.05	.060	.33	17.50	.00	70.74	.009	.05
13.50	.00	70.99	.056	.32	17.67	.00	70.74	.008	.04
13.67	.00	70.97	.052	.29	17.83	.00	70.74	.007	.04
13.83	.00	70.95	.048	.27	18.00	.00	70.74	.007	.04
14.00	.00	70.93	.044	.25	18.17	.00	70.73	.006	.04
14.17	.00	70.91	.041	.23	18.33	.00	70.73	.006	.03
14.33	.00	70.90	.038	.22	18.50	.00	70.73	.005	.03
14.50	.00	70.88	.035	.20	18.67	.00	70.73	.005	.03
14.67	.00	70.87	.032	.18	18.83	.00	70.72	.005	.03
14.83	.00	70.86	.030	.17	19.00	.00	70.72	.004	.02
15.00	.00	70.84	.028	.16	19.17	.00	70.72	.004	.02
15.17	.00	70.83	.026	.15	19.33	.00	70.72	.004	.02
15.33	.00	70.82	.024	.13	19.50	.00	70.72	.003	.02
15.50	.00	70.81	.022	.12	19.67	.00	70.72	.003	.02
					19.83	.00	70.71	.003	.02

PEAK DISCHARGE = 9.497 CFS - PEAK OCCURS AT HOUR 2.10
MAXIMUM WATER SURFACE ELEVATION = 75.000
MAXIMUM STORAGE = .3196 AC-FT INCREMENTAL TIME= .033333HRS

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 1.92473 INCHES = 1.2552 ACRE-FEET
PEAK DISCHARGE RATE = 9.50 CFS AT 2.100 HOURS BASIN AREA = .0122 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:29:23