LA and WLA Discussion Materials for July 25 August 22, 2013 TAC Meeting

Below are my adjusted notes (in no particular order) from the June 27 TAC and July 11 LBWC meetings of items that need to be addressed in developing potential allocation scenarios via the USGS mass balance model to meet the SR-HC May 1 – September 30, 0.07 mg/l TP target at Parma. (Red text represents tentative responses to key points)

Modeling Flowchart – Draft Flowchart Attached
Identify how the mass balance vs. AQUATOX modeling efforts are being implemented and tied together in the TMDL development. In a nutshell:

- The USGS Mass Balance Model will help:
  1. Estimate allocations necessary to meet the 0.07 target from May 1 – September 30,
  2. Inform the appropriate allocations, if any, from October 1 – April 30 to meet the 150 mg/m² periphyton target as modeled by AQUATOX

- The AQUATOX modeling effort will help:
  1. Estimate TP-periphyton relationship, and a number of other parameters (e.g. sediment),
  2. Estimate TP target/allocations needed to meet the 150 mg/m² periphyton target from October 1 – April 30 (in conjunction with the USGS Mass Balance Model),
  3. Inform whether the 0.07 target at Parma from May 1 – September 30 will also meet the 150 mg/m² periphyton target.

  Further investigating TP uptake and release by periphyton will benefit the allocation process. However, it initially appears that uptake and release is a rather minor factor during the irrigation season; it may play a larger role during the fall and spring months. This is consistent with Alex Etheridge’s (USGS) professional opinion and findings from the August, October, and March synoptic sampling.

Allocation Modeling Scenarios Matrix – Draft Matrix Attached
A modeling scenario matrix could help folks determine cost/benefit analyses, and help facilitate the conversation/decisions among the stakeholders about how the allocations should be derived (e.g. lowest price/pound of TP reduction, equal percentage reduction, timeframe to meet target,…?)

- DEQ is soliciting input from the LBWC and other interested stakeholders on potential allocation options that will meet the 0.07 mg/l target at Parma.
  - The Municipal/Industrial Workgroup has committed to provide allocation framework recommendations for the TMDL.

Technology Based Limits for Consideration
Model breakpoints for technology at 1, 0.5, 0.3 (0.35), 0.1, and 0.07 mg/l

- Initial analyses indicate that it may be very difficult to achieve 0.07 mg/l target at Parma with WWTPs discharging above 0.3 mg/l TP.
  - Scenarios in which WWTPs discharge TP above 0.3 mg/l appear capable of neither meeting the 0.07 target via mass balance calculations nor receiving EPA approval.
Unaccounted/Groundwater Flow
Adequately parse out unaccounted vs. groundwater flows.

- To what extent can we practically separate from groundwater, the small drains, septic, etc. that aren’t specifically accounted for in USGS mass balance model?
  
  1. This potential refinement of the model needs to be balanced with ability to gather and incorporate data in concert with the relative contribution of these sources.
    - Flows and loads from undocumented drains, etc. are likely insignificant with respect to discharge measurement uncertainty in the main-stem and major tributaries. However, some currently-undocumented sources, if found to be significant, may need to be addressed.
      - This is consistent with Alex Etheridge’s (USGS) professional opinion and findings from the August synoptic sampling.

  2. Should septic (and other) be given a non-point source load allocation if separated from the unaccounted flows category?
    - The potential calculations for these loads could be identified in an appendix to the TMDL in order to help clarify up-front their potential for use in offsets and trading.

SR-HC Target for the LBR and Critical Low Flows – Draft Flow Duration Curves Attached
Clarify the LBR flows needed to meet the SR-HC TMDL target for the LBR of 0.07 mg/l TP.

- The LBR 0.07 target in the SR-HC was based on average Snake River flow years
  
  1. SR-HC TMDL page 447: “The SR-HC TMDL target for TP for each tributary is a concentration of less than or equal to 0.07 mg/l TP as measured at the mouth of the tributary and applies from May through September. Because the TP target is concentration-based, actual allowable tributary load allocations under the TMDL are dependent on actual tributary flow and will fluctuate from year to year.”
    - The SR-HC TMDL states that the target concentration is “less than or equal to 0.07 mg/l” and that load allocations are, “dependent on actual tributary flow.”

- EPA advocates that TMDL must also consider critical low flows
  
  - The EPA is requiring the TMDL address critical low. One possibility is to identify the 90% flow of 401 cfs for the May 1 – September 30 time period (1983 – 2012) as the critical low flow (see revised flow duration curves and data).
    - The current recommendation is to utilize the May 1 – September 30 (1983 – 2012) flow duration curve and identify the 90th percentile flow of 401 cfs as the critical low flow.

- Perhaps design allocations based on tiered approach and flow duration curves for the river (e.g. loads for categories from low flows through high flows)
  
  - This could be accomplished through a flow duration curve analyses (see revised flow duration curves and data). Potentially identify several categories of flows for the May 1 – September 30 time period (1983 – 2012) to identify corresponding loading allocations.
The current recommendation is to utilize the May 1 – September 30 (1983 – 2012) flow duration curve to identify corresponding tiered flows and loads in the TMDL.

Adjusting the Mass Balance Model for Alternative Flow Scenarios
The mass balance model for August was developed for flows of approximately 624 cfs at Parma. As we work to develop allocations under differing flow scenarios, how to address associated changes in associated parameters (e.g. concentrations, loading distributions among sources, etc.) that may differ under alternative flow conditions?

- This will be difficult and involve clearly identifying assumptions, but perhaps adjust SW flows across the board by a percentage, recalculate GW contributions, and keep TP the same as measured.

Build-out and Implementation Period
What is the build out period, and how do we estimate future conditions, populations, etc.?

- Rely on the best data, best professional judgment, and input from stakeholders and experts to determine these factors,
- Potential alternatives to an implementation timeline (e.g. identify the end-point targets, point source compliance schedules, review TMDL every five years, and adaptively manage).
  - It is possible to develop the TMDL based on current conditions and a proposed compliance schedule for the point sources (2 compliance periods - 10 years). An implementation time frame for the non-point sources, however, would not be defined. Rather, implementation would be as soon as possible, depending on available funding, cost-sharing, and willing partners to achieve the target.
  - Recommendation is to develop the TMDL based on current conditions and a phased approach of 2 compliance periods for point sources (~10 years). Nonpoint source implementation would be as soon as possible, depending on available funding, cost-sharing, and willing partners to achieve the target.

Defining Reasonable Assurances – Draft DEQ TMDL Guidance Language Attached
DEQ, EPA, LBWC, and other stakeholders need to maintain consistent inter-communication as we move through the process to identify specific reasonable assurances, as the broad definition doesn’t apply well on site-specific basis.

- EPA Guidelines for Reviewing TMDLS (B. Reasonable Assurances): “When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur...the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.”

Trading – Draft DEQ TMDL Language Attached
DEQ, EPA, LBWC, and other stakeholders should to clearly understand the potential gains and limitations of trading and their relationship to the TMDL. This will be critical for planning how allocations may be addressed through possible trading.

- DEQ will support trading in the LBR subbasin to the extent practicable,
EPA does not support trading in the LBR subbasin until a TMDL is complete,
The potential for trading will be identified in the TMDL, but the trading specifics and framework will be developed outside of the TMDL process.

- Discussion within the LBWC and TAC of including some additional trading language as an appendix to the TMDL.
- DEQ state office will try to directly address many of the trading questions at the August 22 Open House, and at the September 12 LBWC Meeting.

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Difficult to Meet 0.07 via Mass Balance or Receive EPA Approval
## Flow Duration Curves for the Lower Boise River at Parma

**Lower Boise River at Parma Gage**  
**Flow Duration Data**

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Flow Duration Curves for the Lower Boise River at Parma

Lower Boise River near Parma
Flow Duration Curves
USGS Gauge 13213000

Flow Duration Interval (%) vs. Flow (cfs)

- High Flows
- Moist Conditions
- Mid-range Flows
- Dry Conditions
- Low Flows

Legend:
- Annual (1973 - 2012)
- 30-Day Low Flows (1973 - 2012)
- SR-HC TMDL (1973 - 2012)
- SR-HC TMDL (1983 - 2012)
Daily Mean Flows on the Lower Boise River near Parma
1973 - 2012

May 1

September 30

July 20

August 17
### Day of month CFS Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1 1,200 1,510 2,060 2,480 3,220 2,680 1,370 767 826 1,040 1,050 1,000
2 1,230 1,540 2,090 2,480 3,230 2,650 1,340 767 836 1,040 1,050 994
3 1,230 1,560 2,060 2,450 3,210 2,650 1,300 756 843 1,020 1,040 990
4 1,230 1,590 2,030 2,420 3,140 2,590 1,270 754 855 1,040 1,050 973
5 1,240 1,610 2,100 2,500 3,090 2,570 1,290 749 862 1,040 1,030 957
6 1,240 1,640 2,160 2,560 3,080 2,550 1,300 731 880 1,030 1,020 960
7 1,260 1,670 2,170 2,630 3,080 2,520 1,230 726 904 1,020 1,020 972
8 1,310 1,700 2,180 2,670 3,060 2,510 1,160 726 919 1,040 1,020 983
9 1,320 1,710 2,230 2,700 3,060 2,530 1,140 718 926 1,040 1,010 1,000
10 1,330 1,670 2,240 2,680 2,990 2,550 1,110 711 925 1,070 1,010 1,020
11 1,330 1,640 2,270 2,660 2,990 2,540 1,110 710 955 1,080 1,000 1,020
12 1,330 1,670 2,290 2,670 3,010 2,480 1,080 700 996 1,050 998 1,050
13 1,370 1,740 2,300 2,700 2,970 2,370 1,020 714 984 1,040 1,000 1,050
14 1,400 1,810 2,300 2,730 2,960 2,240 947 751 985 1,030 977 1,050
15 1,440 1,820 2,300 2,770 3,010 2,170 896 754 975 1,070 950 1,070
16 1,470 1,870 2,310 2,870 3,060 2,070 852 772 981 1,120 945 1,080
17 1,500 1,880 2,320 2,890 3,070 1,960 830 783 986 1,050 953 1,030
18 1,480 1,890 2,340 2,890 3,090 1,880 817 792 993 1,030 977 1,010
19 1,460 1,950 2,340 2,900 3,120 1,800 804 792 990 1,010 973 1,050
20 1,450 2,000 2,330 2,990 3,110 1,740 790 795 998 1,030 982 1,070
21 1,470 2,000 2,290 3,030 3,130 1,710 780 789 1,010 1,070 987 1,080
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24 1,410 2,100 2,350 3,170 3,000 1,590 774 814 1,000 1,070 1,000 1,090
25 1,400 2,040 2,360 3,150 2,940 1,590 771 839 1,020 1,060 1,010 1,100
26 1,400 2,000 2,380 3,160 2,890 1,490 766 846 1,020 1,060 1,020 1,110
27 1,410 1,990 2,370 3,230 2,920 1,440 763 841 1,020 1,040 1,010 1,140
28 1,420 2,010 2,390 3,280 2,870 1,410 756 835 1,010 1,030 1,010 1,160
29 1,430 2,540 2,450 3,270 2,780 1,410 751 819 1,020 1,030 1,010 1,180
30 1,440 2,460 3,240 2,710 1,410 756 813 1,040 1,030 1,010 1,200
31 1,470 2,460 2,700 758 813 1,040 1,220
Reasonable Assurance Language Taken from the 2013 DEQ TMDL Addendum Template (to be used for the LBR TP TMDL)

Reasonable Assurance

Identify the agencies and entities who are DMAs (Designated Management Agencies) who will help with implementation, opportunities DEQ and the WAG are committed to following up on, financial resources from 319 or USDA programs, and any other financial commitments in the watershed. Provide enough detail about how nonpoint sources and point sources will achieve the reductions called for.

If the WLA relies on the LA to meet the target, you need to describe how or why the nonpoint sources will comply with their load reductions.
Pollutant Trading Language Taken from the 2013 DEQ TMDL Addendum Template  
(to be used for the LBR TP TMDL)

Pollutant Trading

Pollutant trading (also known as water quality trading) is a contractual agreement to exchange pollution reductions between two parties. Pollutant trading is a business-like way of helping to solve water quality problems by focusing on cost-effective, local solutions to problems caused by pollutant discharges to surface waters. Pollutant trading is one of the tools available to meet reductions called for in a TMDL where point and nonpoint sources both exist in a watershed.

The appeal of trading emerges when pollutant sources face substantially different pollutant reduction costs. Typically, a party facing relatively high pollutant reduction costs compensates another party to achieve an equivalent, though less costly, pollutant reduction.

Pollutant trading is voluntary. Parties trade only if both are better off because of the trade, and trading allows parties to decide how to best reduce pollutant loadings within the limits of certain requirements.

Pollutant trading is recognized in Idaho’s water quality standards at IDAPA 58.01.02.055.06. DEQ allows for pollutant trading as a means to meet TMDLs, thus restoring water quality limited water bodies to compliance with water quality standards. DEQ’s Water Quality Pollutant Trading Guidance sets forth the procedures to be followed for pollutant trading (DEQ 2010).

Trading Components

The major components of pollutant trading are trading parties (buyers and sellers) and credits (the commodity being bought and sold). Ratios are used to ensure environmental equivalency of trades on water bodies covered by a TMDL. All trading activity must be recorded in the trading database by DEQ or its designated party.

Both point and nonpoint sources may create marketable credits, which are a reduction of a pollutant beyond a level set by a TMDL:

Point sources create credits by reducing pollutant discharges below NPDES effluent limits set initially by the wasteload allocation.
Nonpoint sources create credits by implementing approved BMPs that reduce the amount of pollutant runoff. Nonpoint sources must follow specific design, maintenance, and monitoring requirements for that BMP; apply discounts to credits generated, if required; and provide a water quality contribution to ensure a net environmental benefit. The water quality contribution also ensures the reduction (the marketable credit) is surplus to the reductions the TMDL assumes the nonpoint source is achieving to meet the water quality goals of the TMDL.

Watershed-Specific Environmental Protection

Trades must be implemented so that the overall water quality of the water bodies covered by the TMDL are protected. To do this, hydrologically based ratios are developed to ensure trades
between sources distributed throughout TMDL water bodies result in environmentally equivalent or better outcomes at the point of environmental concern. Moreover, localized adverse impacts to water quality are not allowed.

**Trading Framework**

For pollutant trading to be authorized, it must be specifically mentioned within a TMDL document. After adoption of an EPA-approved TMDL, DEQ, in concert with the WAG, must develop a pollutant trading framework document. The framework would mesh with the implementation plan for the watershed that is the subject of the TMDL. The elements of a trading document are described in DEQ’s pollutant trading guidance (DEQ 2010).