

**From:** [McAbee, Kevin](#)  
**To:** [Crane, Drew](#)  
**Subject:** Re: Fish screen structure  
**Date:** Monday, March 04, 2013 7:15:55 AM

---

well 1) manatees may not swim that well and 2) they may be in a slow moving bay or something (with water conditions like a lake) that makes it hard to reduce approach velocity. But that is a big critter to suck onto a screen. But honestly, that's an easy solution. you build an outer "cage" around the intake (four to five feet out with like 4 inch gaps between bars). the farther you are from the intake, the exponentially reduced intake velocity you have and a manatee can swim in a four inch space.

On Mon, Mar 4, 2013 at 9:12 AM, Crane, Drew <[drew\\_crane@fws.gov](mailto:drew_crane@fws.gov)> wrote:

I think your math is correct but the 2 million gal/day is the low end and the automatic trigger for complying with the rule. I guess there are facilities with enough intake velocity that they impinge manatees. That has to be crazy suction or someone is making stuff up.

Thanks for the info!

On Mon, Mar 4, 2013 at 11:07 AM, McAbee, Kevin <[kevin\\_mcabee@fws.gov](mailto:kevin_mcabee@fws.gov)> wrote:

2 million gallons a day = 2,240 acre-feet per year = 3.09 constant CFS for a year. (you SHOULD double check me). So that is orders of magnitude smaller than the projects we work on out here and should be easy to screen. My Uintah pumping station was 20 to 53 cfs, screened down to 3/32 inch; Also Reclamation has rotating screens that protect up in the hundreds of cfs in Colorado.

So I think your project should be quite easy to accomplish. The big question is fish swimming ability (depends on size, age, temperature, conditions, and species) and the "approach velocity" for impingement. That is a factor of surface area, intake volume, and "sweeping velocity" (the velocity of water rushing past the intake).

If these projects are on lakes, it will be somewhat harder of a task, because lakes don't have sweeping velocity.

Read these two docs and you should be all set. I have a ton more literature from the NW if you need it.

kev

On Mon, Mar 4, 2013 at 7:23 AM, Crane, Drew <[drew\\_crane@fws.gov](mailto:drew_crane@fws.gov)> wrote:  
Hey Kevin,

It looks like I may be working with NMFS on an EPA revised rule for cooling water intakes (316B) for things like power plants and industry. We are looking at limiting loss of aquatic species through impingement and such (similar to

what you did for the pumping plant on the Green). Do you know what the capacity of that plant was on the Green by Ouray? Does it have the ability to take in 2 million gallons/day? The reason I'm asking is I'm trying to get an idea of size of facilities this rule will cover and what is reasonable in terms of fish screening.

The good news is that Utah currently doesn't have any facility that would fall under the proposed rule that overlaps with T&E fish :)

Thanks  
Drew

--

Kevin McAbee  
Ecologist, Aquatic Endangered and Sensitive Species  
US Fish and Wildlife Service  
Utah Ecological Services Field Office  
2369 West Orton Circle, Suite 50  
West Valley City, UT 84119

office: 801-975-3330 ext 143  
fax: 801-975-3331

<http://www.fws.gov/utahfieldoffice/>

--

Kevin McAbee  
Ecologist, Aquatic Endangered and Sensitive Species  
US Fish and Wildlife Service  
Utah Ecological Services Field Office  
2369 West Orton Circle, Suite 50  
West Valley City, UT 84119

office: 801-975-3330 ext 143  
fax: 801-975-3331

<http://www.fws.gov/utahfieldoffice/>