

APPENDIX A



March 26, 2014

Mr. M. Joseph Fayyad
Federal Energy Regulatory Commission
Washington, DC 20426

VIA eFiling & E-Mail

**Re: Ice House Partners, Inc.
Project No. 12769-000
Supplemental Information Request - Accession No: 201402105023, 201402105024**

Dear Mr. Fayyad:

As per your request and for your review and comment, I have included the gallons per day (GPD) calculation for the notched weir board at our site on the Nashua River, in Ayer, Massachusetts.

I have also attached a drawing showing the dimensions of the minimum flow "notch" and the reference sheets we used for the basis of our calculation.

Calculation of GPD at Notched Weir

402 GPM	at	one foot width	by 5" deep	* See reference sheet
402	x	60	minutes	24,120
24,120	x	2	feet (width of notch)	48,240
48,240	x	24	hours	1,157,760
				GPD

Please do not hesitate to contact me, if your need additional information. I can be reached at (978)772-3303 or by e-mail at liisa@gradyresearch.com.

Respectfully submitted,

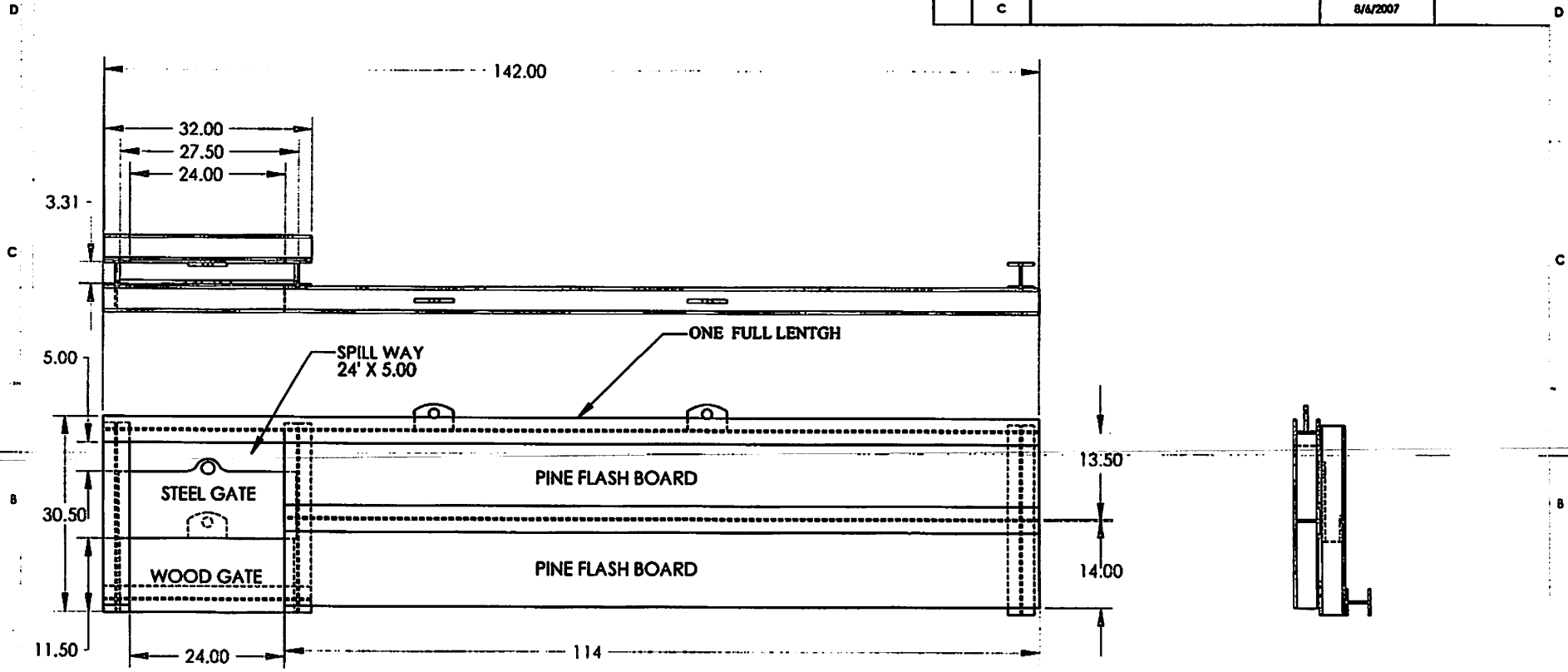
Liisa Marino, VP
ICE HOUSE PARTNERS, INC.

Enclosure

8 7 6 5 4 3 2 1

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	B	AS BUILT	8/3/2007	
	C		8/6/2007	



8 7 6 5 4 3 2 1

ITEM NO.	PART OR COMPONENT NO.	NON-DETAILED OR DESCRIPTION	MATERIAL SPECIFICATION	QTY REQD.
PARTS LIST				
UNLESS OTHERWISE SPECIFIED TOLERANCES ARE IN INCHES				
FRACIONS DECIMALS ANGLES				
*1/64 .0015 .015				
DRAWN: JOL SH S I				
CHECKED: JOL SH S I				
DATE: 8/3/07				
APPROVALS: KED				
DATE: 8/3/07				
MATERIAL: -				
TESTING: -				
MFG ENG: -				
DRAWING: -				
DO NOT SCALE DRAWING				

grady research, Inc

CUT OUT FLASH BOARD ASSM.

part num

SCALE: 1/8" = 1"

SHEET 1 OF 1



for reference

Celebrate 100 Years of Extension



Content from: <http://haywood.ces.ncsu.edu/WaterFlowEstimateOveraWeir/>

Water Flow Estimate Over a Weir

DEPTH (INCHES)	DISHCHARGE PER FOOT OF WEIR	
	WIDTH CFS	GPM
1/2	.03	13
3/4	.05	24
1	.08	36
1 1/4	.11	50
1 1/2	.15	66
1 3/4	.19	83
2	.23	102
2 1/4	.27	122
2 1/2	.32	142
2 3/4	.36	164
3	.42	187
3 1/4	.47	211
3 1/2	.53	236
3 3/4	.58	262
4	.64	287
4 1/4	.70	315
4 1/2	.77	343
4 3/4	.83	372
5	.90	402
5 1/4	.97	433
5 1/2	1.03	463
5 3/4	1.10	495
6	1.18	528

DEPTH (INCHES)	DISHCHARGE PER FOOT OF WEIR	
	WIDTH CFS	GPM
7	1.48	665
7 1/4	1.56	702
7 1/2	1.65	738
7 3/4	1.73	776
8	1.81	814
8 1/4	1.90	853
8 1/2	1.98	890
8 3/4	2.07	930
9	2.16	971
9 1/4	2.25	1012
9 1/2	2.35	1053
9 3/4	2.44	1096
10	2.53	1136
10 1/4	2.63	1179
10 1/2	2.73	1223
10 3/4	2.82	1268
11	2.92	1312
11 1/4	3.03	1358
11 1/2	3.12	1401
11 3/4	3.23	1448
12	3.33	1495

6 1/4	1.25	562
6 1/2	1.33	596
6 3/4	1.41	631

*cfs = cubic feet per second

*gpm = gallons per minute

Use the above table to estimate the water flow over damboards or similar devices. In a stream without such a device, a wooden board (1 inch x 6 inches or 1 inch x 8 inches) can be placed on edge in the stream from bank to bank so that the water flows over the board. Once the average depth and the width of the water over the weir is measured with a ruler (Figure 1), use the table to estimate the flow.

For example:

water depth = 1.5 inches

weir width = 3 feet

flow estimate = 3 x 66 or 198 gallons per minute

from: King's "Handbook of Hydraulics", Fourth Edition, Table 36.

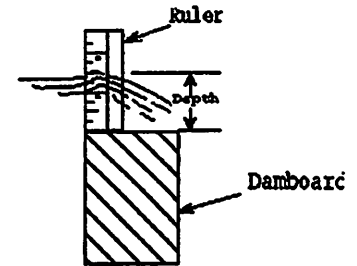


Figure 1

APPENDIX B

From: [Slater, Caleb \(MISC\)](#)
To: [Liisa Marino](#)
Subject: RE: Ice House Project
Date: Wednesday, March 14, 2012 12:28:38 PM

OK great. I will wait for the next nice day and give you a call before I arrive.

Caleb



Caleb Slater, PhD
Anadromous Fish Project Leader
Massachusetts Division of Fisheries and Wildlife
(508) 389-6331

From: Liisa Marino [mailto:liisa@gradyresearch.com]
Sent: Wednesday, March 14, 2012 12:27 PM
To: Slater, Caleb (FWE)
Subject: RE: Ice House Project

I am here pretty much every MON- FRI, 8:30 – 5.
Usually I have to leave in the afternoons ~ 3:30 to pick my son up from school and then I am back.

You are welcome ANY time.
Just give me a heads up – when it works for you. Shouldn't be an issue...

Thanks.
Liisa

From: Slater, Caleb (MISC) [mailto:caleb.slater@state.ma.us]
Sent: Wednesday, March 14, 2012 12:23 PM
To: liisa@gradyresearch.com
Subject: Ice House Project

Liisa,

I see that you are now generating power. I'd like to come by this spring and see the project in operation. When would be good for you?

Caleb

From: Slater, Caleb (MISC)
To: Liisa Marino
Subject: RE: 2012 Ice House Partners Annual Inspection, Repair and Maintenance Schedule
Date: Tuesday, August 07, 2012 8:17:35 AM

Very good.

I still want to come out and see the plant in operation.

Any eels?

Caleb



Caleb Slater, PhD
Anadromous Fish Project Leader
Massachusetts Division of Fisheries and Wildlife
(508) 389-6331

From: Liisa Marino [mailto:liisa@gradyresearch.com]
Sent: Friday, August 03, 2012 3:42 PM
To: 'Becky DaSilva-Conde'; conservation@shirley-ma.gov; bdasilva-conde@ayer.ma.us; John_Warner@fws.gov; Slater, Caleb (FWE); EAC@NashuaRiverWatershed.org; diane@nashobapaddler.com; 'Poole, Tom Mr CIV USA IMCOM'; dblazon@massdevelopment.com
Cc: ksimons@gradyresearch.com; jkg@gradyresearch.com
Subject: 2012 Ice House Partners Annual Inspection, Repair and Maintenance Schedule

Good Afternoon-

I wanted to throw out some dates for our planned annual drawdown for inspection and maintenance activities at the Ice House Dam.

Thanks to the Permit Extension Law (<http://www.mass.gov/hed/economic/eohed/pro/zoning-laws/permit-extension-act.html>) our new expiration date for the Order(s) of Conditions issues in Ayer (100-321) and Shirley (284-408) are April 2014 and February 2014, respectively. Therefore our request to extend the OOCs – will be sent a few months prior to these expiration dates. This is just by means of an FYI to the distribution list – on our local permitting status.

We are targeting the consecutive weeks of September 10, 2012 and September 17, 2012 for our activity period. Last year, we had a request to try and keep the work confined to the period between Labor Day and Columbus Day. As you may remember, we were unable to ever lower the water enough last year to tackle the projects we had planned to accomplish due to the significant rainfall we experienced in that same window.

In other news, we finally began to sell power back to the grid in March of this year and have recently signed a long term power purchase agreement with Littleton Electric, so they will be buying the hydropower we export. This is a great opportunity to keep everything “local”. We are very excited about the partnership. We are also now selling our RECs (Renewable Energy

Certificates) – and have recently completed our first sale to a group that is consolidating various Class I MA RECs for sale. So far, 2012 has been a great year for us – quite rewarding after a decade of hard work in many areas.

As always, visits – concerns, questions, comments are welcome.

Thanks and have a great weekend!

Liisa Marino, VP

Ice House Partners, Inc.

No virus found in this message.

Checked by AVG - www.avg.com

Version: 2012.0.2197 / Virus Database: 2437/5248 - Release Date: 09/04/12

From: [Liisa Marino](#)
To: ["Slater, Caleb \(MISC\)" \(caleb.slater@state.ma.us\)](#)
Subject: Visit?
Date: Wednesday, November 20, 2013 2:43:00 PM

Hey Caleb-

Just thought I would send you a note – inviting you to come by one of these days to take a look at our bypass reach area – since we are in pretty low flow conditions these days.

I still have this as a semi-open item on our exemption and with LIHI – as we had previously agreed to have you take a look at the project, during low flow conditions once operational.

So, let me know if you will be in the area anytime soon.

You are welcome anytime.

Hope all is well!

Best.

Liisa Marino
Ice House Partners, Inc.
978-772-3303

From: [Slater, Caleb \(MISC\)](#)
To: [Liisa](#)
Subject: Ice House Bypass reach
Date: Tuesday, November 26, 2013 9:25:14 AM

Liisa,

As we discussed while I was on site last Friday November 22, the Bypass Reach of the Ice House Project looks fine with the project operating and the minimum flow spilling from the dam. The river backwaters to within <100 feet of the dam, and the minimum flow seems to be more than adequate to keep the pool below the dam and the remainder of the bypass reach flowing at the conditions I witnessed.

Caleb



Caleb Slater, PhD

Anadromous Fish Project Leader

Massachusetts Division of Fisheries and Wildlife

PLEASE NOTE NEW FIELD HEADQUARTERS ADDRESS (Phones and Emails have not changed.)

Mass. Division of Fisheries & Wildlife

100 Hartwell Street, Suite 230

West Boylston MA 01583

508-389-6331

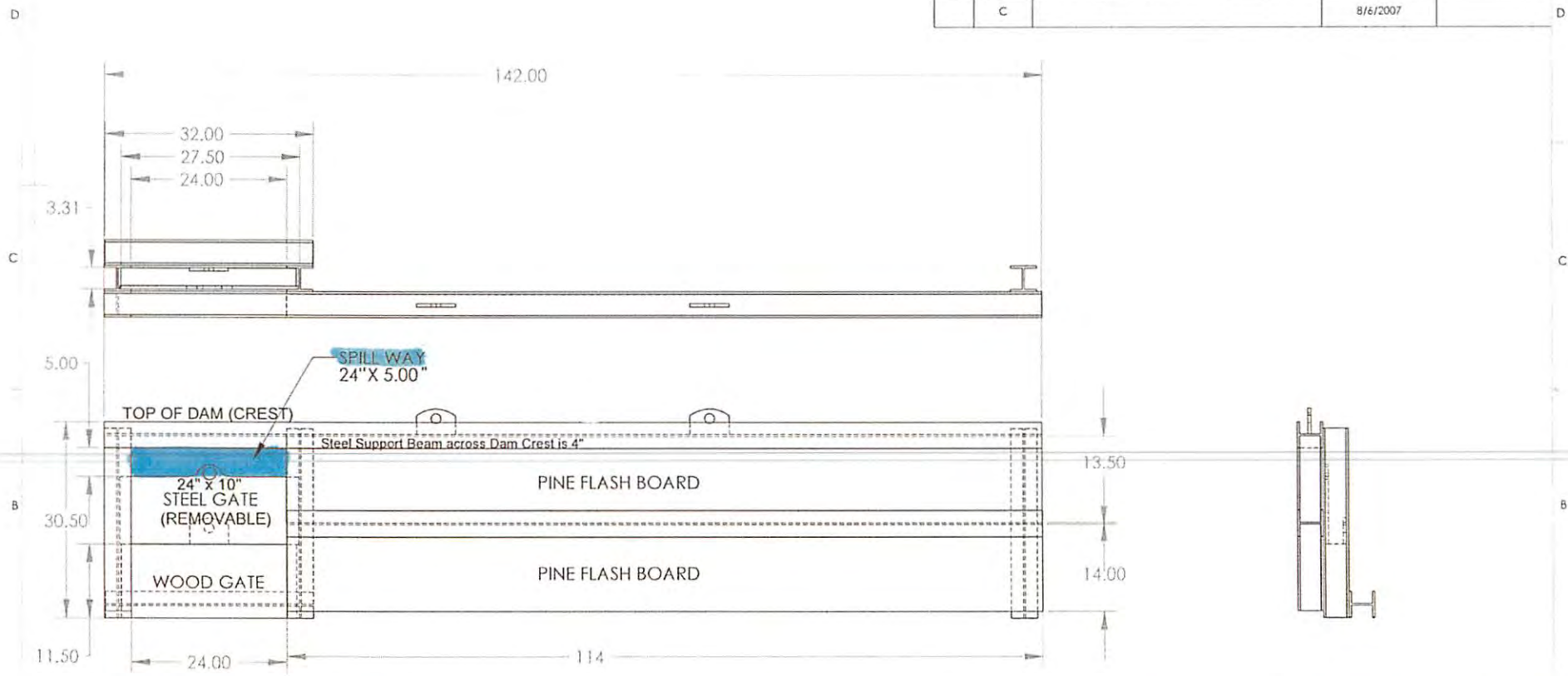
www.mass.gov/masswildlife

APPENDIX C

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	C		8/6/2007	



NOTE: The 24" x 10" removable Steel Gate can be removed during inspection and maintenance activities, when the water height needs to be lowered below the 4" limit - thereby preserving the minimum bypass flow in all conditions.

ITEM NO.	PART OR IDENTIFYING NO.	QUANTITY	DESCRIPTION	MATERIAL SPECIFICATION	QTY REQD
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES					
*1/64 .001 .01 ± 1					
DRAWN: KES DATE					
CHECKED					
MATERIAL					
PINE					
MFG ENG					
QUAL ENG					
DO NOT SCALE DRAWING					

CAD GENERATED DRAWING
DO NOT MANUALLY UPDATE

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CUT OUT FLASH BOARD ASSM.

SEE DWS NO. 8 part num
SCALE: 1:1 CAD FILE

REV. C
SHEET 1 OF 1