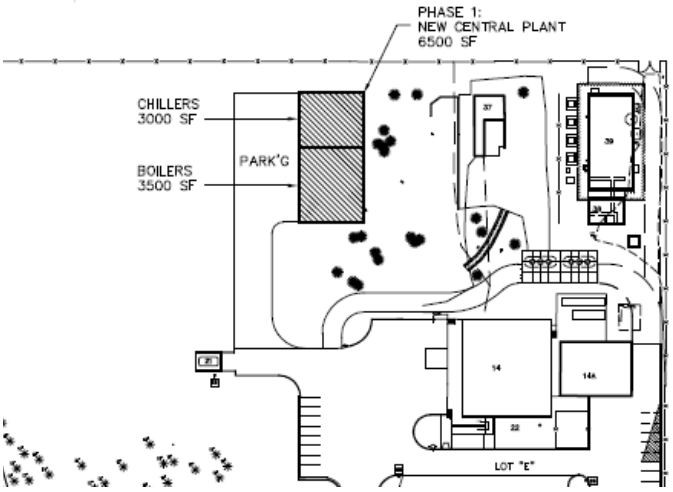
Supplemental analysis to the Spokane VAMC Boiler Plant Feasibility Study dated October 2012

OPTION 1 - CONSTRUCT A NEW BOILER PLANT NEAR THE WEST PERIMETER OF THE PROPERTY



A. DESCRIPTION

1. This option would provide a completely new facility for the boilers in an undeveloped area west of the south end of the Parking Lot which is south of Building #14. The plans will include provisions for co-locating the chiller plant in the future.
2. This new plant building would require about 3,500 sq.ft. for the boiler plant with another planned 3,000 sq. ft. for the chiller plant. The cooling towers would be located adjacent to this new facility.
    a. The proposed size of the facility provides room for the future addition of another boiler and another chiller.
    b. All of the heating equipment (boilers, feed-water systems, etc. would be new).
3. New underground steam and chilled water would need to be run from this plant location to intercept the existing underground piping on the west side of bldg. 40. The piping would be pre-insulated direct bury piping.
4. The proposed semi-hardened construction of the new building would be cast-in-place concrete walls with either cast-in-place or precast concrete roof structure. Floors will be slab-on-grade, recessed where required to retain potential spills.
5. Under this option, new pad-mounted switches and pad-mounted transformers would be installed near the new building. Transformer secondary voltages would be 480Y/277-VAC, three-phase, four wire. One transformer would be provided for the boiler loads and a separate transformer would be required for the chiller loads.
6. GOV parking would be moved to a new parking lot adjacent to the plant.

B. ADVANTAGES

1. This would locate the new facility closer to the existing generator building to consolidate similar functions such as fuel delivery and maintenance closer together.
2. This location would be further from the north property line and other buildings as it may impact emission considerations for cooling tower plumes or boiler exhaust.

3. This location may allow sharing the existing fuel tanks with the Generator Building #39 to provide back-up fuel for the boilers. (Additional equipment for 'polishing' the fuel may need to be added).
4. This location would allow good access for future installation and/or replacement of boilers and chillers. There is also room for a parking lot for the government owned vehicles which are managed by plant personnel.
5. This would allow the entire new boiler and chiller plant to be placed in operation before shutting down the existing boilers and taking them out of service.
6. There is reasonably good access to the existing underground steam and chilled water services that would allow for a tie-in to feed back into the existing systems.
7. The natural gas main is reasonably accessible to this location.
8. The new location of the chiller plant would give opportunities for re-piping that would result in better maintenance access to equipment for repair or replacement as well as improving some operational issues. Even in the existing plant location an expansion would require some re-piping to resolve operational issues; but the existing plant location does not have the space to provide the degree of maintenance and service access space that a new facility could provide.
9. By relocating the boiler and chiller functions to a completely new facility a portion of the existing facility could then be used for other purposes.
10. The new chiller plant would include capability for expansion if future loads should require additional cooling capacity.
11. This Option provides the advantage of being able to construct the site power distribution system without disrupting the exiting boiler and chiller functions.
12. This option provides the opportunity to change the voltage for the boiler functions to 480-VAC to more easily accommodate larger loads.

C. DISADVANTAGES

1. The Laundry would be further from the heating and cooling plant and would require changing the steam pressure supplied to the other buildings from 100 to 125 psi
2. Will result in separate boiler and chiller plants.

D. RISKS

1. Least risk of the available options

E. ROUGH ORDER OF MAGNITUDE COST PROJECTION

General Construction: $2,609,500
Mechanical Construction: $3,950,200
Electrical Construction: $277,500
Electrical Site Distribution: $702,500
OH&P, Cont., Escal. @ 35%: $2,428,895
A/E Design: $999,000
TOTAL: $10,967,595
Bid option to abate and demo old boilers: $2,500,000
Bid option to remodel the plant: $75,000
TOTAL with options: $13,542,595

OPTION 2 – REPLACE THE BOILERS IN THE EXISTING BUILDING

A. DESCRIPTION

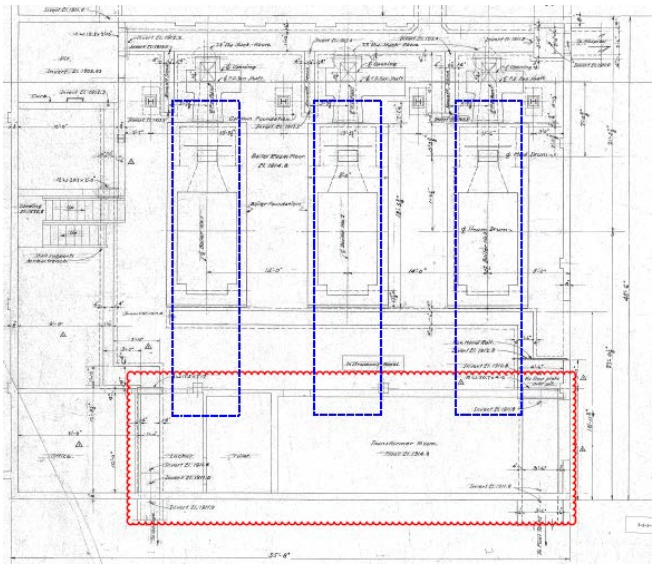
1. This option would install new boilers in place of the existing boilers. **Due to the size constraints of the existing building and the concrete structure, it is not feasible to install new boilers in the existing plant.**
2. The existing boilers were built in place and there is no opening that would allow for installation of modern package boilers. Package boilers require a significantly larger footprint to allow for maintenance of the tubes.
3. The new boilers will be 20% larger in capacity than the existing boilers so the entire plant is inadequate for the current or projected campus loads.
4. Adding openings and extending the boiler bay would require demolition and relocation of the electrical room (campus distribution is also routed through this room), locker room, bathroom, AHU, and laundry hot water tanks. The structural reinforcement and construction costs would negate any advantages of reusing the building.
5. The existing roof structure does not allow for new boilers to be craned in. There is no adjacent real estate on either side of the building that is feasible to use (see option 3 below).

B. ADVANTAGES:

1. Reuses the existing campus utility connections.
2. Reuses some of the existing ancillary boiler equipment (DA tank, etc)
3. Does not require an entirely new building.

C. DISADVANTAGES:

1. The existing boiler plant is essentially land locked with no feasible means to stage replacement at the current location.
2. Expanding the building footprint to accommodate new boilers requires prohibitively expensive structural and infrastructure work.
3. The plant footprint will remain undersized and will not allow for future expansion.
4. The bulk of the plant equipment to be reused and is all the same vintage. Repair costs and manpower are much higher compared to a new plant.
5. Boiler efficiency will be compromised by the size of the structure – i.e. no room for economizers.
6. The footprint of 400hp package boilers is shown below and the area in red would need to be demolished to accommodate new boilers:



D. RISKS

1. Unforeseen conditions are probable which results in delays and additional costs.
2. Containment of asbestos is critical with the remainder of the plant operational.

E. ROUGH ORDER OF MAGNITUDE COST PROJECTION

Abatement: $2,000,000
Demolition, structural reinforcement: $1,000,000
Addition/FCA Correction: $3,300,000
Relocation of electrical and other utilities = $500,000
New boilers and controls = $3,500,000
Portable boiler rental during project (3 @ $25k) = $75,000/mo x 12 months +
Mob/Setup/Connections ($15,000) = $915,000
OH&P, Cont., Escal. @ 35%: $3,925,250
TOTAL: $15,140,250

OPTION 2A – RE-TUBE THE EXISTING BOILERS

A. DESCRIPTION

1. This option would re-tube the existing boilers. **This would be a stop-gap measure as it does not provide the necessary plant capacity.**

B. ADVANTAGES:

2. Lowest initial cost
3. Reuses existing ancillary equipment
4. Shortest construction period

C. DISADVANTAGES:

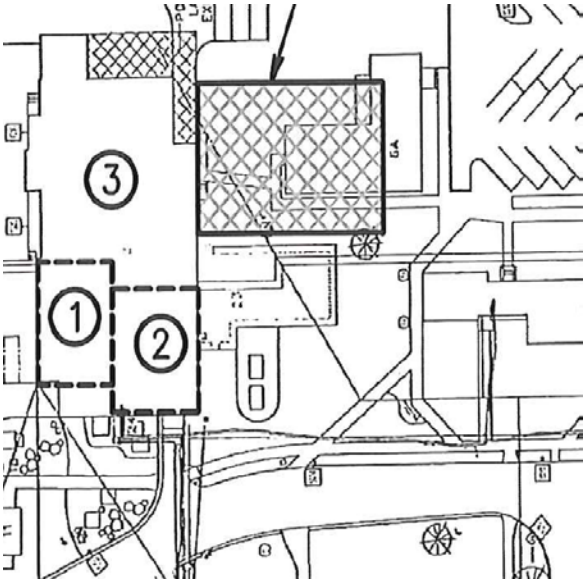
1. Reused ancillary equipment is 1949 vintage
2. Seismic reinforcement of the existing plant and correction of FCA deficiencies would be needed.
3. Boiler efficiency and emissions would only be brought back to original specs instead of increased with modern equipment.

4. Rental boilers would be required during construction. Containment of asbestos during work on any boiler makes operation of the remaining boilers impractical. It is far faster, safer, and less expensive to work on all three boilers simultaneously.
5. Containment of asbestos during disassembly of the boilers would have to be closely controlled, especially if the plant is to remain in operation.
6. The bulk of the plant equipment will be reused and is all of the same vintage. Repair costs and manpower are much higher compared to a new plant.

D. ROUGH ORDER OF MAGNITUDE COST PROJECTION

Abatement: $2,000,000
General Construction/FCA Correction: $2,800,000
Re-tubing Boilers = $500k + repairs per boiler = $1,750,000
Portable boiler rental during abatement (2 @ $25k) = $50,000/mo x 6 months +
Mob/Setup/Connections ($15,000) = $315,000
OH&P, Cont., Escal. @ 25%: $1,716,250
TOTAL: $8,581,250

OPTION 3: CONSTRUCT NEW PLANT ADJACENT TO THE EXISTING PLANT - EAST



A. DESCRIPTION

1. This option would expand the plant with a new boiler room expansion to the east, and north of the existing cooling tower location, into the area currently occupied by Building #6A.
2. The available footprint between the laundry and building 6A is 35'x100' which is too small and in the wrong configuration to be feasible. **Demolition of 6A would be required.**
   a. **6A is a state owned building occupied by multiple veteran's service organizations. A replacement building or space would presumably need to be provided.**

B. ADVANTAGES:

1. Close to the original plant, reduced infrastructure costs.
2. Reuses some of the existing ancillary boiler equipment (DA tank, etc)
3. Keeps the boiler and chiller plant co-located.

C. DISADVANTAGES:

1. Requires demolition of building 6A and construction of a similar structure elsewhere on the campus
2. Places the new plant immediately adjacent to building 6 (office space)
3. Reused ancillary equipment is 1949 vintage

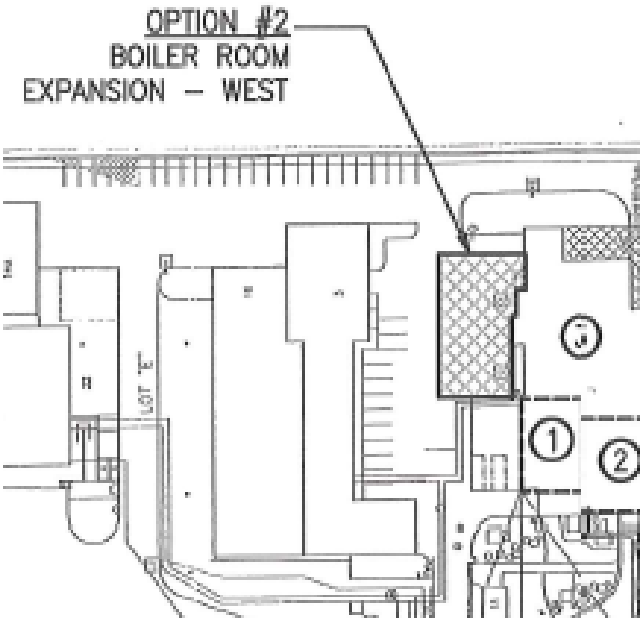
D. RISKS:

1. Disturbance to building 6 occupants

E. ROUGH ORDER OF MAGNITUDE COST PROJECTION

General Construction: $2,609,500
Mechanical Construction: $3,950,200
Electrical Construction: $277,500
Demolition and reconstruction of bldg. 6A: $1,000,000
OH&P, Cont., Escal. @ 35%: $2,743,020
A/E Design: $999,000
TOTAL: $11,580,220
Bid option to abate and demo old boilers: $2,500,000
Bid option to remodel the plant: $75,000
TOTAL with options: $14,155,220

OPTION 3A: CONSTRUCT NEW PLANT ADJACENT TO THE EXISTING PLANT - WEST



A. DESCRIPTION

1. This option would expand the plant with a new boiler room expansion to the west into the parking lot between Buildings #2 and #3.

B. ADVANTAGES:

1. Close to the original plant, reduced infrastructure costs.
2. Reuses some of the existing ancillary boiler equipment (DA tank, etc)
3. Keeps the boiler and chiller plant co-located.

C. DISADVANTAGES:

1. Would encounter gas, water, and sewer mains in the street.
2. Would require partial demolition of building 3 (Grounds garage)
3. Would encumber the laundry plant and require relocation of the loading dock to the north and an associated interior remodel.
4. Eliminates GOV parking lot and road between bldgs. 2 & 3
5. Reused ancillary equipment is 1949 vintage

D. RISKS

1. Service disruptions due to relocation of utility mains
2. Unforeseen site conditions
3. Traffic problems due to elimination of the road
4. Disruption to the laundry operations
5. No parking area for grounds/snow plowing equipment

E. ROUGH ORDER OF MAGNITUDE COST PROJECTION

General Construction: $2,609,500
Mechanical Construction: $3,950,200
Electrical Construction: $277,500
Relocation of utility mains in the street: $700,000
Demolition and reconstruction of grounds shop and fuel station: $1,000,000
Relocate loading dock and associated remodel for the laundry: $200,000
OH&P, Cont., Escal. @ 35%: $3,058,020
A/E Design: $999,000
TOTAL: $12,794,220
Bid option to abate and demo old boilers: $2,500,000
Bid option to remodel the plant: $75,000
TOTAL with options: $14,370,220