**To:** slu@dsllc.com[slu@dsllc.com]
**Cc:** Tony Donigian[Tony.Donigian@respec.com]; 'Paul, Sabu'[SPaul@mbakerintl.com]; 'Chris Wallen'[cmwallen@dsllc.com]; Shaikh, Taimur[Shaikh.Taimur@epa.gov]
**From:** Anurag Mishra
**Sent:** Wed 3/7/2018 9:48:23 PM
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

I am going through the UCI files to check it. I will let you know as soon as I have a definite answer.

**ANURAG MISHRA**
650.962.1864 office // 650.395.7224 cell

---

**From:** Silong Lu <slu@dsllc.com>
**Sent:** Wednesday, March 07, 2018 1:45 PM
**To:** Anurag Mishra <Anurag.Mishra@respec.com>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>; 'Paul, Sabu' <SPaul@mbakerintl.com>; 'Chris Wallen' <cmwallen@dsllc.com>; Shaikh Taimur <Shaikh.Taimur@epa.gov>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Anurag, as discussed over the phone, please let us know if this is just a conversion issue for subbasin 946 in your UCI file. As mentioned, for all the other subbasins we checked, TSS numbers seem fine.

---

**From:** Anurag Mishra [mailto:Anurag.Mishra@respec.com]
**Sent:** Wednesday, March 07, 2018 2:31 PM
**To:** slu@dsllc.com
**Cc:** Tony Donigian; 'Paul, Sabu'; 'Chris Wallen'; Shaikh Taimur
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Silong

Could you please email me the PLTGEN file where you are seeing the differences? Best option would be to forward the original email that you received with the PLTGEN data for the calibration model.

Thanks
~A

**ANURAG MISHRA**
650.962.1864 office // 650.395.7224 cell

---

**From:** Silong Lu <slu@dsllc.com>
**Sent:** Friday, March 02, 2018 1:39 PM
**To:** Anurag Mishra <Anurag.Mishra@respec.com>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>; 'Paul, Sabu' <SPaul@mbakerintl.com>; 'Chris Wallen' <cmwallen@dsllc.com>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Hi Anurag,

We randomly checked TSS concentration/loading from different sub-basins and found that the TSS concentration/loading from Subbain 946 is higher than that used in the calibration model and wonder why. TSS concentrations/loadings from the other sub-basins we checked are slightly smaller than those used in the calibration model.

Thanks,

Silong Lu, Ph.D, P.E., D. WRE|Voice: 865-212-3331 Ext 26|Fax: 865-212-3398|Email: slu@dsllc.com|www.dsllc.com

---

**From:** Paul, Sabu [mailto:SPaul@mbakerintl.com]
**Sent:** Thursday, March 01, 2018 6:36 PM
**To:** Chris Wallen (cmwallen@dsllc.com); Silong Lu (slu@dsllc.com)
**Cc:** Anurag Mishra; Tony Donigian

**Subject:** FW: EXTERNAL: RE: Reduction scenario results for EFDC

Hi Chris/Silong,
Attached is the HSPF output for the 1st scenario. Please review and let us know if this is good.

Regards,
Sabu.

---

**From:** Anurag Mishra [mailto:Anurag.Mishra@respec.com]
**Sent:** Thursday, March 01, 2018 6:22 PM
**To:** Tony Donigian <Tony.Donigian@respec.com>; Paul, Sabu <SPaul@mbakerintl.com>; Shaikh Taimur <Shaikh.Taimur@epa.gov>
**Subject:** Re: EXTERNAL: RE: Reduction scenario results for EFDC

Paul/Taim

Please find the EFDC output for 72percent global reduction.

Thanks

~A

---

**From:** Tony Donigian
**Sent:** Thursday, March 1, 2018 11:53:22 AM
**To:** Anurag Mishra; Paul, Sabu; Shaikh Taimur
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Taim/Sabu –
I'm wondering if we should show the # of violations/year, and not the cumulative number over the simulation period?
Any thoughts on this? I'm thinking that might be more interesting … but I'm just an engineer! ☺
Tony
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

**TONY DONIGIAN**

650-962-1864 // 650-962-1868 D // 650-722-2669 C

---

**From:** Anurag Mishra
**Sent:** Thursday, March 01, 2018 11:38 AM
**To:** Paul, Sabu <SPaul@mbakerintl.com>; Shaikh Taimur <Shaikh.Taimur@epa.gov>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Sabu and Taim

I updated the number of violations in the table below and added the 72% global reduction scenario as well. The GeoMean were rounded to three decimal places before a violation was calculated.

I will send EFDC results later by COB today.

Thanks
~A

| | | |
|---|---|---|
| | | max(30-day GeoMean) for TP Concentration [Standard is 0.0 |
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

| DSN ID | Location | Location Name | State | Baseline (Sim0) | Number of Violations | Percent Violations | 69% Global Reduction (Sim1) | Number of Violations | Percent Violations | 72% Global Reduction | Number of Violations | Percent Violations | 75% Global Reduction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6320 | 630 | Illinois River at State Line | AR | 0.119 | 6521 | 99.6 | 0.040 | 13 | 0.2 | 0.037 | 0.0 | 0.0 | 0.034 |
| 9635 | 635 | | OK | 0.119 | 6521 | 99.6 | 0.040 | 12 | 0.2 | 0.037 | 0.0 | 0.0 | 0.034 |
| 9637 | 637 | | OK | 0.121 | 6500 | 99.3 | 0.041 | 8 | 0.1 | 0.038 | 1.0 | 0.0 | 0.035 |
| 6420 | 640 | | OK | 0.121 | 6503 | 99.3 | 0.041 | 8 | 0.1 | 0.038 | 2.0 | 0.0 | 0.035 |
| 9650 | 650 | | OK | 0.123 | 6499 | 99.3 | 0.042 | 9 | 0.1 | 0.039 | 3.0 | 0.0 | 0.036 |
| 9660 | 660 | | OK | 0.129 | 6514 | 99.5 | 0.045 | 42 | 0.6 | 0.042 | 8.0 | 0.1 | 0.039 |
| 9670 | 670 | | OK | 0.133 | 6505 | 99.4 | 0.047 | 60 | 0.9 | 0.043 | 16.0 | 0.2 | 0.040 |
| 9800 | 800 | | OK | 0.144 | 6535 | 99.8 | 0.050 | 144 | 2.2 | 0.047 | 56.0 | 0.9 | 0.043 |
| 9810 | 810 | | OK | 0.145 | 6535 | 99.8 | 0.051 | 145 | 2.2 | 0.047 | 56.0 | 0.9 | 0.043 |
| 9820 | 820 | | OK | 0.146 | 6535 | 99.8 | 0.051 | 142 | 2.2 | 0.047 | 56.0 | 0.9 | 0.044 |
| 9830 | 830 | | OK | 0.147 | 6535 | 99.8 | 0.052 | 161 | 2.5 | 0.049 | 65.0 | 1.0 | 0.045 |
| 9840 | 840 | | OK | 0.150 | 6534 | 99.8 | 0.053 | 168 | 2.6 | 0.049 | 70.0 | 1.1 | 0.046 |
| 9850 | 850 | | OK | 0.153 | 6534 | 99.8 | 0.055 | 184 | 2.8 | 0.051 | 88.0 | 1.3 | 0.047 |
| 9860 | 860 | | OK | 0.159 | 6538 | 99.9 | 0.060 | 369 | 5.6 | 0.056 | 193.0 | 2.9 | 0.052 |
| 8690 | 870 | Illinois River at Tahlequah | OK | 0.165 | 6538 | 99.9 | 0.062 | 394 | 6.0 | 0.058 | 224.0 | 3.4 | 0.054 |
| 9880 | 880 | | OK | 0.170 | 6539 | 99.9 | 0.064 | 463 | 7.1 | 0.060 | 285.0 | 4.4 | 0.056 |
| 9890 | 890 | | OK | 0.174 | 6539 | 99.9 | 0.066 | 554 | 8.5 | 0.062 | 338.0 | 5.2 | 0.058 |

**ANURAG MISHRA**
650.962.1864 office // 650.395.7224 cell

**From:** Paul, Sabu [mailto:SPaul@mbakerintl.com]
**Sent:** Thursday, March 01, 2018 11:15 AM
**To:** Anurag Mishra <Anurag.Mishra@respec.com>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Anurag,
Can you export the results corresponding to 72% for EFDC?

Regards,
Sabu.

---

**From:** Shaikh, Taimur [mailto:Shaikh.Taimur@epa.gov]
**Sent:** Thursday, March 01, 2018 1:29 PM
**To:** Anurag Mishra <Anurag.Mishra@respec.com>; Paul, Sabu <SPaul@mbakerintl.com>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

72% it is.

Thanks Anurag.

Taim.

Taimur A. Shaikh, Ph.D.
Assessment, Listing, and TMDL Section (6WQ-PT)
Water Division | EPA Region 6

---

**From:** Anurag Mishra [mailto:Anurag.Mishra@respec.com]
**Sent:** Wednesday, February 28, 2018 11:54 PM
**To:** Paul, Sabu <SPaul@mbakerintl.com>; Shaikh, Taimur <Shaikh.Taimur@epa.gov>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

With 72% Global Reduction, the max of 30-day Geomean at state line is 0.0373mg/L.
With 73% Global Reduction, the max of 30-day Geomean at state line is 0.0363mg/L.

Depending upon the number of significant digits we are looking at, we can select 72 or 73% Global Reduction.

~A

**ANURAG MISHRA**
650.962.1864 office // 650.395.7224 cell

---

**From:** Paul, Sabu [mailto:SPaul@mbakerintl.com]
**Sent:** Wednesday, February 28, 2018 7:33 AM
**To:** Anurag Mishra <Anurag.Mishra@respec.com>; Shaikh Taimur <Shaikh.Taimur@epa.gov>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Anurag,
Thanks for sending these files. I am guessing we are running these with the 2015 point sources. Should we run the model with point sources at their permit level with design flow? Do you know how they compare – I mean the 2015 load and flow versus the permit/design flow?

Regards,
Sabu.

**From:** Anurag Mishra [mailto:Anurag.Mishra@respec.com]
**Sent:** Tuesday, February 27, 2018 6:56 PM
**To:** Paul, Sabu <SPaul@mbakerintl.com>; Shaikh Taimur <Shaikh.Taimur@epa.gov>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Sabu

The EFDC output for the two scenarios is attached. Both folders have respective UCI files in them as well.

Thanks
~A

**ANURAG MISHRA**
650.962.1864 office // 650.395.7224 cell

---

**From:** Paul, Sabu [mailto:SPaul@mbakerintl.com]
**Sent:** Tuesday, February 27, 2018 1:12 PM
**To:** Anurag Mishra <Anurag.Mishra@respec.com>; Shaikh Taimur <Shaikh.Taimur@epa.gov>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** RE: EXTERNAL: RE: Reduction scenario results for EFDC

Anurag,

Please go ahead and generate the results for 75/99 scenario also.

Regards,
Sabu.

---

**From:** Anurag Mishra [mailto:Anurag.Mishra@respec.com]
**Sent:** Tuesday, February 27, 2018 3:42 PM
**To:** Paul, Sabu <SPaul@mbakerintl.com>; Shaikh Taimur <Shaikh.Taimur@epa.gov>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** EXTERNAL: RE: Reduction scenario results for EFDC

Sabu/Taim/Tony

I updated the table with the violation frequency for the baseline values as well.

Sabu, I generated the EFDC results for the scenario with 75% global reductions. Tony will QA/QC that run and I will send it to you after that.

Thanks
~A

| | | max(30-day GeoMean) for TP Concentration [Standard is 0.037 mg/l] | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DSN ID** | **Location** | **Location Name** | **State** | **Baseline (Sim0)** | **Frequency of Violations** | **Percent Violations** | **69% Global Reduction (Sim1)** | **Frequency of Violations** | **Percent Violations** | **75% Global Reduction** | **Frequency of Violations** | **Percent Violations** | **75% AR Reduction and 90% OK Reduction)** |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6320 | 630 | Illinois River at State Line | AR | 0.119 | 6527 | 99.7 | 0.040 | 17 | 0.3 | 0.034 | 0 | 0.0 | 0.034 |
| 9635 | 635 | | OK | 0.119 | 6527 | 99.7 | 0.040 | 17 | 0.3 | 0.034 | 0 | 0.0 | 0.034 |
| 9637 | 637 | | OK | 0.121 | 6510 | 99.5 | 0.041 | 13 | 0.2 | 0.035 | 0 | 0.0 | 0.035 |
| 6420 | 640 | | OK | 0.121 | 6518 | 99.6 | 0.041 | 17 | 0.3 | 0.035 | 0 | 0.0 | 0.035 |
| 9650 | 650 | | OK | 0.123 | 6513 | 99.5 | 0.042 | 19 | 0.3 | 0.036 | 0 | 0.0 | 0.035 |
| 9660 | 660 | | OK | 0.129 | 6521 | 99.6 | 0.045 | 59 | 0.9 | 0.039 | 3 | 0.0 | 0.037 |
| 9670 | 670 | | OK | 0.133 | 6518 | 99.6 | 0.047 | 70 | 1.1 | 0.040 | 5 | 0.1 | 0.038 |
| 9800 | 800 | | OK | 0.144 | 6536 | 99.8 | 0.050 | 166 | 2.5 | 0.043 | 16 | 0.2 | 0.039 |
| 9810 | 810 | | OK | 0.145 | 6536 | 99.8 | 0.051 | 165 | 2.5 | 0.043 | 20 | 0.3 | 0.039 |
| 9820 | 820 | | OK | 0.146 | 6535 | 99.8 | 0.051 | 165 | 2.5 | 0.044 | 22 | 0.3 | 0.039 |
| 9830 | 830 | | OK | 0.147 | 6536 | 99.8 | 0.052 | 188 | 2.9 | 0.045 | 31 | 0.5 | 0.040 |
| 9840 | 840 | | OK | 0.150 | 6536 | 99.8 | 0.053 | 185 | 2.8 | 0.046 | 36 | 0.5 | 0.040 |
| 9850 | 850 | | OK | 0.153 | 6536 | 99.8 | 0.055 | 233 | 3.6 | 0.047 | 48 | 0.7 | 0.041 |
| 9860 | 860 | | OK | 0.159 | 6540 | 99.9 | 0.060 | 406 | 6.2 | 0.052 | 115 | 1.8 | 0.046 |
| 8690 | 870 | Illinois River at Tahlequah | OK | 0.165 | 6539 | 99.9 | 0.062 | 429 | 6.6 | 0.054 | 134 | 2.0 | 0.047 |
| 9880 | 880 | | OK | 0.170 | 6540 | 99.9 | 0.064 | 502 | 7.7 | 0.056 | 165 | 2.5 | 0.049 |
| 9890 | 890 | | OK | 0.174 | 6541 | 99.9 | 0.066 | 607 | 9.3 | 0.058 | 186 | 2.8 | 0.049 |

**ANURAG MISHRA**
650.962.1864 office // 650.395.7224 cell

**From:** Anurag Mishra
**Sent:** Monday, February 26, 2018 3:59 PM
**To:** 'Paul, Sabu' <SPaul@mbakerintl.com>; 'Shaikh Taimur' <Shaikh.Taimur@epa.gov>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** RE: Reduction scenario results for EFDC

Sabu

I will apply the 75% Global Reduction and generate the output. In the meanwhile, please find the Scenario Comparisons with the frequency of violations as you requested last week. Let me know if you need me to send the whole workbook.

Thanks
~A

| | | |
|---|---|---|
| | | max(30-day GeoMean) for TP Concentration [Standard is 0.037 mg/l] |

| DSN ID | Location | Location Name | State | Baseline (Sim0) | 69% Global Reduction (Sim1) | Frequency of Violations | Percent Violations | 75% Global Reduction | Frequency of Violations | Percent Violations | 75% AR Reduction and 90% OK Reduction) | Frequency of Violations | Percent Violations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6320 | 630 | Illinois River at State Line | AR | 0.119 | 0.040 | 17 | 0.3 | 0.034 | 0 | 0.0 | 0.034 | 0 | 0.0 |
| 9635 | 635 | | OK | 0.119 | 0.040 | 17 | 0.3 | 0.034 | 0 | 0.0 | 0.034 | 0 | 0.0 |
| 9637 | 637 | | OK | 0.121 | 0.041 | 13 | 0.2 | 0.035 | 0 | 0.0 | 0.035 | 0 | 0.0 |
| 6420 | 640 | | OK | 0.121 | 0.041 | 17 | 0.3 | 0.035 | 0 | 0.0 | 0.035 | 0 | 0.0 |
| 9650 | 650 | | OK | 0.123 | 0.042 | 19 | 0.3 | 0.036 | 0 | 0.0 | 0.035 | 0 | 0.0 |
| 9660 | 660 | | OK | 0.129 | 0.045 | 59 | 0.9 | 0.039 | 3 | 0.0 | 0.037 | 1 | 0.0 |
| 9670 | 670 | | OK | 0.133 | 0.047 | 70 | 1.1 | 0.040 | 5 | 0.1 | 0.038 | 2 | 0.0 |
| 9800 | 800 | | OK | 0.144 | 0.050 | 166 | 2.5 | 0.043 | 16 | 0.2 | 0.039 | 3 | 0.0 |
| 9810 | 810 | | OK | 0.145 | 0.051 | 165 | 2.5 | 0.043 | 20 | 0.3 | 0.039 | 3 | 0.0 |
| 9820 | 820 | | OK | 0.146 | 0.051 | 165 | 2.5 | 0.044 | 22 | 0.3 | 0.039 | 3 | 0.0 |
| 9830 | 830 | | OK | 0.147 | 0.052 | 188 | 2.9 | 0.045 | 31 | 0.5 | 0.040 | 4 | 0.1 |
| 9840 | 840 | | OK | 0.150 | 0.053 | 185 | 2.8 | 0.046 | 36 | 0.5 | 0.040 | 4 | 0.1 |
| 9850 | 850 | | OK | 0.153 | 0.055 | 233 | 3.6 | 0.047 | 48 | 0.7 | 0.041 | 4 | 0.1 |
| 9860 | 860 | | OK | 0.159 | 0.060 | 406 | 6.2 | 0.052 | 115 | 1.8 | 0.046 | 32 | 0.5 |
| 8690 | 870 | Illinois River at Tahlequah | OK | 0.165 | 0.062 | 429 | 6.6 | 0.054 | 134 | 2.0 | 0.047 | 45 | 0.7 |
| 9880 | 880 | | OK | 0.170 | 0.064 | 502 | 7.7 | 0.056 | 165 | 2.5 | 0.049 | 62 | 0.9 |
| 9890 | 890 | | OK | 0.174 | 0.066 | 607 | 9.3 | 0.058 | 186 | 2.8 | 0.049 | 71 | 1.1 |

**ANURAG MISHRA**
650.962.1864 office // 650.395.7224 cell

**From:** Paul, Sabu [mailto:SPaul@mbakerintl.com]
**Sent:** Monday, February 26, 2018 6:56 AM
**To:** Anurag Mishra <Anurag.Mishra@respec.com>
**Cc:** Tony Donigian <Tony.Donigian@respec.com>
**Subject:** Reduction scenario results for EFDC

Hi Anurag,

Please export the HSPF results for EFDC model corresponding to Scenario 4 (75% reduction) meeting the standards at the Stateline. Let me know when it is ready.

Regards,
Sabu.

**Sabu Paul, Ph.D, P.E., PMP**

Senior Technical Manager
Michael Baker International
9400 Innovation Drive, Suite 110 | Manassas, VA
[O] 703-334-4917 | [M] 571-606-3705
spaul@mbakerintl.com | www.mbakerintl.com

Michael Baker INTERNATIONAL

Connect with us:

75 YEARS

We Make a Difference

Confidentiality Notice: This E-mail and any attachments is covered by the Electronic Communications Privacy Act, 18 U.S.C. & 2510-2524, is confidential and may be legally privileged. If you are not the intended recipient, you are hereby notified that any retention, dissemination, or copying of this communication is strictly prohibited. Please reply to the sender that you have received the message in error, and permanently delete the original and destroy any copy, including printed copies of this email and any attachments thereto.