

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

### MEETING NOTES

September 10, 2003

CORPS OF ENGINEERS NORTHWESTERN DIVISION OFFICES – CUSTOM HOUSE  
PORTLAND, OREGON

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the “record” of the meeting, only a reminder for TMT members.

#### **Transmission Business Line – Transmission Limitations:**

Brian Silverstein, Tracy Rolstad and Mike Kreipe, BPA TBL, presented information to the TMT on BPA's regional transmission system, its limitations and proposed and current transmission line projects. Handouts were provided and can be obtained by contacting John Welschlagger. Of the \$1.5 billion total estimated cost, \$500 million is for six transmission line projects currently under construction. Three of these are new construction, the other three are changes at existing sub-stations. Brian discussed the Grand Coulee-Bell project, which is scheduled for completion in December 2004. Cindy Henriksen, COE, pointed out the inter-connectedness between BiOp operations and transmission line emergencies that occur. Mike reported on the Libby preliminary studies that were done – a “thermal analysis” of previous outages in the area, and a “reactive margin analysis” that looked at how a heavily loaded system removes the margin relative to voltage. The TBL is discussing whether to build a new line at a cost of over \$100 million from Libby to Bonners Ferry, or to continue doing “bandage” work to fix the current system, and are also exploring the possibility of alternative operations at Hungry Horse and Libby. TMT agreed that there is a need for a feedback loop with the TBL to anticipate changes in operations, which will allow for better planning capabilities.

#### **IT Input on Spill Criteria/Process:**

During last week's IT meeting, members began discussing a process for developing beginning/end of spill criteria for future years. As soon as next month, IT will review historical data of fish runs, survival, the PUD approach in the Mid-Columbia, and other information that will help the group begin developing regionally acceptable criteria. There was an expressed desire to have a joint TMT/IT meeting so that the TMT can provide technical input as the IT looks over the data. TMT will be informed as soon as possible when/if that joint meeting is scheduled.

#### **Current Conditions:**

*Fish status:* Ron Boyce, Oregon, reported that there has been the biggest catch of returning adults this year than ever before. To date, approx. 238,000 fish have been observed. Paul Wagner reported that juvenile numbers increased for a few days in early September at Little Goose and

Lower Granite, then declined. Temperatures were higher for longer than usual this year, still ranging around 68 degrees.

*Reservoir operations:* Grand Coulee is at elevation 1279' and expected to reach 1283' by the end of September. Hungry Horse is near 3538' and meeting Columbia Falls requirements. Tony Norris, BOR, reported that so far there have been no "trip-offs" resulting from fires in the area. Libby outflows were increased on Monday to 11kcfs to compensate for emergency water supply intake from Kooteney to the City of Bonner's Ferry. Cathy Hlebechuk, COE, reported after the meeting that the outflows would be ramped down to 7 kcfs this Saturday, 9/13. Donna Silverberg, facilitator, noted that email notification of emergency operations such as this have enhanced clearer communication amongst the TMT. Dworshak is releasing 7.3 kcfs and is currently at elevation 1524'. Outflows are expected to reduce to 4.7 kcfs on Friday, then even further to reach elevation 1520' early next week. Per discussions last week, Paul Wagner reported that the ISAB has no time to review Albeni Falls operations this year. Instead, NOAA and USFWS will engage in discussions about this year's Albeni Falls operations and suggest who will review the recommendations. Paul and Russ Keifer, Idaho, will update the group with additional information at the next TMT meeting.

#### **Chum Criteria:**

TMT members began exploring options for chum operations for this year (storing additional water at Grand Coulee, changing the structure of spawning areas at Hamilton Creek, etc.) They agreed to gather information for the September 24<sup>th</sup> TMT meeting:

- Chum criteria list developed last year – Paul Wagner
- Information on the Oregon/Washington survey of redds – Ron Boyce
- Long range winter forecast – Kyle Martin
- Model of anticipated flows based on reservoir elevations – COE, BOR
- Estimates for fish numbers (if available) – Salmon Managers

#### **Water Management Plan:**

The deadline for sending comments in on the WMP has been moved to September 24<sup>th</sup>, but all were encouraged to get them in sooner!

#### **Year End Review:**

TMT will hold its annual year end review on November 5<sup>th</sup>. At the 9/24 TMT meeting, the facilitation team will provide topics from previous years to help TMT members develop an agenda for this year's review.

#### **Other:**

Paul Wagner provided a Salmon Manager handout of an Implementation Plan process chart. TMT began discussing the chart today and it became clear that there was not full agreement from members on the process for making changes to BiOp operations.

**ACTION:** TMT members will take the chart to their respective organizations and get feedback. If there are other ways of looking at the process, members should bring ideas to the next TMT meeting for discussion.

#### **Next Meeting, September 24, 2 pm (NOTE NEW TIME!!):**

Agenda:

- Chum Criteria
- RPA 143 Presentation
- Process for Making Changes to Biop Operations
- Year End Review Topics

### ***1. Greeting and Introductions***

The September 10 Technical Management Team meeting was chaired by Cindy Henriksen of the Corps and facilitated by Donna Silverberg. The following is a distillation, not a verbatim transcript, of items discussed at the meeting and actions taken. Anyone with questions or comments about these minutes should call Henriksen at 503/808-3945.

### ***2. Transmission Limitations.***

Scott Bettin reminded the group that Jim Litchfield and others had requested a presentation on the West of Hatwai cut-plane issue and other transmission system constraints that influence -- and are influenced by -- BiOp operations. He said he had invited personnel from BPA's Transmission Business Line (TBL) to provide that presentation at today's meeting.

BPA's Brian Silverstein led this discussion. He distributed three handouts – a map of proposed BPA transmission line projects, a map of constrained transmission paths in the Northwest, and a PowerPoint presentation on how BPA uses the transmission system and explaining the West of Hatwai phenomenon. Silverstein noted that BPA got its wake-up call on this issue in 1996 when an outage caused a blackout in the Portland area that cut off power to 2 million consumers; this event is thought to have cost the region about \$2 billion. Other serious transmission-related events occurred in 2000 and 2001. BPA has not built a new major transmission line in 16 years, Silverstein said; despite a very robust economy during the 1990s, we were able to get by using more sophisticated controls on the transmission system and by working smarter. One problem facing the TBL is the fact that, if you upgrade one part of the system, the next place improvements are needed is often the next transmission line over. However, the time has now come to put wires in the air, and undertake new transmission line construction, Silverstein said.

He drew the group's attention to the map of "Northwest Constrained Paths," noting that there are two major constrained paths – east to west, between the dams and generation facilities east of the Cascades and consumers along the I-5 corridor, and north to south, between the Northwest hydrosystem and consumers in California. The West of Hatwai constraint limits our ability to move power from the generating facilities at Libby, Hungry Horse and elsewhere in Montana to consumers west of the Cascades, Silverstein said.

Recognizing these problems, said Silverstein, BPA identified 20 major transmission projects, some of which have been on the books for some time, which we feel are needed to maximize the efficiency and reliability of the transmission system. He drew the group's attention to the "Proposed BPA Transmission Line Projects" map. All told, he said, the projects on the map will cost \$1.2 billion. BPA has limited borrowing authority, he said; we asked Congress last year to approve an additional \$1.5 billion in borrowing authority, but they gave us less than half of that – \$700 million. Of the 20 projects on this list, six are now under construction but only

three of the six are major transmission line projects. By the time they're energized in 2005, these six projects will cost \$500 million. The projects under construction are noted in green on the map (the Coulee-Bell transmission line, the Schultz-Wautoma transmission line, the Kangley-Echo Lake project, the Sno-King 500/230 kV transformer, the Celilo modernization project and the Pearl 500/230 kV transformer).

And these projects will alleviate the West of Hatwai problem? Ron Boyce asked. Yes, Silverstein replied; the Coulee-Bell line will take care of that problem, but bear in mind that there are other problems east of the Cascade. The current path capability is 2,800 MW; once the Coulee-Bell line is complete, at a cost of \$150 million, that capacity will be increased to 4,000 MW. Silverstein spent a few minutes going through some of the other projects on this map; he noted that BPA is confident that the projects now underway will be completed on time.

Continuing on, Silverstein noted that there are some who believe transmission system constraints are simply a figment of BPA's imagination. The utility industry is generally reluctant to discuss near-misses, he said; this August, there was an incident where there was a great deal of power being produced and transmitted from Montana, but virtually no generation at Grand Coulee or Chief Joseph. The project operator noticed that voltage levels were starting to fluctuate; he called for redispatch, bringing up generation at Grand Coulee and cutting back generation at Libby. The problem was averted, but if the operator had not been alert, my guess is that Spokane would have dropped off the grid, he said. Silverstein also described another near-miss that occurred in the West of Hatwai area on June 4, during which generation at Libby and Dworshak had to be suddenly curtailed to avoid transmission system problems. The bottom line is that this is a real problem, said Silverstein; as we saw on the East Coast in August, power outages and cascading blackouts can occur without warning.

Silverstein continued on through the list of "on-hold" transmission system projects, noting, for example, that the design and environmental work is now complete on the McNary-John Day transmission line, which will support the Columbia wind projects and upcoming gas turbine construction. BPA is now waiting for someone to write them a check for \$150 million so the two-year construction period can commence. Silverstein explained that the projects shown in red on the map are those for which at least some work has been completed, but are on hold due to funding, environmental or other issues; projects shown in blue have not yet been started.

Silverstein added that the events on the East Coast this summer have increased the level of interest in transmission system upgrades and line construction; it is impossible to predict, however, what the effect will be in terms of additional funding.

Henriksen noted that the June 4 West of Hatwai problem had a direct impact on the Biological Opinion operations agreed to at TMT; it was necessary to reduce outflow and generation at Dworshak during the period the problem was being resolved.

BPA's Tracy Rolstad then went through the PowerPoint presentation, which described how BPA's Transmission Business Line uses the Northwest transmission system. He touched on the following major topic areas:

- Different needs and uses of the transmission system
- BPA’s transmission system philosophy
- Interties and Northwest cutplanes (map)
- A description of the West of Hatwai cutplane
- West of Hatwai curtailments (how they are applied, projects affected etc.)
- A curtailment example

Rolstad noted that there is an important statement in the “Philosophy” slide: “For other less-common contingencies, it is not economical to provide enough capacity to maintain full service, so interruption of service or some reduction of quality of service is allowed.” In other words, said Rolstad, while the transmission system is designed to function efficiently over 95% of the range of possible conditions, it is simply not economical to build in the safeguards necessary to prevent all outages.

Rolstad noted that the real West of Hatwai problem showed up in 2001, when the aluminum smelters shut down. The current transmission system was designed to service the aluminum plants, he said; when they not operating, problems become much worse. The late spring/early summer period is typically when the West of Hatwai problem occurs, he added; unfortunately, that is one of the key BiOp water management periods as well.

In response to a question from Cathy Hlebechuk, Rolstad said the TBL does differentiate between different types of emergencies – essentially, those that can be anticipated, and true emergencies, under which automatic actions, such as the near-instantaneous curtailment of generation in response to equipment failure, are taken. There is no discussion of those emergency response actions, he said – they are taken automatically to prevent catastrophic failure of the transmission system. I just wanted to be sure the salmon managers understand that there are different types of emergencies, Hlebechuk said – that there are situations under which BiOp operations will be constrained when problems occur.

Rolstad noted that the West of Hatwai curtailments are applied in a pro-rata fashion by contract right and use – in other words, he said, they are equitably applied. The resources affected by the West of Hatwai cutplane are Libby, Dworshak, Hungry Horse and Albeni Falls; the transmission line is also affected by operations at Chief Joseph and Grand Coulee. Avista’s westbound schedules and other Montana resources such as Colstrip can also be impacted. When it is energized in January 2005, the new Coulee-Bell transmission line will solve some of these problems, he added, but not all of them.

Silverstein said BPA has done some preliminary studies on the possibility of adding a sixth unit at Libby. BPA’s Mike Kreipe described the history of this project and the economics behind it. The new unit would increase Libby’s transmission capacity from 600 MW to 720 MW. Kreipe described BPA’s thermal analysis of the conductor limits associated with this project, as well as the upgraded control systems the sixth unit would necessitate. He noted that if the sixth unit is added at Libby, it would remove a lot of the reactive margin from the system, increasing the likelihood of voltage oscillations or collapse. An additional 230 kV Libby-Bell transmission line would be needed to

support a sixth unit at Libby, Kreipe said. The bottom line is that we could do band-aid solutions – tighten the lines or install more sophisticated controls, or we can build the \$100 million+ transmission line, or we can look at operational tradeoffs, Silverstein said, adding that, if BPA spends \$100 million on a transmission projects, it expects 1,000 MW in additional capacity, not 100 MW.

Rolstad noted that the summer spill program can exacerbate transmission system instability; it was definitely a contributing problem to the August 1996 outage. Spill comes with a cost, he said – decreased reliability. The better we understand which units aren't going to be spinning, he said, the more precisely we can describe our operational limits. Silverstein noted that improved dewatering capability at The Dalles and John Day, as well as the construction of the Schultz-Wautoma transmission line, due for energization in December 2005, will help alleviate this problem.

Again, however, despite the projects that are now underway, in the Northwest transmission system, we're essentially shoving problems from one area of the system to another, Rolstad said. If we fix the west of Hatwai problem, that could cause additional problems in, say, the west of Noxon area. The bottom line is that we're going to need to adopt some new criteria if we're going to get completely out of the salmon managers' hair, said Rolstad. The challenge is that we can only plan for the operations we can anticipate, said Silverstein – when operations change, we have to scramble to deal with that. To the extent that you can anticipate changes, that allows us to be forward-looking in our planning, and to head off concerns before they become actual problems, he said.

Boyce thanked BPA for a very informative presentation.

### ***3. IT Input on Spill Criteria/Process.***

Henriksen said that, at its meeting last week, the IT requested historic data on the timing of all of the fish runs at all projects – that will be the first step in this journey, she said. The Fish Passage Center is going to try to provide this data a week in advance of the October IT meeting. At that meeting, the IT also plans to review the BiOp's contemplated survival targets, as well as the methodologies that have been proposed so far for deciding when to start and end spill, as well as the criteria used by the Mid-Columbia PUD spill programs, Silverberg said. There was a desire, on the IT's part, to involve the TMT in that review – a joint IT/TMT meeting, in other words, Silverberg said. We'll look into the logistics of that, she said; it will likely happen during the first week in October.

### ***4. Current System Conditions.***

Beginning with the current status of the migration, Paul Wagner said the action, currently, is in the adults. Boyce noted that fishermen in the Rainier area of the Columbia are currently enjoying phenomenal success; current catch rates for upriver bright chinook are the highest ever recorded. They are also talking about upping the run size prediction upward from the original estimate of 600,000 fall chinook entering the river mouth,

Boyce said. Wagner said 240,000 adult chinook have passed Bonneville to date; the daily peak exceeded 20,000 fish in early September, although passage counts have fallen somewhat in recent days, to about 11,000 yesterday. Now that temperatures have begun to moderate, Boyce said, we'll probably see those counts come back up. It's a very good run, comparable with the counts to date seen in 2001.

With respect to juveniles, said Wagner, combined subyearling chinook indices at Lower Granite have been running in the 200-400 range recently; the surprise was Little Goose, where indices jumped up to the 1,100-1,800 range until two days ago, when they receded to the 700-900 range. Water temperatures, as Ron noted, are beginning to moderate throughout the system, he said.

Moving on to current reservoir operations, Tony Norris said Grand Coulee is currently at elevation 1279; Hungry Horse, 3538 feet and meeting the Columbia Falls minimum flow. The fires still have caused no transmission system problems in the Hungry Horse area, he said, and with the current rain, it is unlikely that they will. The plan is to refill Grand Coulee to elevation 1283 by September 30, Norris said.

Henriksen said that, as, as discussed at last week's TMT meeting, flow was reduced by 1 Kcfs per day at Libby over the weekend, as project outflow approached 7 Kcfs, there was an issue with the backup water supply at Bonners Ferry – the intake for the system in the Kootenai River was too high. We have therefore increased Libby outflow to 11 Kcfs temporarily until the city can get a pump running to water up their wells, perhaps later today or early tomorrow, Henriksen said, at which point Libby outflow will once again be reduced from 11 Kcfs to 7 Kcfs, again, at a rate of 1 Kcfs per day. It will take us five days to get back down to 7 Kcfs, so if we start tomorrow, we will be at 7 Kcfs by Sunday night, she said.

Henriksen said Dworshak is releasing 7.3 Kcfs on a day-average, under the load-following scenario laid out at the last meeting. The project is currently at elevation 1524 feet and will ramp down to a day-average outflow of 4.7 Kcfs, running one big unit during the day and one small unit at night, on Friday, September 12. By Tuesday, Dworshak will be at elevation 1520 and releasing minimum outflow, she said.

There are no problems to report in the power system, currently, said Bettin. With respect to water quality, Laura Hamilton reported that Dworshak's release temperature continues in the 45-degree range; forebay temperatures in the Lower Snake are averaging about 66 degrees, F.

At Albeni Falls, said Henriksen, we wanted to follow up on the discussion we had last week regarding winter operations at that project. The word from the ISAB was that they do not have time to address that issue this year, said Wagner; NOAA Fisheries is now discussing a process for making that decision with the Fish and Wildlife Service. You will recall that, for the 2004-2007 period, we had asked for ISAB guidance about drawup vs. drawdown at Albeni Falls (2051 vs. 2055, or some elevation in between) to support kokanee spawning in the lake. In the meantime, then, NOAA is talking with the Fish and Wildlife Service about what to do this year? Silverberg asked. That's correct,

Wagner replied. We'll discuss it again at the TMT's September 24 meeting, Silverberg said.

### ***5. Chum Criteria.***

In response to a question from Boyce, Bettin said BPA has not yet received a fall water supply forecast. If don't get fall rain, Bettin said, our plan is to keep Bonneville outflows down to keep the fish from spawning at higher elevations, so we don't have to dewater redds later. Can we make more water available, perhaps by ponding additional water at Grand Coulee this fall? Boyce asked. Grand Coulee isn't large enough to significantly increase Lower Columbia flows for two months, Bettin replied. The other problem is that such an operation will give you a maximum Vernita Bar protection flow, Henriksen said. Since we don't yet know what water conditions are going to be this fall or winter, that would be very risky, she said. Bettin added that the BiOp planning date for the beginning of chum operations is November 1; by then, better information will be available on the available water supply.

At this point, we're still considering all options, Bettin said – we just don't know what we're going to do yet. In response to a question from John Wellschlager, Boyce said that, when the chum start to arrive below Bonneville, the salmon managers would like to implement the minimum Bonneville tailwater elevation called for in the BiOp, 11.5 feet. So your interest is to maximize the spawning habitat available to the chum, to avoid the destruction of redds by later-arriving fish? Wellschlager asked. Correct, Boyce replied – we have had some discussions about physical modification to improve access to the spawning areas at lower Bonneville outflows, but there are risks associated with that. Those risks include changing the gradient of flow and the groundwater environment, for a species that needs good spring and upwelling flow in the gravel for successful incubation, noted Wagner. In other words, in trying to help, you may be creating a worse environment for spawning, said Boyce.

The plan for today was to review some of the issues that traditionally have been associated with the chum operation, said Silverberg, noted Silverberg; perhaps we should wait to delve into the specifics until we get an updated water supply forecast. Kyle Martin said his fall/winter weather forecast, as well as the University of Washington's predicted streamflows in the Columbia after October 1 will be available soon; he offered to provide a weather briefing at a TMT meeting in late September or early October. It was generally agreed that this would be useful; Martin said he will attempt to provide that presentation at the TMT's September 24 meeting.

Will we have the Hamilton Creek gauges in place to allow us to monitor spawning ground conditions in real-time this year? Henriksen asked. Yes, Boyce replied. Perhaps at the next TMT meeting, we can also discuss the Oregon/Washington redd mapping information developed after the 2002 spawning, Bettin suggested. I'll try to provide that, Boyce replied. At the September 24 meeting, we can also review the criteria we've used to make chum operational decisions in past years, Silverberg suggested. It would also be helpful if the Corps could provide some modeling runs of the flows anticipated to be available for chum, Boyce said. Henriksen suggested that Boyce look at the current baseline BiOp 27c run; in the absence of new runoff forecast information, we

can't really give you a more accurate picture of what operations are likely to look like, she said. Didn't you provide some model runs last year based on current reservoir elevations? Wagner asked. Yes, but if you take a look at the runs we did last year, you'll find that reservoir elevations are almost identical to last year's.

Operationally, would it be possible to store some additional water in Grand Coulee, if the current dry conditions persist? Boyce asked. Physically we might be able to fill above elevation 1285, Bettin replied, but that would require us to go to an average flow of 70 Kcfs or 80 Kcfs at Bonneville. Storing into the top seven feet at Grand Coulee would provide an additional 300 kaf in storage, Henriksen said; however, that only translates into an additional flow of 5 Kcfs per day for one month. We're just looking for some additional water that might help bridge the gap between low flows in the fall and higher winter flows, Boyce said. The other unanswered question is whether we are required to do that operation under the BiOp, Bettin observed.

#### ***6. New System Operational Requests.***

No new SORs were submitted prior to today's meeting. Martin said he had little new to report on problems reported during the fall treaty fishery; he noted, however, that there has been some discussion of extending the fishery for a week or two. He said he will provide catch-to-date information at the next TMT meeting.

#### ***7. Recommended Operations.***

Recommended operations were covered during Agenda Item 4, above; no other major operational changes are planned for the next two weeks.

#### ***8. Discussion of 2004 Water Management Plan.***

Boyce said Oregon has developed its draft comments on the 2004 Water Management Plan; while these comments have not yet been reviewed internally at ODFW and are not yet ready for submission, ODFW is working diligently to finalize them. He said it should be possible for his agency to submit its comments within a week or two. CRITFC is also working on its comments and they are undergoing internal review, said Martin. Wagner said NOAA Fishery's comments are mostly minor and editorial in nature; he said he will provide them directly to Boyd within a day or two. Russ Kiefer said IDFG also has a few minor comments, which he will submit electronically within the next few days. Steve Haeseker said he does not know, at this point, if the Fish and Wildlife Service plans to submit comments on the 2004 WMP.

#### ***9. Schedule for Year-End Review.***

After a brief discussion, it was agreed to hold the TMT's annual year-end review on Wednesday, November 5. Henriksen asked the TMT participants to consider the specific topics they would like to review, to allow the Corps and other to prepare the necessary information for presentation at the meeting. It was agreed to discuss this topic further at the next TMT meeting.

**10. Other.**

Wagner drew the group’s attention to a handout, developed at yesterday’s FPAC meeting, showing a flow chart developed by the salmon managers describing a strawman process for making changes to the Implementation Plan or to BiOp actions. He noted that FPAC felt that the comment period on the Implementation Plan was the best place to put forward the operational changes various parties would like to see, and that the TMT is the best forum through which to bring those changes to the implementation planners’ attention. Bettin noted that this flow chart is fairly generic; it might be helpful to list the 15 issues already identified by the TMT, as well as where and when the TMT anticipates that these issues will be resolved.

The group devoted a few minutes of discussion to this framework. Ultimately, it was agreed that some additional clarity is needed on the process for making operational changes to the BiOp. It was further agreed that the TMT participants will discuss this issue within their own agencies and come to the next TMT meeting prepared to discuss it in greater detail.

**11. Next TMT Meeting Date.**

The next meeting of the Technical Management Team was set for 2 p.m. Wednesday, September 24, followed by another meeting on October 8. Meeting summary prepared by Jeff Kuechle.

***TMT ATTENDANCE LIST***

***September 10, 2003***

<b><i>Name</i></b>	<b><i>Affiliation</i></b>
Cindy Henriksen	COE
Donna Silverberg	Facilitation Team
Tony Norris	USBR
John Wellschlager	BPA
Robin Harkless	Facilitation Team
Colin Beam	PPM
Tim Heizenrater	PPM
Mary Karen Scullion	COE
Steve Haeseker	USFWS
Scott Boyd	COE
Julie Ammann	COE

Nancy Yun	COE
Russ George	WMCI
David Benner	FPC
Mike O'Bryant	CBB
Rudd Turner	COE
Jim Adams	COE
Nick LANE	BPA
Paul Wagner	NOAA Fisheries
Laura Hamilton	COE
Brian Silverstein	BPA
Mike Kreipe	BPA
Randy Wortmann	COE
Russ Kiefer	IDFG
Tonm Le	PSE
Margaret Filardo	BPA
Lance Elias	PPL
Mike Butchko	Powerex
Kyle Martin	CRITFC
Tracy Rolstad	BPA
Scott Bettin	BPA
Cathy Hlebechuk	COE