

To: President Gamble Business Process Review Oversight Committee	From: BPR Treasury Team (LeAnn Anderson-BL, Ed Binkley-GF, Chris Fastnow-BZ, Heather Halverson-BL, Bob Snyder-BZ, Chris Wendland-HV)
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**MSU Business Process Review Business Case: Treasury Team
Cash Management**

Executive Summary

Cash Management at MSU consists of:

- Monitoring SABHRS balances
- Monitoring Banner balances
- Investing/disinvesting in STIP and STBP
- On-demand reporting and reconciliation
- Monthly interest distributions

The Treasury Team reviewed our current cash management processes and found remarkably similar processes with the exception that Bozeman was considerably more automated, using an Access program developed for this purpose. The Oversight Committee endorsed our Phase I recommendation to explore employing the Bozeman Access tool on the other campuses.

We created a detailed description of the steps in the process employed on each campus. We used this description to generate estimates of the time spent on cash management each year and the attendant salary costs. We also collected data on investment ratios. Finally, we developed an estimate of the implementation needs, in terms of employee time. No software or hardware purchases are required to implement our recommendation. Analysis of these data suggest small time savings over the long term – about 150 hours per year across the four campuses – however time spent on implementation outweighs the annual operational time saved. We would "make up" the implementation time near the end of the second year.

We have identified many non-financial benefits to the recommended option, including:

- Reduction in error,
- Enhanced technical support,
- Greater cross-training and back-up,
- Enhanced reporting.

It is these non-monetary and non-quantifiable benefits that convinced the Treasury Team of the merits of adopting the Access tool on all four campuses.

The team feels strongly that centralizing this function would not be an improvement. Implementation costs are the same whether the process is centralized or not. Further, operational costs are equivalent. Each campus has responsibility for its own accounts, and each cash manager believes in continuing to monitor their own accounts for this reason. Calling a central investor after making the effort to monitor accounts seems an efficiency loss.

Internal Audit and IT Security personnel have reviewed our proposal and voiced their concerns. We address their specific goals – data confidentiality, integrity, and availability, in the case of Security, and division of responsibility and internal controls in section D and in the detailed process description in Appendix A.

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A. Introduction

1. MSU Business Process Review

The 4 campuses of MSU were invited to participate in a business process review of all administrative and financial business processes across the 4 campuses.

There were several strategic objectives:

- develop a single process to be used by the 4 campuses,
- have a consistent set of definitions for all data elements, and
- improve institutional and system efficiencies and effectiveness.

Each of the processes will be:

- Redesigned,
- Modified, or
- Remain unchanged.

Each process will have a business case and cost benefit analysis to support the final recommendations.

The investigation and development phases (Phases I and II) occurred during 2006. Implementation of approved recommendations will occur during 2006 and 2007 in alignment with business cycles and resources availability.

a. Summary of Treasury Processes to be Redesigned or Modified.

Process Title	June 28th 2006 Recommendations	Interim Recommendations
Cash Management	Modify	Modify
Bonded Indebtedness	Modify	Combine
Other Debt Management	Modify	
Capital/Plant Funds	Modify	No change
Endowments	No Change	No change

The Treasury Team reviewed five processes in Phase I and brought the above recommendations to the Oversight Committee in June. In the meantime, we have reviewed in greater depth the four modifications. This document describes Cash Management in its current state and our recommendations.

After in-depth review, the Treasury Team concluded that the bonded debt and other debt processes are similar, as are our proposals. Therefore we will combine them in our final recommendation.

Finally, Plant and Capital Funds have been reviewed by the Treasury Team and will not be modified as part of the BPR process. This was approved by Craig Roloff as of 11/28/06. Bozeman has the largest number of transactions in this arena by far, exceeding the other campuses' combined total by several factors. Further, most of the process is decision-oriented and specific to the potential or realized purchase; hence the processes are very specific to

each campus. For capital programs, much of the process is regulated and beyond our control. Finally, much of this process is being considered in pieces on both the Treasury Team and other teams. Business officers involved in these processes will accommodate any revisions they recommend.

b. Business Process Review Objectives

The Treasury Team's goals for cash management are to:

- increase efficiency,
- maximize investment revenue within good business practices,
- build in redundancy or backup across the campuses.

c. Scope of This Case – Cash Management

The cash management process includes monitoring of SABHRS and Banner cash balances, review of transactions for errors or delays, monitoring of investment balances, and investing and disinvesting in the state's Short Term Investment Pool (STIP) and the Trust Fund Bond Pool (TFBP). Regular and *ad hoc* reports result from these activities but are not the focus of cash management.

The Treasury Team reviewed our cash management practices in Phase I. The four campuses use strikingly similar processes, following nearly identical steps in nearly identical order. However, Bozeman's process is considerably more automated, which allows for review and management of many more funds without significantly adding to the time or salary costs. Therefore, we recommended a modification at the end of Phase I: adoption of the basic process used in Bozeman at the other campuses. The Oversight Committee endorsed this recommendation.

d. Recommendation

In this business case we present our preferred modification recommendation: **employ an Access interface to Banner** that was developed on the Bozeman campus several years ago. The Access tool has been used successfully in Bozeman and can be expanded for use by the other campuses.

Access is programmed to extract from Banner daily: date, fund code, fund code predecessor, title for each, cash, STIP, and TFBP balances. This table is revolving on the last 35 days to capture a full month yet not needing to come in on a weekend or holiday to run monthly reports.

No data are entered into Banner directly through the Access tool. After determining amounts to invest or disinvest, the user inputs the relevant information in an Access form. An e-mail is sent from the user's account to the Board of Investments with the fund code, the total amount to purchase and the total amount to sell, and the date. A clearing account is used for this purpose.

An x-feed process is used to invest/disinvest and allocate interest earnings to individual funds. The x-feed is delivered via email to the Business Office (or an appropriate accounting tech) for separation of responsibility. The accounting tech actually processes the x-feed but need not re-enter all of the data, eliminating one likely source of keypunch error.

Interest rates and other information used in this program have no natural home within Banner and are stored in a table in the Access program.

Using the Access program allows for a quick and careful view of account balances, and its speed allows for more frequent investment changes if warranted. Thus, we anticipate implementing the Access tool will smooth out some of the differences in investing norms across campuses.

2. Business Process Review Business Case Purpose

This business case describes the Cash Management process, the data the Treasury Team collected to review it, and the recommendation we have developed. It also addresses security and software concerns raised during our review. The Oversight Committee and President Gamble, may use this document to inform their decisions to approve our recommendation. We do not expect any purchase to follow from this decision.

3. Background

The Treasury functions at MSU are largely invisible to the bulk of university constituents, but they may have a large impact on our operational budgets. Cash management, in particular, has few direct clients and low visibility, however it can result in significant revenue for the university through appropriate investment levels. Further, appropriate cash management keeps the university in good fiscal health, out of legal trouble, and away from errors resulting from bookkeeping or keypunching errors.

The Treasury function is under review in BPR because of its location within Administration and Finance, not because of any errors or major inefficiencies. However, the Treasury Team sees BPR as an opportunity to learn across campuses and improve each campus' efficiency in this area as well as to maximize investment revenue.

a. Problems and/or Opportunities Addressed by Business Process Review

As with the entire BPR process, the Treasury Team sees several opportunities presented by BPR. Not all of the overall issues are applicable to the Treasury functions. Those that we explicitly addressed during our review include:

- Single process across 4 campuses to promote efficiency, succession planning, and training.
- Data consistency to improve the reliability of management reports both from an individual campus perspective and a comparative, cross campus perspective.
- Quality process to improve quality, reduce error rates and improve the targeting of training and reference materials,
- Improved technical functionality by implementing Banner functionality *where possible*.
- Development of Business Continuity Plan (BCP) based on a risk assessment of improved processes. A BCP will also link in with an IT Disaster Recovery plan.
- Implementation of Front Office/Back Office concept *if appropriate*.

b. Connections to other Projects/Products or Programs

The Treasury Team BPR project has ongoing links with:

- Accounting Functions BPR

The Cash Management Process review is related to:

- SABHRS

- Banner Finance Reports
- Accounting Functions
- Debt Management

c. Other, Alternative Actions

If the Oversight Committee or President Gamble do not approve our recommendation for streamlining and standardizing cash management across the campuses, we propose reverting to the *status quo*.

d. Current Problems or Limitations

There are no major problems to address in the cash management process. Occasionally a transaction review produces a red flag, and the parties in accounting functions track down the error and correct it before it becomes a problem. The state requires SABHRS balances to be negative no more than seven consecutive days, so review of those balances on a regular basis keeps the university in compliance. In recent memory, no campus has been punished for a violation of this kind.

Investment income generated by the four campuses varies based on the ratio of investments to cash. The campuses differ significantly in their investment norms – some over-invest on a regular basis, while others are much more conservative. Cash-to-investment ratios should be monitored and kept at a level where financial obligations may be met while generating optimal investment income. BPR allowed the team to compare practices to meet all of these obligations.

The main constraint on the Treasury function is a lack of time to do other things. The Treasury actors on all four campuses also have other obligations within accounting, capital programs, and other areas. Streamlining the cash management process will lead to more attention and time to those other important aspects of their jobs.

e. Other Important Historical or Situational Information

Because each campus has responsibility for their own financial affairs – each campus' relevant actor would be held accountable if accounts were negative for more than seven days, e.g. – and because there is specific, campus-based information involved in the decision to invest or liquidate certain accounts, the Treasury Team recommends keeping the decision-making portions of cash management decentralized.

Although it is possible for one person or location to have responsibility for "pushing the button" to invest or disinvest, we do not believe it is appropriate to centralize this task. First, because of the nature of the Banner tables and campus accounting, there must be four separate triggers. Second, though one person could pull all four triggers, that person must rely on the decisions made on each campus, informed by each campus' needs. Efficiency gains from consolidating the actual investing would be foregone by communication time and effort. Finally, by keeping the process decentralized, four different people have intimate knowledge of the cash management process and can provide backup for each other in the event of a disaster or more benign event.

B. Methods and Assumptions

In Phase I, the Treasury Team developed flowcharts for each process under review, comparing steps involved on all campuses. We collected data on the amount of time each step takes (flowchart analysis) as well as how much of each employee's FTE is devoted to the process overall (workload

distribution analysis). There is significant agreement among the campuses in the steps of the process, data definitions, and reporting needs in cash management. The only visible difference at the end of Phase I was the amount of time it takes to process substantially more transactions in Bozeman relative to Billings, Great Falls, and Northern. That is, Bozeman appears to be much more efficient.

Because the Oversight Committee gave us fairly explicit direction to explore and if possible employ the Bozeman Access tool, in Phase II we focused on modifying the Bozeman process to fit the needs of the four campuses. We created detailed process descriptions (see Appendix A) for each campus with specific time estimates for all of the detailed steps. This allows us to compare the actual time spent at the three campuses with more manual processes against the actual time spent in Bozeman. This analysis appears below. Also presented below is a comparison of the projected investment ratios under the status quo and recommended option.

1. Financial Metrics

For financial metrics, we calculate time and salary costs devoted to cash management and investment income generated through the process.

There are also non-financial considerations, such as reduction in error, backup/redundancy and succession planning.

Additionally, there are one-time implementation costs of training, setup, testing, documentation, and succession planning. We will make gross estimates for these to fully account for the true impact of adopting the recommendation.

2. Business Case Scope and Boundaries

This business case covers the four campuses, the time spent on tasks relating to cash management, projected over the next year. Only the time (and related salary costs) of those directly involved in cash management – reviewing balances, transactions, and investments, as well as decision-making and execution of investment/disinvestment – are included.

a. The Analysis Period

We predict time involved over one projected year based on weekly estimates of actual time spent over the last year. We project investment ratios for the first half of fiscal 08, based on actual investment ratios and amounts from July to December 2006, as well as assumed constant returns. Obviously, the first half of the fiscal year is incomplete, but we do not have data for the full year and are reluctant to extrapolate from the first half of the year to the second. However, the assumptions are identical in both the recommended scenario and the *status quo*, so comparisons should be tenable.

b. Geography or Location

Billings, Bozeman, Great Falls, and Northern are involved in this analysis. The Extension and Experiment Station accounts are managed in Bozeman and are therefore tacitly included, though no personnel from those two agencies have been included in the analysis. For the most part, we will compare the three campuses against Bozeman, since we propose extending the Bozeman process to the other campuses.

c. Organizations

Financial Services or the equivalent office is included on each campus.

d. Functions and Positions

Bozeman is the only campus with an explicitly defined Treasury function, vested in the position of Director of Capital Programs. On the other campuses, the Controller, Budget Officer, and Director of Financial Services are principal actors in cash management. Others within Financial Services offices also participate.

e. Technology

No technology costs are included in this business case. Both the status quo and the recommendation use tools already on hand.

3. Scenario Design

This business case compares continuing the *status quo* on all four campuses to adopting the Bozeman Access tool on all four campuses. The main difference between these two scenarios is the adoption of the Access program on the three campuses not currently using it. Therefore, we will consider the costs of expanding its use and the expected benefits based on experience in Bozeman. Of course, use on the other campuses will not be exactly like use on the Bozeman campus. For example, Bozeman's cash management process involves thousands of accounts while the other campuses have far fewer. However, we can use the Bozeman case as an upper bound – after appropriate training and set-up to allow the other campuses to "ramp up."

Investment income generated by the four campuses varies based on the ratio of investments to cash. The campuses differ significantly in their investment norms – some over-invest on a regular basis, while others are much more conservative. Using the Access program allows for a quick and careful view of account balances, and its speed allows for more frequent investment changes if warranted. Thus, we anticipate implementing the Access tool will smooth out some of the differences in investing norms.

4. The Cost Model

The financial considerations we have included are time spent on the process (with attendant salary costs) and investment earnings. No other costs appear to be relevant to the change we are proposing. We will include implementation costs (set up, training, documentation), as well as regular operational costs.

Investment income could increase or decrease depending on our current practices. If any of the campuses currently over-invest, implementing the recommendation may cost the university money (such a loss would be reasonable to incur in order to maintain appropriate business practices). We do not calculate actual or proposed earnings, but we present the actual and expected cash balances and investment balances.

5. The Benefits Rationale

We also consider non-monetary benefits:

- error reduction, which will in turn reduce time spent within Accounting functions on error correction;
- consistency across campuses, leading to
- backup and cross-training, especially for campuses with few employees in this function;
- and enhanced reporting at minimal additional programming cost.

6. Data Structure

N/A

7. Data Sources and Methods

We employed the following in our analyses:

Data	Source	Method
Workload Distribution Charts	Employees involved	Self-report
Detailed Flowcharts	Employees involved	Self-report, validated by team
Cash-to-investment ratios	Banner	Daily extract via Access compiled monthly

a. Data Sources

All sources are internal to the BPR process, stored in the Access database, or extracted from Banner.

b. Methods for Estimating Costs and Benefits

We use estimates of time spent based on Bozeman activity to predict other campuses' future time expenditures. Prior time spent on all campuses is self-reported. The process is standardized enough within a campus that variation is rare, yielding what we believe to be accurate estimates.

We predict time involved over one projected year based on estimates of actual time spent in the previous year.

For investment analyses, we compare two treatments of the available cash for the last six months of 2006. We compare actual amounts invested on each campus, averaged monthly (for status quo) to 97% of the same dollar amount invested (to proxy for the recommended option). Obviously, the first half of the fiscal year is incomplete, but we do not have data for the full year and are reluctant to extrapolate from the first half of the year to the second. However, the assumptions are identical in both the recommended scenario and the *status quo*, so comparisons should be tenable.

We will not explicitly estimate a dollar figure associated with expected benefits.

8. Assumptions

For time and salary analyses, we assume that time spent at Bozeman is indicative of the time it will take to run similar processes at the other campuses, once the program is fully implemented and everyone is fully trained. We further assume that unchanged steps will continue to take the same amount of time by the same people.

For investment analyses, we compare two treatments of the available cash for the last six months of 2006. We compare actual amounts invested on each campus, averaged monthly (for status quo) to 97% of the same dollar amount invested (to proxy for the recommended option).

C. Business Impacts

Appendix A shows the current process on all four campuses in detail, alongside the proposed process. Time spent by all actors and attendant salary costs appear for each campus. Total costs for the fully implemented new process are compared to the current total costs on the final page.

Investment ratios for July through December, 2006 appear in Appendix B.

Implementation time estimates appear in Appendix C.

1. Analysis

a. Operational Costs

See Appendix A.

In each case (except Bozeman), we anticipate at least some cost savings with full implementation. These savings are greatest in Great Falls, where the investing process is daily and manual. Without changing the frequency of investing, Great Falls may realize time savings of about 150 hours over the course of a year, equivalent to \$3,600 in salary costs per year. Billings and Northern will likely see smaller savings, and Bozeman may increase the amount of time and salary by adding SABHRS monitoring to the process. Because Great Falls is expected to see the greatest improvement, with small changes on the other campuses, the overall estimate is about 150 hours and just under \$3,500 a year in salary costs saved across the four campuses.

Further consolidation across the campuses might yield additional time savings, but it is unlikely. If one actor on one campus were to invest, for instance, each of the other campuses' main actors would still monitor their cash balances to insure compliance with the law and good fiscal practices, giving the single investor their input prior to any decisions being made. This would not save much time on each campus. Further, assigning responsibility to Bob Snyder, the person with the most accounts and experience would result in higher salary costs associated with this process than under the recommended option.

b. Investment Ratios

See Appendix B.

On all four campuses, current investment ratios (invested cash to cash on hand) vary widely. Northern, for example, swings between making investments while maintaining negative cash balances (significantly "over-investing") to investing half of their cash on hand (arguably "under-investing"), while Billings rarely invests more than 95% of its cash. Using the Access program should make overall investment ratios easier to track, and therefore should smooth out those variations. Further, we expect it will be easier to monitor cash and investments, making it

possible to invest close to 100% of cash, or whatever level of investment is desirable to the Oversight Committee.

If all four campuses hew a stricter investing line, averaging 97% of cash on hand to maximize earnings while maintaining positive cash balances, some campuses will come out ahead and some will fall back from the first six months of FY07. We project the net amount invested across all campuses to be about the same, but Billings and Great Falls would likely see six figure increases in the amount of cash invested, while Bozeman and Northern would see a reduction in invested cash. We do not project the actual earnings.

c. Set-Up, Training, Implementation

See Appendix C.

Set-up and training times for this recommendation are not trivial. Bob Snyder expects to invest about 66 hours programming, 80 hours installing on the other three campuses' servers (in concert with campus IT personnel), and 45 hours on continued training. It will take about two years of operational time savings to make up this implementation time. There are additional costs (not included in the Appendix) for user and technical documentation, however those costs will be incurred whether or not the other campuses adopt the tool as long as Bozeman continues to employ it.

Apart from training costs, these implementation resources are required whether the process remains on all four campuses or is consolidated on one. To make the appropriate interface to Banner, there must be four separate campus tables.

The Treasury Team believes the non-financial gains from this recommendation outweigh these quantifiable costs.

d. Analysis Summary

- Time savings on an annual basis are positive but not large.
- Investment earnings are likely to go up for all campuses combined, but individual campuses may see a decrease in earnings based on smaller amounts of cash invested.
- Implementation costs are non-trivial.

2. Analysis of Results

Apart from implementation costs, the recommended process will save the campuses about 150 hours a year and earn them additional money in investment income. However, the implementation costs are significant. Still, the team believes that the non-monetary benefits (below) tip the balance toward implementing the Access program on all four campuses.

3. Non-financial and Non-quantified results

- Error reduction through greater automation and reduced dependence on key punching, which will in turn reduce time spent within Accounting functions on error correction;
- Smoother investment ratios through ease of balance monitoring and speedier investment processes;

- Consistency across campuses, leading to;
- Backup and cross training, especially for campuses with few employees in this function;
- Enhanced reporting at minimal additional programming cost – many reports are already written with the end users in mind and can be expanded to four campus use without tying up ITC or Finance report writers' time.

D. Sensitivity, Security and Risk Analysis

1. Assumption Sensitivity Analysis

Cash balances are likely to deviate from the assumptions above, but we cannot predict them any better than based on our past experience. Changes should not affect the conclusions.

Time and training costs may also deviate. Updates to Banner or Microsoft will affect the Access interface with Banner creating a need to spend additional time modifying the Access tool. We do not know how much time or knowledge must be spent with each instance. However, Bob Snyder is likely to invest that time anyway to make his own version of the tool compliant. Extending the fix to all four campuses will not appreciably affect that investment.

2. IT Security and Internal Audit Concerns

a. Programming and Documentation

The cash management program was originally written by Bob Snyder in Access and is regularly run by him. The Finance IT group is taking on responsibility for cross-training and technical documentation, along with Bob Snyder, both for internal controls and for succession planning. Technical documentation will be developed over the next year. User manuals will be developed by those within the Treasury functions at each campus before full implementation.

b. User Authentication

Users may only access the program and the attendant Banner data (below) after receiving a security role as established through Paul Lambeth in ASG. The MTLs approve a Banner role and Jim Bratsky implements the permissions. The program is not accessible if the password fails 3 times. Bob Snyder, or his backup in Finance IT, can reverse the lockout.

c. Data Extracted, Entered, and Stored

No sensitive or private information is used in this process. Access is programmed to extract from Banner daily: date, fund code, fund code predecessor, title for each, cash, STIP, and TFBP balances. This table is revolving on the last 35 days to capture a full month yet not needing to come in on a weekend or holiday to run monthly reports.

No data are entered into Banner directly through the Access tool. After determining amounts to invest or disinvest, the user inputs the relevant information in an Access form. An e-mail is sent from the user's account to the Board of Investments with the fund code, the total amount to purchase and the total amount to sell, and the date. A clearing account is used for this purpose.

An x-feed process is used to invest/disinvest and allocate interest earnings to individual funds. The x-feed is delivered via email to the Business Office (or an appropriate accounting tech) for

separation of responsibility. The accounting tech actually processes the x-feed but need not re-enter all of the data, eliminating one likely source of keypunch error.

Interest rates and other information used in this program have no natural home within Banner and are stored in a table in the Access program.

d. Location and backups

The program will reside on a network server on each campus. Housing the program only in Bozeman with access granted to the other campuses appears to be prohibitively slow, with delays up to 15 minutes for tables to refresh from Havre. To increase speed and efficiency, we propose housing a copy on each campus with tables only for that campus. However, each campus will have the ability to log on to the other campuses in the event of a disaster or to temporarily backup another campus user.

Campus	Server	Backups
Billings	SAN	Incremental nightly, full weekly, tape
Bozeman	Opal	Incremental nightly, full weekly, tape
Great Falls	LEDA	3x/week, disk-to-disk
Northern	Rigel	Incremental nightly, full weekly, tape

e. Record-keeping and Reconciliation

Daily and monthly reports have been created to serve the users' needs as well as those of departmental contacts. Currently copies of the journal vouchers that recorded the Bozeman transactions in Banner via x-feed are stored in hard copy in the office of the Director of Capital Programs. Hard copies may be stored on the other campuses as they use the tool, and all four campuses may move to digital imaging as that becomes available.

The investing ratios are saved in Excel on the BPR shared drive (Treasury Team folder) and hard copy (with other BPR documents) for performance metrics for the BPR process.

Reconciliation between Banner, SABHRS, and STIP is performed on all campuses regularly.

f. Upgrades and Support

On login, Access verifies the version of the program. Earlier versions will not open. Bob Snyder and the Finance IT group will make new versions available to each campus after testing.

Bob Snyder originally developed the program and continues to maintain it. He has a vested interest in its functionality because he uses it daily. However, good business practices mandate additional support for succession planning and disaster mitigation. The Finance IT group, under Kevin Ward's direction, has taken on responsibility for cross-training and backup.

In the event of an upgrade or patch from Microsoft or Banner, the Finance IT group will work with Bob Snyder to test for compatibility before launch. During previous Banner upgrades, Bob Snyder has tested during the general test period, and he will continue to be in that pre-test loop. In the unlikely event of a significant delay, each campus can revert to the current method of cash

management – all reports and data used to monitor and invest will remain independently available.

g. Training

On most campuses only one person is typically involved in the part of the cash management process using the Access interface. At most, two people on a campus will need to know how to use the bulk of its functionality. Because each campus can use the same program, further backup on a campus for everyday use is unnecessary.

All current users have been trained on the program by Bob Snyder through tutorials both in person and on the phone using remote desktop or Net Meeting. As new users are brought on board, the user manuals being developed by the current users should suffice for training. Those manuals will be complete as of the implementation date and will be kept on each campus network as Word documents along with the program itself. Upgrades to the program will be accompanied by addenda to the user manuals. Additional training in person or using Net Meeting can be accommodated if necessary.

Technical support is currently being developed. Bob Snyder is working with Kevin Ward to write technical documentation (beyond the code itself, which is transparent to programmers though vast). As new Finance IT group members come along, they may be trained using the technical documentation as well as tutorials with Bob Snyder and Kevin Ward.

3. Risk Analysis

To summarize the above information, we examine three security concepts here: confidentiality, integrity, and availability.

a. Confidentiality

None of the data used in this process is confidential. We use no personal data, only financial, and all of the fields used are subject to scrutiny by auditors. We do employ email to transmit some information, which is subject to its own security issues. Regardless of the recommendation, however, email had been employed for this purpose for many years without incident. If one were intercepted, the nature of the information is unlikely to harm the institution.

b. Integrity

As our enterprise security manager has written, controls must be in place to ensure the accuracy of all information. Automating more of this process with the Access tool actually improves our data integrity. Key punching errors are minimized with one entry point followed by several opportunities to review the data – first by the user within the Treasury function, then by an accounting tech in the Business Office, and finally during regular reconciliation processes. No data are directly entered into Banner through Access. The x-feed process has already passed muster as a tool for changing data in Banner, and our recommendation only expands its use on the other campuses.

c. Availability

This is the most likely cause for concern, but we believe we have mitigated the risk of unavailable data. In the case of an upgrade, regular testing will occur before a Banner launch, as it has in the past on the Bozeman campus.

Availability risk on this tool for non-upgrade reasons, based on past performance, is minimal – one crash in near daily use over three years. Should the program crash, backups from the night before can be used and paper reports from any change that was processed outside of Access (through an x-feed, for example) during the program's down time can be used to re-set values to their appropriate amount.

Downtime on the application is well tolerated. None of the campuses invests on a daily basis, though review of transactions and balances does occur daily. Those processes can be achieved outside of the Access program if necessary, as they are now on three of the four campuses. In the worst case, where Access, Banner, and SABHRS are all unavailable (the latter two outside of the control of the Treasury function), cash balances may be negative for up to seven consecutive days under state law, leaving the institution several days to correct the problem.

The responsibility for developing, upgrading, testing, and using this program has rested in one person. The BPR process has given us an opportunity to review this practice and correct it. With appropriate support from the Finance IT group, we are more confident that we can move forward in the unlikely case of a disaster or the eventual case of a personnel change.

E. Conclusions and Recommendations

For the reasons summarized below, the Treasury Team recommends implementing the Access Cash Management program developed at Bozeman for four-campus use. We encourage the Oversight Committee and President Gamble to maintain four-campus cash management and approve housing a copy of the program, customized with tables for each campus, on each campus for speedier service.

- We already use very similar detailed processes, with consistent data elements, definitions, and outcomes.
- Developing the Access interface for monitoring and disbursement on all four campuses will allow for streamlining the already similar processes.
- Enabling the Access program and developing the skills across campuses will build redundancy across campuses, especially where the cash management function is not very deep. Using the Access program on a weekly or daily basis will develop those cross-trained skills more thoroughly than cyclic or occasional use.
- Deepening our in-house support, with the Finance IT Group, lends greater depth to a tool we already rely on in Bozeman.
- Automation through greater use of x-feeds as well as the Access interface to Banner decreases possibility for user error.
- We can employ these efficiency gains and backups while maintaining the campuses' autonomy where appropriate. Monitoring cash balances should continue at each campus because the responsibility for legal compliance (seven days negative cash, e.g.) rests on each campus. Once that investment in time is made, it makes little sense to pick up the phone to tell one central investor what to do.

- Putting all responsibility for a regular task like cash management on a single person or office results in high risk of unavailability.
- Development costs, which are not insignificant, are equivalent whether the tool is deployed centrally or not, however reporting capacity is enhanced by decentralized implementation.
- Reporting functionality is enhanced at minimal cost and without depleting overburdened ITC resources. Reports for nearly all finance matters are already housed in or can be directly linked to this program in a user-friendly format.
- We may see specific campuses decrease their investment earnings if implementation does lead to smoother/more conservative investing behavior.

F. Appendixes and References

Please see attachments.

Cash Management Business Case Appendix A
Detailed Process and Cost Estimates

Cash Management Process

Step	Billings					Bozeman					Great Falls					Havre				
	Responsible Party	Avg Time (minutes)	Current Salary Cost	Projected Time (minutes)	Projected Salary Cost	Responsible Party	Avg Time (minutes)	Salary Cost	Projected Time (minutes)	Projected Salary Cost	Responsible Party	Avg Time (minutes)	Salary Cost	Projected Time (minutes)	Projected Salary Cost	Responsible Party	Avg Time (minutes)	Salary Cost	Projected Time (minutes)	Projected Salary Cost
MONITOR SABHRS CASH: (DAILY)																				
Run SABHRS cash - general ledger activity report	Accountant	2	0.50	2	0.50	DCP			2	0.88	Controller	2	0.86	2	0.86	Budget officer	2	0.64	2	0.64
Print SABHRS cash report	Accountant	0.5	0.12	0.5	0.12						Controller	0.5	0.22	0.5	0.22	Budget officer	0.5	0.16	0.5	0.16
Review and check for negative balances	Accountant/DFS	0.08	0.02	0.08	0.02	DCP			1	0.44	Controller	0.08	0.04	0.08	0.04	Budget officer	0.08	0.03	0.08	0.03
Note days negative	Accountant	0.5	0.12	0.5	0.12															
Run error reports from SABHRS	Accountant	3	0.75	3	0.75															
Print SABRHS error report	Accountant	0.5	0.12	0.5	0.12															
Review & correct as necessary	Accountant	0.5	0.12	0.5	0.12	DCP			0.5	0.22										
MONITOR BANNER CASH: (DAILY)																				
Automatic download of Banner cash info, print reports	computer			0.25		computer	0.25	0.00	0.25	0.00	computer			0.25	0.11	computer			0.25	0.08
Run cash report off REPT, includes debits and credits from prior day	Accountant	1	0.25								Controller	2	0.86			Budget officer	1	0.32		
Run cash report off MSTR	Accountant			0.25	0.06	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
run Access cash report off MSTR	Accountant										Controller	0.5	0.22							
Print cash report	Accountant	0.5	0.12	0.5	0.12	DCP	0.25	0.11	0.25	0.11	Controller	0.25	0.11	0.25	0.11	Budget officer	1	0.32	0.25	0.08
Review cash balances	DFS	1	0.52	1	0.25	DCP	0.25	0.11	0.25	0.11	Controller	5	2.15	0.25	0.11	Budget officer	1	0.32	0.25	0.08
Review cash balances, debits and credits	Accountant			0.25	0.06	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
Run negative accounts report	Accountant/DFS	0.08	0.04	0.08	0.04	DCP	0.25	0.11	0.25	0.11	Controller	5	2.15	0.25	0.11				0.25	0.08
Check for negative balances	Accountant/DFS					DCP	0.25	0.11	0.25	0.11	Controller								0.25	0.08
Compare fund type balances to SABHRS report	DFS	0.5	0.26	0.5	0.23															
Run transaction report from Banner	Accountant	1	0.25	1	0.25															
Print transaction report	Accountant	0.5	0.12	0.5	0.12															
Review transaction report	DFS	2	1.03	2	1.03															
Daily Totals		13.67	4.36	13.42	3.94		1.25	0.44	4.75	1.98		15.08	6.50	3.83	1.65		4.58	1.46	3.83	1.23
INVEST: (BIWEEKLY or DAILY)																				
Make investment decision	Accountant	5	1.25	5	1.25	DCP	0.25	0.11	0.25	0.11	Controller	5	2.15	5	2.15	Budget officer	5	1.60	5	1.60
invest by fund everywhere	Accountant	1	0.25	1	0.25	DCP	0.25	0.11	0.25	0.11	Controller	10	4.31	10	4.31	Budget officer	10	3.20	10	3.20
Invest by combination of fund and fund type	Accountant					DCP	20	8.80	20	8.80						Budget officer	10	3.20	10	3.20
Charge negative interest	Accountant			0.25	0.06	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
Process invest disinvest	Accountant	1	0.25	1	0.25	Accounting Assoc I	2	0.44	2	0.44	Controller	5	2.15	2	0.86	Accounting Assoc IV	2	0.46	2	0.46
Ban only entry	Accountant	2	0.50	0.25	0.06	DCP	0.25	0.11	0.25	0.11	Controller	15	6.46	0.25	0.11				0.25	0.08
JE 16	DFS	0.5	0.26	0.5	0.26	Controller		0.00		0.00	CFO	2	1.20	2	1.20	DBS	1	0.43	1	0.43
Review	DFS	0.5	0.26	0.25	0.13	DCP	0.25	0.11	0.25	0.11	Controller	1	0.43	0.25	0.11	DBS	1	0.43	1	0.43
Approve	DFS																			
Biweekly or Daily Totals		10	2.76	8.25	2.26		23.25	9.79	23.25	9.79		38	16.71	19.75	8.85		19	6.13	19.5	6.28
OTHER: (ON DEMAND)																				
STIP balance in Crystal	DFS	0.5	0.26			DCP	0.25	0.11	0.25	0.11	Controller	2	0.86							
STIP balance in Access	DFS			0.25	0.13									0.25	0.11					
BOI sends out of balance report																				
Run report to find error						DCP	0.25	0.11	0.25	0.11										
Call other campus to correct						DCP	0.25	0.11	0.25	0.11										
Periodically check unprocessed journals											Controller	5	2.15	5	2.15	Budget officer	2.5	0.80	2.5	0.80
On Demand Totals		0.5	0.26	0.25	0.13		0.75	0.33	0.75	0.33		7	3.02	5.25	2.26		2.5	0.80	2.5	0.80

Cash Management Business Case Appendix A
Detailed Process and Cost Estimates

Cash Management Process

Step	Billings					Bozeman					Great Falls					Havre				
	Responsible Party	Avg Time (minutes)	Current Salary Cost	Projected Time (minutes)	Projected Salary Cost	Responsible Party	Avg Time (minutes)	Salary Cost	Projected Time (minutes)	Projected Salary Cost	Responsible Party	Avg Time (minutes)	Salary Cost	Projected Time (minutes)	Projected Salary Cost	Responsible Party	Avg Time (minutes)	Salary Cost	Projected Time (minutes)	Projected Salary Cost
INTEREST EARNINGS DISTRIBUTION: (MONTHLY)																				
BOI sends daily yields via email	Accountant	0.5	0.12	0.5	0.12	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
Save yield document as new file in excel	Accountant			0.25	0.06	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
BOI sends monthly average daily yield hard copy	Accountant	1	0.25								Controller	1	0.43			Budget officer	1	0.32		
Load yields into Access	Accountant			0.25	0.06	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
Put average daily yield into investing spreadsheet	Accountant	2	0.50								Controller	1	0.43							
Put earnings amount into investing spreadsheet											Controller	1	0.43			Budget officer	1	0.32		
Correct daily yields to match bottom line	Accountant	2	0.50								Controller	2	0.86							
Allocate earnings-Formula driven allocator																Budget officer	1	0.32		
Access divvies earnings based on daily yields	Accountant			0.25	0.06	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
Allocate earnings to each fund and reinvest - no cash																				
Allocate according to grand design	Accountant	20	4.98	0.25	0.06	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
Journal entry (JE16) to allocate interest	Accounting Assoc III	5	1.17								Accounting Assoc I	120	20.00			Accounting Assoc IV	4	0.92		
X feed	Accountant			0.25	0.06	DCP	0.25	0.11	0.25	0.11				0.25	0.11				0.25	0.08
Ban only entry	Accountant	1	0.25	1	0.00	Accounting Assoc I	2	0.44	2	0.44	Controller	2	0.86	2	0.86	Accounting Assoc IV	2	0.46	2	0.46
Monthly Totals		31.5	7.77	2.75	0.44		3.5	1.10	3.5	1.10		127	23.02	3.5	1.51		9	2.35	3.5	0.94
Daily Total * 261 workdays		3567	\$1,138	3502	\$1,029		326	\$115	1240	\$517		3937	\$1,697	1001	\$431		1196	\$382	1001	\$320
Biweekly/Daily Total * 104/261 occasions		1040	\$287	858	\$235		2418	\$1,018	2418	\$1,018		9918	\$4,362	5155	\$2,309		4959	\$1,599	5089.5	\$1,640
Monthly Total * 12 months		378	\$93	33	\$5		42	\$13	42	\$13		1524	\$276	42	\$18		108	\$28	42	\$11
On Demand Total * 18 occasions		9	\$5	5	\$2		14	\$6	14	\$6		126	\$54	95	\$41		45	\$14	45	\$14
ANNUAL TIME AND SALARY COSTS		4994	\$1,523	4397	\$1,271		2800	\$1,152	3713	\$1,554		15,505	\$6,389	6292	\$2,799		6308	\$2,023	6177	\$1,986

Cash Management Business Case Appendix B
Investment Ratio Projections

Campus	Month	FY07 Actual Average Cash	FY07 Actual Average % invested	FY07 Actual Average Investment	Projected Average % invested	Projected Average Investment	Investment Difference (Projected- Actual)
Billings	July	\$12,313,236.66	80.58%	\$9,922,577.39	97.00%	\$11,943,839.56	\$2,021,262.17
	Aug	\$16,116,479.31	90.36%	\$14,563,459.78	97.00%	\$15,632,984.93	\$1,069,525.15
	Sept	\$21,394,293.79	92.88%	\$19,871,012.46	97.00%	\$20,752,464.98	\$881,452.51
	Oct	\$21,378,055.72	95.17%	\$20,345,053.32	97.00%	\$20,736,714.05	\$391,660.72
	Nov	\$18,977,899.35	95.57%	\$18,137,779.13	97.00%	\$18,408,562.37	\$270,783.24
	Dec	\$18,294,571.98	94.04%	\$17,204,601.71	97.00%	\$17,745,734.82	\$541,133.11
	6 Month Average		\$18,079,089.47	92.23%	\$16,674,080.63		\$17,536,716.78
Bozeman	July	\$39,517,225.68	117.91%	\$46,595,922.58	97.00%	\$38,331,708.91	(\$8,264,213.67)
	Aug	\$61,925,935.35	92.84%	\$57,492,962.90	97.00%	\$60,068,157.29	\$2,575,194.38
	Sept	\$80,729,114.11	94.08%	\$75,946,280.00	97.00%	\$78,307,240.68	\$2,360,960.68
	Oct	\$76,537,155.33	99.14%	\$75,879,074.19	97.00%	\$74,241,040.67	(\$1,638,033.52)
	Nov	\$65,512,210.48	102.09%	\$66,883,630.67	97.00%	\$63,546,844.16	(\$3,336,786.50)
	Dec	\$70,570,221.07	94.89%	\$66,964,980.65	97.00%	\$68,453,114.44	\$1,488,133.79
	6 Month Average		\$65,798,643.67	98.73%	\$64,960,475.16		\$63,824,684.36
Great Falls	July	\$3,051,864.96	50.55%	\$1,542,663.97	97.00%	\$2,960,309.01	\$1,417,645.05
	Aug	\$3,866,024.76	95.05%	\$3,674,529.82	97.00%	\$3,750,044.01	\$75,514.19
	Sept	\$4,028,153.10	95.16%	\$3,833,027.54	97.00%	\$3,907,308.50	\$74,280.97
	Oct	\$4,380,238.26	95.37%	\$4,177,322.61	97.00%	\$4,248,831.11	\$71,508.50
	Nov	\$4,138,372.21	94.71%	\$3,919,361.87	97.00%	\$4,014,221.04	\$94,859.17
	Dec	\$4,293,279.41	93.86%	\$4,029,874.76	97.00%	\$4,164,481.03	\$134,606.27
	6 Month Average		\$3,959,655.45	89.14%	\$3,529,463.43		\$3,840,865.78
Northern	July	(\$616,483.83)	-19.31%	\$119,058.06	97.00%	\$0.00	(\$119,058.06)
	Aug	\$225,113.80	146.26%	\$329,254.84	97.00%	\$218,360.38	(\$110,894.46)
	Sept	\$525,828.96	87.87%	\$462,053.67	97.00%	\$510,054.09	\$48,000.42
	Oct	\$377,539.92	122.38%	\$462,030.32	97.00%	\$366,213.73	(\$95,816.60)
	Nov	\$330,351.49	49.77%	\$164,430.00	97.00%	\$320,440.95	\$156,010.95
	Dec	-\$124,642.08	-51.34%	\$63,995.16	97.00%	\$0.00	(\$63,995.16)
	6 Month Average		\$119,618.04	223.05%	\$266,803.68		\$235,844.86
Total 6 Month Average, All Campuses		\$87,957,006.63	97.13%	\$85,430,822.90		\$85,438,111.78	\$7,288.88

Cash Management Business Case Appendix C
Implementation Time Estimates

Step	Responsible Party	Time (hours)	Associated Salary
Programming			
Converting the programs from the way they were written to viewing four campuses	Bob Snyder	23	\$607
Converting the programs to accommodate Performance metric monitoring	Bob Snyder	43	\$1,135
Programming Total		66	\$1,742
Set-Up			
Travel to a campus	Bob Snyder		
Get IT to set up a server and allow me write access to it.	Bob Snyder		
Get IT to set up a server and allow me write access to it.	Campus IT		
Install the programs and link them properly	Bob Snyder		
Make sure the investing people have all the write access privileges also	Bob Snyder		
Make sure all the reports are working with the proper accounts and names showing on the e-mails and electronic fund transfers	Bob Snyder		
Draw all the investing balances out of Banner and create beginning balances in the Investing program	Bob Snyder		
Add all the loans and repayment schedules and make sure the reports match the previous totals on the financial statements and bond reports.	Bob Snyder		
Set-Up Total (not including IT)		80	\$2,112
Training			
Phone training (completed)	Bob Snyder	6.25	\$165
	Other campuses' employees (1.25*5)	6.25	\$114
Phone training (continued)	Bob Snyder	5	\$132
	Other campuses' employees (1*5)	5	\$91
In person training (completed)	Bob Snyder	12	\$317
	Other campuses' employees (12*5)	60	\$1,092
In person training (continued)	Bob Snyder	8	\$211
	Other campuses' employees (8*5)	40	\$728
Training Total		142.5	\$2,850
Total Implementation Estimate		288.5	\$6,705