



Great Salt Lake Water Quality Studies

Selenium Program Update

- Project 1 – Birds
- Project 2 – Food Chain
- Project 3 – Selenium Loading
- Project 4 – Selenium Flux
- Project 5 – Brine Shrimp Kinetics

June 5, 2007

CH2MHILL/CWECS



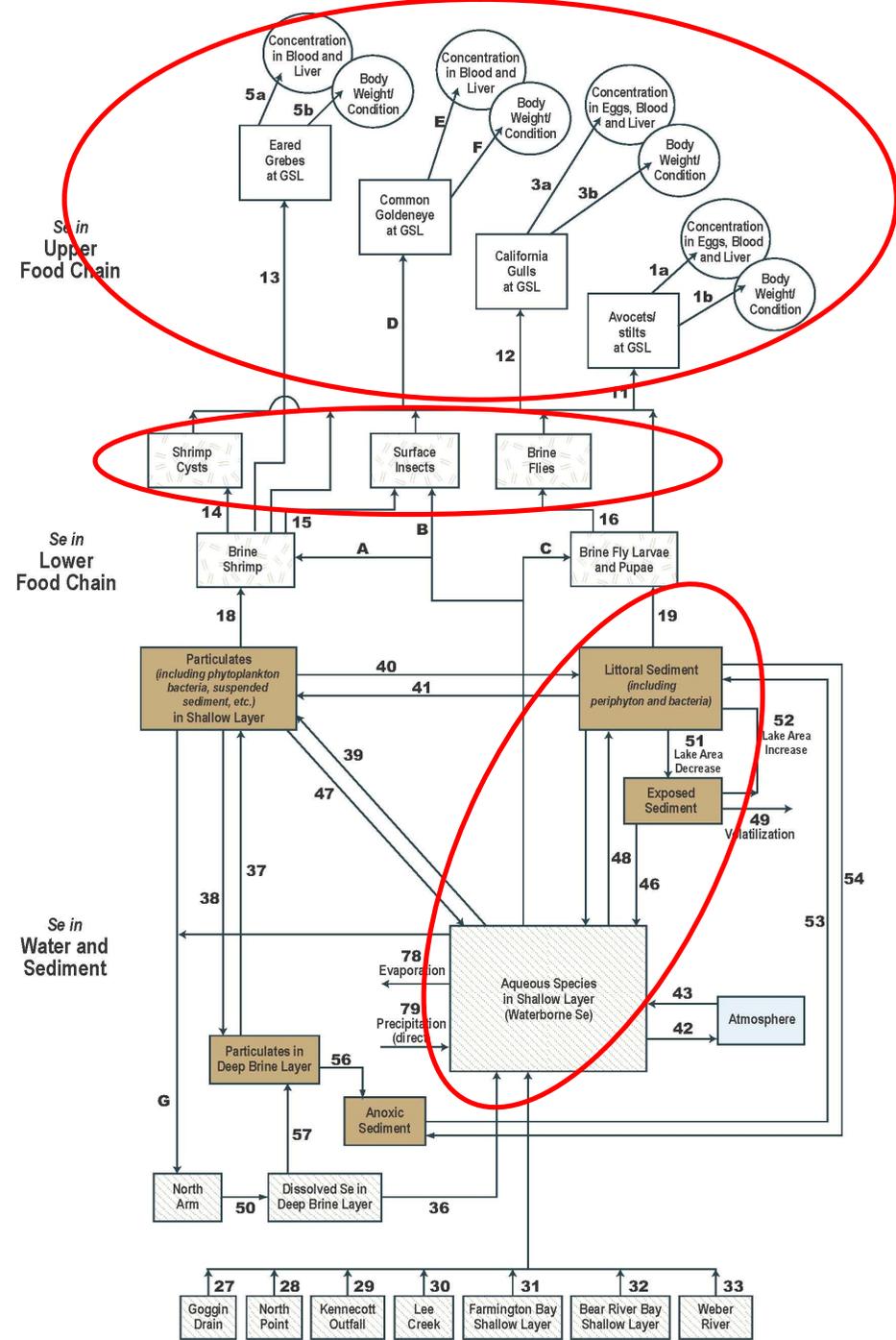
Great Salt Lake Water Quality Studies

Project 1 – Birds

1A – Shorebirds (WSU)

1B1 – Gulls (USU/UDWR)

1B2 – Overwintering ducks and grebes
(USU/UDWR)



Project 1 Birds

1A – John Cavitt/WSU
1B – Mike Conover/USU

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Project 1 A – Shorebirds

- 2006 sampling program
 - *Sampling complete*
 - *Final comments from Science Panel received*
 - *Expect to finalize report in July*



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Project 1 A – Shorebirds

- 2007 sampling program
 - *Sampling under way*
 - *Collecting 10 female avocets (Se & Hg in blood & liver, Se in eggs) from Ogden Bay colony*
 - *Collecting brine fly larvae/pupae at Ogden Bay & Saltair*



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Project 1 B1 – California Gulls

- 2006 sampling program
 - *Sampling complete*
 - *Final comments from Science Panel received*
 - *Expect to finalize report in June*



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Project 1 B1 – California Gulls

– 2007 sampling program

- *Collect gulls from Hat Island, GSL Minerals, and Neponset Reservoir*
- *Collect gull eggs/diet from Neponset Reservoir*
- *Analyze blood/liver for Se & Hg*
- *Sampling complete*
- *Expect draft report in July*



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Project 1 B2 – Overwintering Birds

- *Collected all Eared Grebes*
- *Unable to collect spring goldeneyes*
- *Using goldeneye samples from 2005/2006 winter*
- *Draft report expected in July*





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Further Analysis of Se Concentrations in Avian Blood Samples

- Validated 2006 data and methods
- Completing spring 2007 sampling to confirm 2006 concentrations and look at possible Se:Hg interaction
- Completing inter-lab comparison of analytical techniques
- Completed review of literature for marine birds
- Memorandum to document evaluation

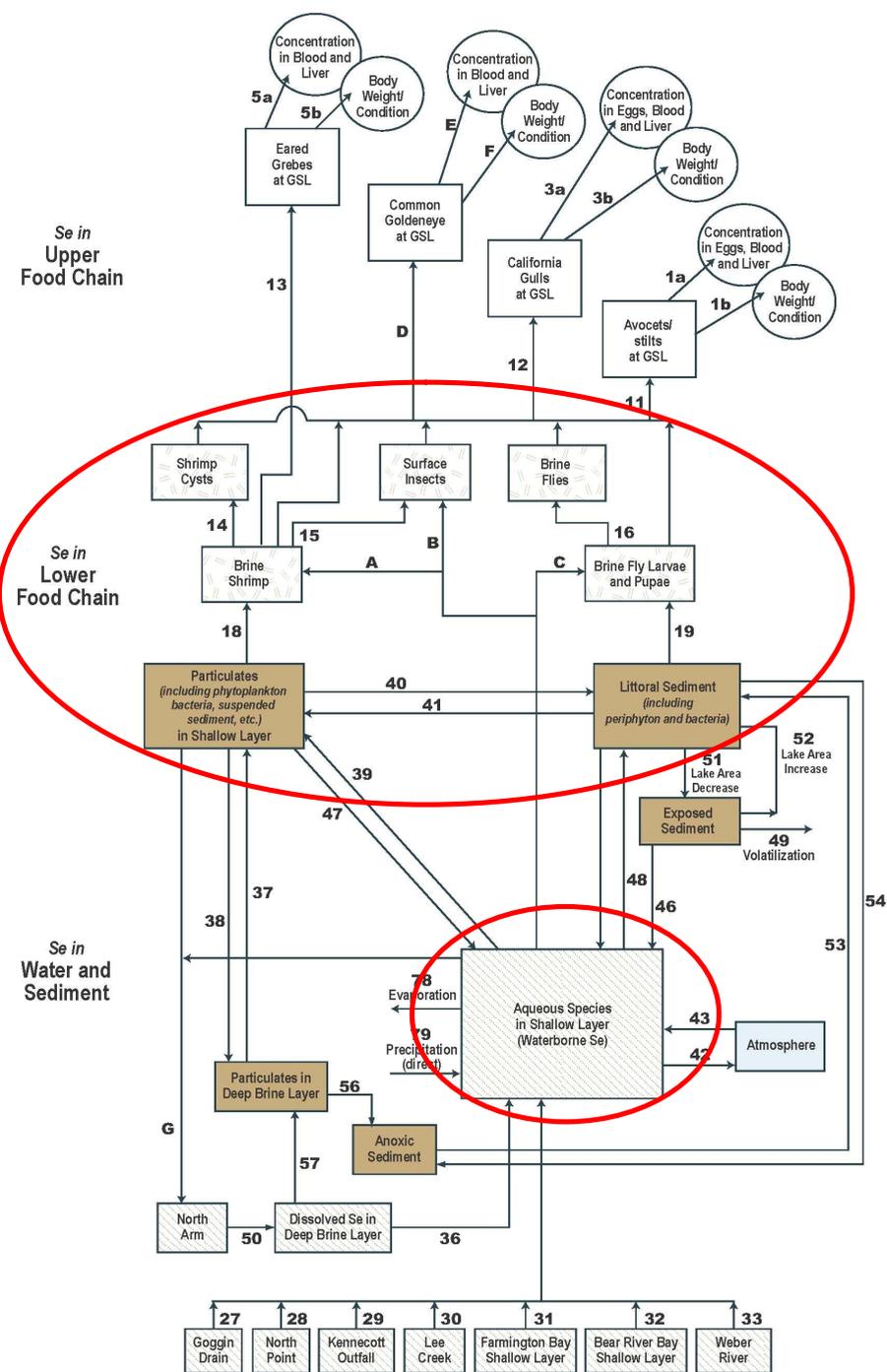


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Project 2 – Food Chain

2A – Benthic Zone (USU)

2B – Synoptic Survey (Brad Marden)



Project 2 Food Chain

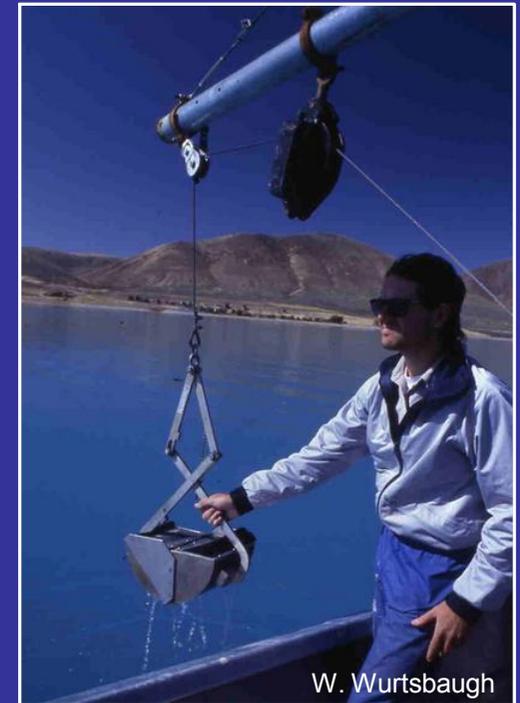
2A - Wayne Wurtsbaugh/USU

2B - Brad Marden/Parliament Fisheries

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Project 2A – Benthic Zone

- 2006 sampling program
 - *Sampling complete*
 - *Final draft report submitted to Science Panel in early May*
 - *Expect to finalize report in June*



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Project 2B – Synoptic Survey

- 2006 sampling program
 - *Sampling extended into January*
 - *Sampling complete*
 - *Draft report expected this week*
 - *Expect to finalize report in June*



B. Marden

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Project 2B – Synoptic Survey

- 2007 sampling program
 - *Sampling extended April – July to complete annual cycle*
 - *3 sampling events complete*
 - *Out on the lake today*
 - *Draft report expected July/August*





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Further Analysis of Se Concentrations in Brine Shrimp Samples

- Validated 2006 data and analytical methods
- Completed side by side comparison of sampling methods
- Completing inter-lab comparison

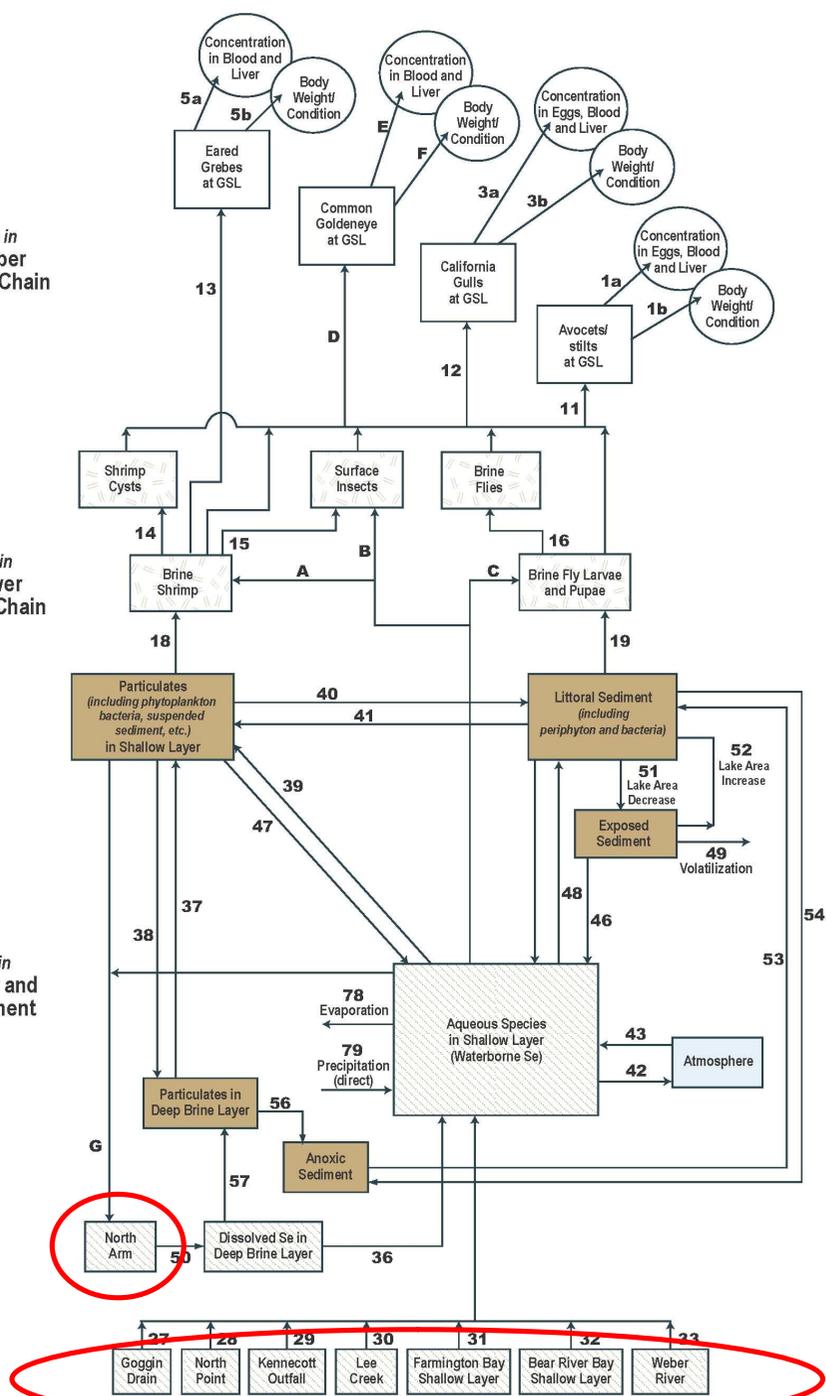
Project 3 Selenium Loading

Dave Naftz/USGS
Bill Johnson/UofU

Se in
Upper
Food Chain

Se in
Lower
Food Chain

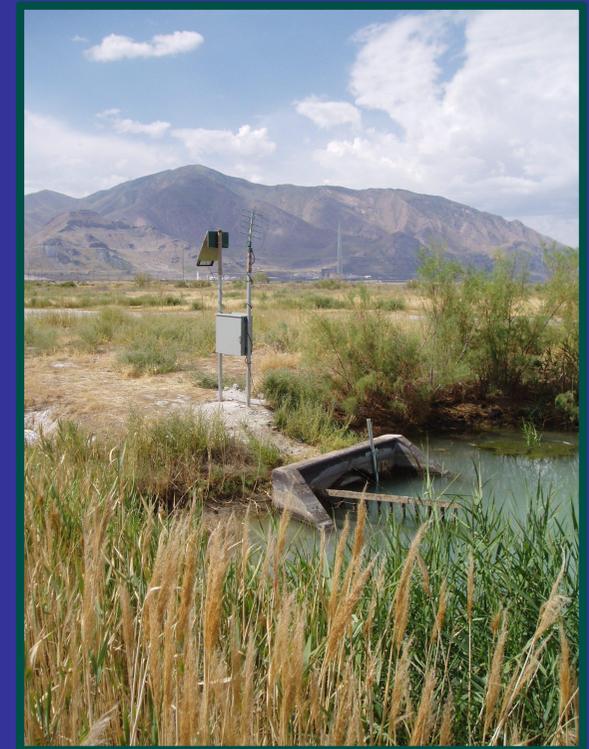
Se in
Water and
Sediment

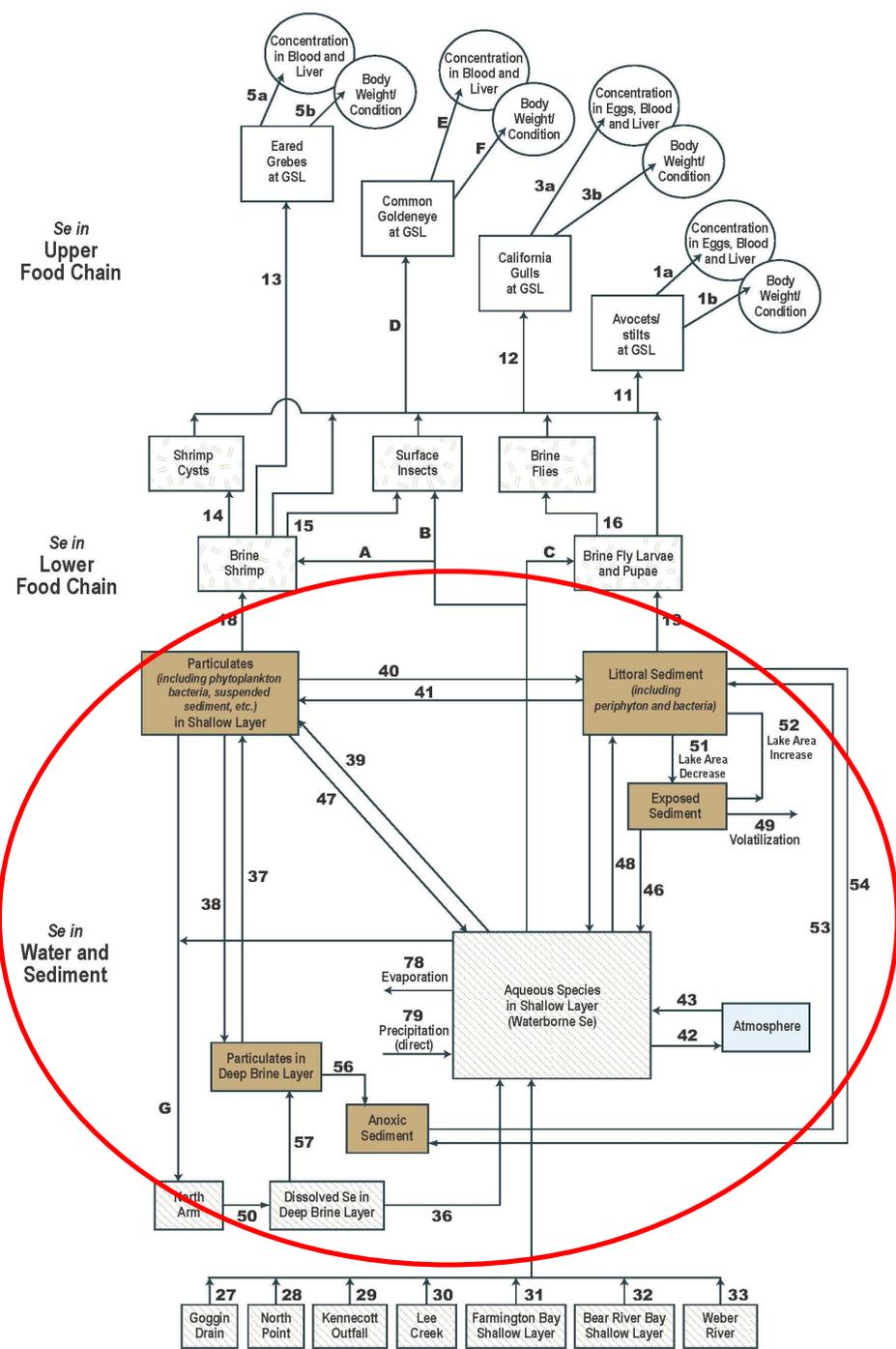


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Project 3 – Selenium Loading

- *Scheduled for 2006-2008*
- *Sampling is ongoing*
- *Final draft report for 2006 data submitted to Science Panel in early May*
- *Expect to finalize report in June*





Project 4 Selenium Flux

Bill Johnson/UofU
Dave Naftz/USGS

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Project 4 – Selenium Flux

– 2006 Sampling Program

- *Final draft report for 2006 data submitted to Science Panel in early May*
- *Expect to finalize report in June*
- *Ongoing sampling/experiments with exposed sediment, sediment traps – complete in June*



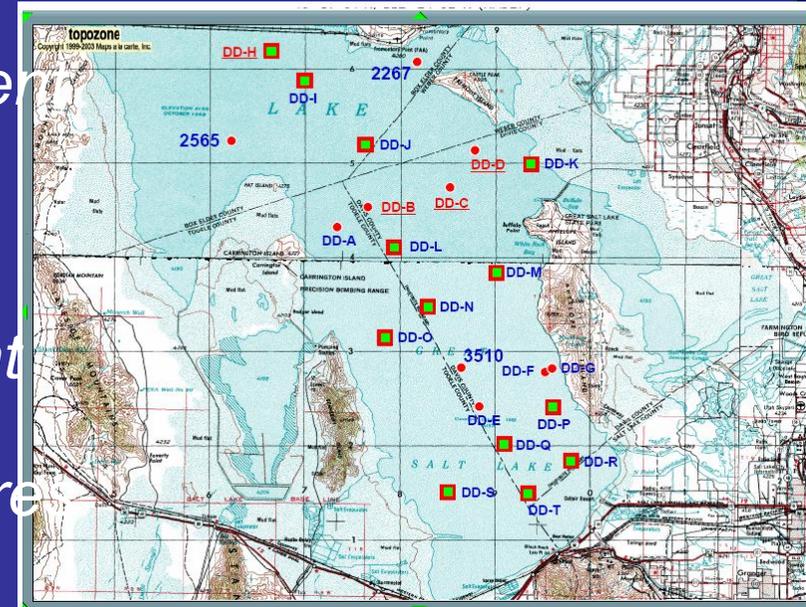
D. Naftz

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Project 4 – Selenium Flux

— 2007 Sediment Studies

- *Objective is to refine sediment flux rates*
- *Completed 40 shallow core samples, samples at lab*
- *Preliminary map of sediment complete*
- *USGS to complete deep core week of July 2*
- *Report expected Sept/Oct*



D. Naftz

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Project 4 – Selenium Flux

- 2007 Volatilization Studies
 - *Objective is to refine atmospheric flux rates*
 - *Completed calibration of field equipment*
 - *Ongoing sampling on lake to measure actual volatilization rate*
 - *Project 4 report to be updated July/August*



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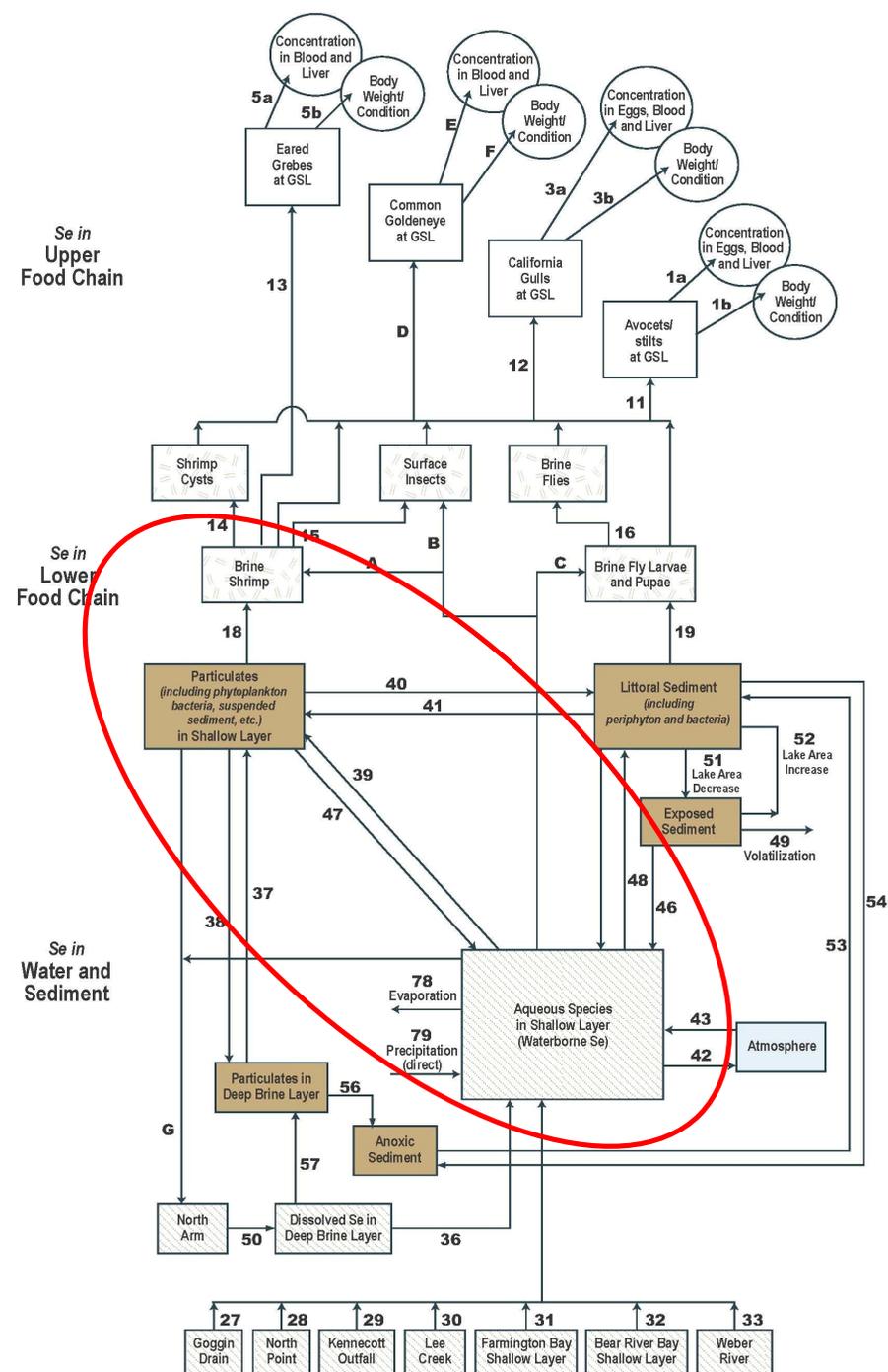
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Further Analysis of Se Concentrations in Deep Brine Layer

- Validated 2006 data and analytical methods
- Completed side by side comparison of sampling methods
- Completing inter-lab comparison

Project 5 Brine Shrimp Kinetics

Martin Grosell/U of Miami



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Project 5 – Brine Shrimp Kinetics

- *Objective is to refine transfer factors from water/algae to brine shrimp*
- *Evaluated role of salinity*
- *Determined uptake rates from water*
- *Currently determining uptake rates from algae/water*
- *Draft report in September*





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Data Integration/Modeling

- Draft memo to Pls next week
- Draft memo to Science Panel by end of June
- Ongoing evaluation/integration of data through August
- Draft report in September
- Ongoing evaluation of data/reports by Panel



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Schedule

- **2006 Reports – finalize in June**
- **New spring 2007 studies**
 - Shorebirds/gulls – finalize in August
 - Synoptic survey – finalize in August
 - Sediment/Volatilization – draft results in August, final reports in October
- **Project 5 report – draft in September, final in October**
- **Program Report – draft in September**



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Questions?

