



Public Works Committee Agenda
Regular Meeting Wednesday March 27, 2013 – 6:30PM
City Shop Conference Room

MEMBERS

Joseph A Klejka
Council Rep.
Term Expires
11/2012

Frank Neitz
Chair
Term Expires
12/2013

Jennifer Dobson
Vice-Chair
Term Expires
12/2014

Bill Schreiner
Committee Member
Term Expires
12/2013

Scott Guinn
Committee Member
Term Expires
12/2014

Donna Lindsey
Committee Member
Term Expires
12/2015

VACANT
Committee Member
Term Expires
.

Chuck Willert
Ex-Officio Member

Cheryl Roberts
Secretary/Recorder

AGENDA

- I. CALL TO ORDER
- II. ROLL CALL
- III. PEOPLE TO BE HEARD – (15 Minute Limit)
- IV. APPROVAL OF MINUTES
 - A. Minutes from the previous Special Meeting of - February 27, 2013.
- V. APPROVAL OF AGENDA
- VI. DIRECTOR'S REPORT
- VII. UNFINISHED BUSINESS
 - A. Update - Closeout of 2 Outstanding Grants / ABC Loop
 - B. Update - 5 Year Plan/ RFP - Water & Sewer Master Plan
 - C. Update - Recycle Center
 - D. Update - Institutional Corridor - Feasibility Study
 - E. Update - RFP - Cost Analysis of the City of Bethel's Water & Sewer Utilities
 - F. Update - City Shop Floor
 - G. Update - New BNC/Swansons Complex Road Access - Rachael Pitts, City of Bethel - Planning Director
 - H. Update - Wind Generation 100kw per Public Building
 - I. Recommendation to Council in regards to Sewage Lagoon Rehabilitation Project
 - J. Update - H-Marker Lake Road
 - K. Update - TDX Avec Power Plant
- VIII. NEW BUSINESS
 - A. Water and Sewer Utilities Development Priorities
 - B. In accordance to Bethel Municipal Code 2.52.070 A. 6. Declaring Jeff Sanders' Committee Seat Vacant Having Received A Written Resignation Date 1-2-2013.
- IX. MEMBER COMMENTS
- X. ADJOURNMENT

City of Bethel, Alaska

Public Works Committee Minutes

February 27, 2013

Special Meeting

Bethel, Alaska

CALL TO ORDER

A special meeting of the Public Works Committee Meeting was held on February 27, 2013 at 6:25p.m. in the City Shop Conference Room, Bethel, Alaska was called to order by Committee Member Chair Frank Neitz.

ROLL CALL

Present: Joseph Klejka, Frank Neitz, Jennifer Dobson, Bill Schreiner, Scott Guinn, Donna Lindsey

Excused absence(s): Chuck Willert

Unexcused absence(s): None

Also in attendance were the following:

Bill Arnold, in place of the Public Works Director

Cheryl Roberts, Public Works Admin, Recorder of Minutes

John Sargent, City of Bethel, Grant Manager

Annual Election of Chair

MOVED BY:	J. Klejka	To Re-elect Frank Neitz to be the Chair for the Public Works Committee.
SECONDED BY:	J. Dobson	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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Annual Election of Vice-Chair

MOVED BY:	J. Klejka	To Re-elect Jennifer Dobson to be the Vice-Chair for the Public Works Committee.
SECONDED BY:	D. Lindsey	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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PEOPLE TO BE HEARD

None.

TO MOVE JOHN SARGENT TO TOP OF AGENDA FOR UPDATES

MOVED BY:	B. Schreiner	To approve the minutes of the regular meeting of December 19, 2012 & January 16, 2013.
SECONDED BY:	J. Klejka	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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APPROVAL OF AGENDA

MOVED BY:	J. Klejka	Motioned carried to approve the agenda.
SECONDED BY:	B. Schreiner	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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APPROVAL OF MINUTES

MOVED BY:	J. Klejka	To approve the minutes of the regular meeting of December 19, 2012 & January 16, 2013.
SECONDED BY:	S. Guinn	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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DIRECTOR'S REPORT

We are still working with CH2MHill for a contract, & CH2MHill is communicating with YKHC. CH2MHill has been getting information from YKHC about their water system & from what it looks like we can hook up to it, but it's just a matter of how.

UNFINISHED BUSINESS

Item A - Update - Closeout of 2 Outstanding Grants/ABC Loop

The Construction Grant is closed out. The Pre-Planning Grant includes two PER/ER's, one with the ABC Loop & the Sewage Lagoon Rehabilitation & other is on the Manhole which have already been approved. We are waiting on the final draft to be reviewed. And included in the grants we want to get the water pipes for ABC Loops replaced.

Item B - Update - Sewer Lagoon

Once the planning porting has been completed, we would like to move forward with USDA for funding for construction just in-case our funding doesn't go through the State.

Item C - Update - 5 Year Plan/ RFP - Water & Sewer Master Plan

Our committee had a discussion to contact the City Manager & to have someone contact LCG daily & to update the Public Works Committee every week.

To have someone call on the outstanding Grants daily

MOVED BY:	J. Klejka	Motion to have someone call on a daily basis for an update on the Grants & to contact the Public Works Chair on a weekly basis.
SECONDED BY:	J. Dobson	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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Item D - Update - Recycle Center

Jennifer had a discussion with the City Manager & mentioned to him that we had a vested interest in what was submitted to the Budget Request & that the Public Works Committee would like to provide input in the process because whatever they request for budget would be effected by staffing, hours open, etc. The City Manager said he would be submitting the budget proposal & to send him feedback before he submits it if we would like feedback, but we wouldn't have a chance to review the proposal before it was submitted to Council.

To Review the Proposal before it goes to City Council

MOVED BY:	B. Schreiner	Motion to review the Recycle Center Proposal before going to City Council and the money to run it.
SECONDED BY:	J. Klejka	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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Item E - Institutional Corridor - Feasibility Study

We're waiting on the State to decide on what they will be doing.

Item F - RFP - Cost Analysis of the City of Bethel's Water & Sewer Utilities

Preliminary information was presented to Council on February 26, 2013. From this information, it seems that the City can really profit from this. The Analysis did not address the actual cost per gallon of water per mile to hauled or piped homes. Plus the depreciation of the trucks & the pipes, we have never had that done. Also, the people on piped water are not paying the cost of delivering water to us. Piped water customers are not paying enough & the customers on trucked are paying more than the cost of their water. On the Sewage side, it's paying for itself, for piped & trucked. Council & the Public Works Committee can expect to receive a follow-up report in four weeks.

Item G - City Shop Floor - Chuck Willert

Update from Bill Arnold – We're working with CH2MHill to get the RFP done, they promised they would have it to us by Friday (March 1st). The engineer has been out here & Bill has been talking with him & the engineer. We received a matrix of eight different ways to replace the floor, & Bill let him know what & how he wanted the floor to be done.

Item H - New BNC / Swansons Complex Road Access

They would like to get the Planning Director at our next meeting to get an update on the Road Access & get some drawings/plans on this.

Item I - Wind Generation 100kw per Public Building

Ok to get 100kw per Building. 85% of what is produced goes back into the grid. Grants? Why those rules? Who do we contact to get the rules changed?

NEW BUSINESS

Item A - Recommendation to Council in regards to Sewage Lagoon Rehabilitation Project

To add a third Cell, on City land, to have a shorter distance, only about one mile instead of three miles, & it's cheaper & easier. The Public Works Committee has not yet reviewed the PER-ER, so Bill will give a copy to Jennifer. John Sargent is asking for a recommendation to support it, but the committee needs to review the document first.

Item B - Water and Sewer Utilities Development Priorities

Keep on for next meeting as to no one remembers what this is in reference to.

Item C - H-Marker Lake Road

Item D - TDX Avec Power Plant - Update

John Sargent is unsure of the status with TDX, but we are still negotiating with BUC & it's been a very slow process.

Item E - Rescheduling of Public Works Committee Meeting - BMC 2.52.130 - Requested by Chair

To Reschedule our March Public Works Meeting

MOVED BY:	J. Klejka	Motion to reschedule our normal Public Works meeting from Wednesday, March 20, 2013 to Monday, March 18, 2013 @ 6:30pm.
SECONDED BY:	J. Dobson	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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MEMBER COMMENTS

Joe - I've got really no comments & was happy about the meeting & welcome aboard Donna. Thank you everybody for showing up I really love the dedication of this committee. I love your minutes, you always do good minutes, and everyone always knows what's going on.

Jennifer - I had a few comments on the rate study, but Joe very thoroughly covered anything I had thought of. No other comments.

Bill - I liked your direction today that we were working on more action items & trying to get more people to make deliverables, I think that's a great way to go. And welcome Donna, thanks for joining the committee.

Scott - I still have a question; Why is the City plowing & giving them access to the road they won't give us access to? They plow right up to it & let them go right in it. We are plowing right up to, near Polk's land, & then stopping. Bill Arnold stated it's a city road & we are required to maintain it.

Donna - Looks like I have a lot of learning to do, I hope I'm up to it.

Frank - We are so glad to have you, Donna.

ADJOURNMENT

MOVED BY:	S. Guinn	Motion to adjourn the meeting.
SECONDED BY:	D. Lindsey	

VOTE ON MOTION	Motion carried by unanimous voice vote.
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With no further business before the Committee, the meeting adjourned at 7:58 p.m.

APPROVED THIS _____ DAY OF MARCH, 2013.

Frank Neitz, Chair

Cheryl Roberts
Recorder of Minutes

MEMORANDUM

DATE: 3/1/2013

TO: Lee Foley, City Manager

FROM: Chuck Willert, Public Works Director

SUBJECT: Manager's Report –

Programs/Divisions

Public Works Director:

We are working with CH2M Hill engineers in regards to getting a RFP out for the Public Works Shop floor this week, March 5, 2013.

We are working to get another RFP out for two truck chassis's and one stainless steel highway sander by next week, March 11th.

Utility Maintenance:

This month we responded to six after hour callouts. We also flushed three sewer lines this month in ASHA. We also had a glycol leak in BHWTP which was fixed immediately. There was four freeze ups in City Sub. We were able to thaw two of them. We also had a water leak at Tunista Inc. which was fixed by the owner. We also continue to blue tag overdue accounts for our Billing Department. We also continue to monitor our liftstations on a daily basis and rebuild sewer pumps when needed.

Hauled Utilities:

We've been trying to cut down on overtime. Because of attendance there is still quite a bit. Routes are getting done. Three drivers responded to a fire callout in Larson Sub on 2/9/2013. Training on the new guy seems to be going pretty good. In a couple of weeks we will have another guy on the roster. This will help out a lot.

Property Maintenance:

Buildings are being checked daily for heat and adjusted according to outside temperatures. Problem valves or pumps are replaced or something done with. Entrance ways, decks and stairs are being shoveled, ice chipped and sanded as needed. The hot and cold water is run through the systems to make sure everything is in good shape with the plumbing. We

have had some issues with the diesel fuel nozzles on our Fuel Delivery Building. We had bought some inexpensive equipment and found out the foreign made hardware is not worth the trade off. The stuff just does not hold up in extreme conditions or for that matter in any product we have to work with. Prior to Presidents Day we checked and changed hardware and flags in most locations.

We had Pioneer Door out here to inspect and adjust our overhead doors in all our buildings. A little preventative maintenance goes a long ways. I have been showing families Cemetery plots and having to clear snow off them. It is once again filling up and I will have to look at getting another section ready. We have been working on a room over at what we call the P.D. annex for the engineer that will be staying in town tracking the new Aquatic/Rec Center. I have been using Community Service Workers to assist me. We have lots of projects going on and they have been of tremendous help. I use them all the time. We will be getting some one out here soon I hope to look at our ventilation system at the Court House. He has been giving me lots of excuses and I will be looking for someone else soon if he does not show.

Road Maintenance:

Streets and Roads have been working on widening roads of the snow berms that have been caused from drifting snow and plowing the roads during the blizzards. In between snow storms we have been working on widening the roads and moving back the rather large snow berms. Now that we've been working at a larger scale with all the berms we've been using two loaders steady to push the snow back and haul it off the roads. Also now we started to use the D5 dozer in pushing the snow off the road in places where the loaders cannot get to it or in areas that we cannot push it off the road. We windrow it to the center of the road with either the D4 or the graders and haul it off with the two loaders.

Streets and Roads have been digging the ice at the two water pump houses where the trucks fill up with the 420 backhoe when needed. This is from the water trucks over flowing when they fill up and freezing up on the ground causing a mountain of ice that takes the 420 backhoe to rip up the ice and dig it out.

Gary has been running the new Cat Excavator for the Port digging out the mouth of Brown Slough when they need him and plowing the roads when not working in Brown Slough. As of now it looks like the port is on hold for the dredging of the Slough.

Vehicles and Equipment:

Pretty much the same as last month, we have been going through the water and sewer trucks to make sure everything is in top working order such as the air system, breaks, and electrical system. We are short one mechanic and staying late for hauled utilities and going thru a lot of over time.

Transit System:

For February 2013, The Bethel Transit System transported a total of 893 passengers, 161 of those riders had a disability and 100 were elders. The cash fares totaled \$ 922.00 while the passes used totaled \$971.00 and monthly passes were \$273.00. There are three drivers, Brenda George who is a full time driver /Acting Manger, Jang Kim who is the Part time, Christina David who is an on-call driver.

These figures are from February 1 thru the 28th 2013.

Staffing Issues/Concerns/Training:

Sonny Venes will retire at the end of March, he is the Landfill Manager. Vince has two open positions in the Hauled Utilities Department.

Budget/Financial:

Will put in financial numbers next month.

*Sewage lagoon rehabilitation
information is highlighted.*

WATER LOOPS A, B & C AND WASTEWATER UPGRADES

BETHEL, ALASKA

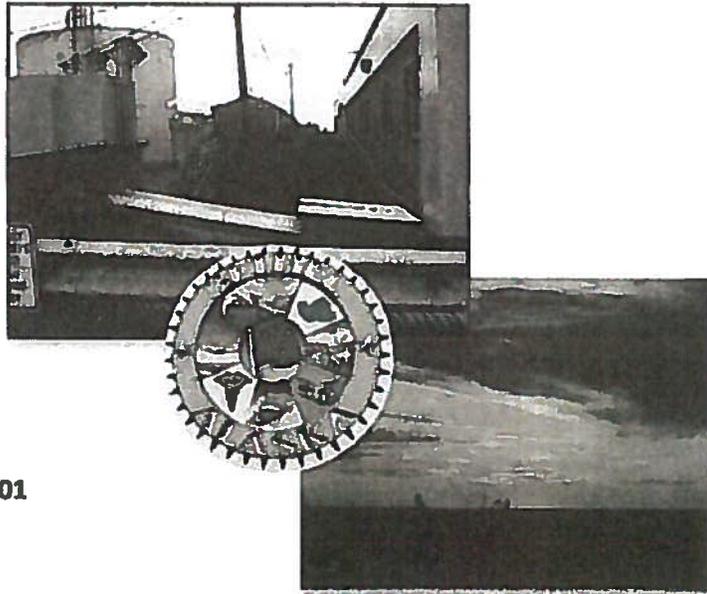
ENVIRONMENTAL REPORT

JUNE 2012

FINAL

PREPARED FOR:
CITY OF BETHEL
PO Box 1388
Bethel, AK 99559

FOR SUBMITTAL TO:
USDA-RD
USDA 800 W. EVERGREEN, STE. 201
PALMER, ALASKA 99645



reduced callouts are estimated to be \$60,000 per year and \$12,000 per year, respectively. By converting Loop A into two loops, pumping will be reduced, resulting in an annual power and associated O&M cost savings.

2.3. WASTEWATER TREATMENT UPGRADES

2.3.1. Project Need

The existing wastewater lagoon treatment system consists of two facultative cells with a combined area of 61.6 acres. This volume is adequate for current municipal wastewater flow as well as for the 20-year planning horizon projection. However, these ponds are reaching their hydraulic capacity due to infiltration of surrounding groundwater and the accumulation of biosolids in Cell 1.

As noted in Section 3.4.3, water from the cells is pumped to the tundra twice each summer in order to create sufficient storage capacity to hold the winter wastewater load. Despite being pumped nearly in the fall, the cells must be pumped again before the spring thaw in order to prevent overflow and possibly collapse of the containment berm.

The City's end-of-pipe effluent quality data has, at times, exceeded the EPA's and State of Alaska's maximum levels for total suspended solids (TSS), biochemical oxygen demand (BOD) and fecal coliforms (FC) during both spring and fall pumping events.

Bethel does not have a current Alaska Pollution Discharge Elimination System (APDES) permit. Since the 1997 permit expired in 2002, it has been administratively extended. In 2008, an application was submitted but it was not executed, in part due to no mixing study model was ever completed.

A biosolids depth assessment conducted by LCG in 2010 found that Cell 1 has approximately 40,000 cubic yards of accumulation, reducing its hydraulic storage by 16 percent. Cell 2 biosolids accumulation was also measured and found operationally small.

In addition to the problem of insufficient storage volume, the effluent is presently discharged to the tundra north of the existing stabilization ponds into the Browns Creek drainage system that eventually makes its way to Brown's Slough, which runs through Bethel. A more controlled treatment scheme is warranted to provide a higher level of treatment that will comply with State requirements.

Also and issue of increasing concern is the lagoon baffle curtains and sheet piling around the hauled sewage area that are beginning to show signs of failure and are in need of replacement.

2.3.2. Project Alternatives

Several wastewater treatment concepts have been evaluated in previous studies, including membrane bioreactor (MBR) treatment and a mechanically aerated lagoon system. These project costs have been estimated by others and have been included in this report and converted to 2012 dollars. This report considers an alternative gravity flow system involving a new holding cell and other measures to provide usable storage and a wetland treatment system to provide additional treatment of the effluent.

A summary of these alternatives and estimates of their costs are shown in Table 2.4-1. See Appendix E for a detailed cost estimate of the New Holding Cell and the Constructed Wetlands alternative and Appendix C for a figure of the preferred New Holding Cell alternative.

TABLE 2.4-1 Preliminary Evaluation of Wastewater Treatment Alternatives

Alternative	Environmental Impact	Capital Cost	Annual Costs	Life Cycle Cost (2030)	Advantages
					Disadvantages
Membrane Bioreactor	Effluent is discharged to river APDES permit required	\$20.65 (million)	\$0.93 (million)	\$36.29 (million)	High effluent quality
					High vulnerability
Mechanical Aeration	High noise High energy requirement APDES permit required	\$18.19 (million)	\$0.59 (million)	\$28.15 (million)	Good effluent quality
					Moderate vulnerability
New Holding Cell	Uses existing discharge point APDES permit required	\$9.62 (million)	\$.01 (million)	\$9.70 (million)	Good effluent quality
					No pumping requirements
Constructed Wetland	Effluent discharged to constructed wetland APDES permit required	\$11.42 (million)	\$.05 (million)	\$12.26 (million)	Low to moderate effluent quality
					Significant land area is required
					High Land acquisition requirements
					High vulnerability

Appendix D contains a life-cycle cost analysis for the project alternatives.

2.3.3. Project Description

Preliminary order-of-magnitude cost estimates indicate that the new holding cell alternative would be the most economical. The concept of a lined pond was not pursued because of the likely presence of permafrost and the settling and tearing of the liner that may occur in thaw-unstable soils. Also, incoming seepage can be controlled by maintaining fall water levels in Cell 1 and Cell 2. A summary of the design criteria for a new holding cell and wetland treatment are shown in Table 2.4-2.

TABLE 2.4-2 General Wastewater Design Criteria

2010 Population		6,080
2030 Design Population		7,300
Design Per Capita Wastewater Flow	gal / cap · day	50
Design Per Capita BOD Load	lbs BOD / cap · day	0.15
Design Wastewater Flow	gpd	365,000

PURPOSE, NEED & ALTERNATIVES FOR PROJECTS

Design BOD Load	lbs BOD / day	1,095
Facultative Cell Sizing		
Design BOD Load	lbs BOD / acre · day	20
Design Hydraulic Detention Time	days	9 months
Existing Total Cell Area	acres	61.7
Design Cell Area for 20 lb BOD/ac-d	acres	55
Design Usable Storage Volume	gal	133.2 million
Existing Cells Usable Volume	gal	171.8 million
Annual precipitation	gal	30.0 million
Holding Cell Sizing		
Eight Months Wastewater Flow	gal	133 million
Eight Months Precipitation	gal	20 million
Total Holding Cell	gal	153 million
Wetland Treatment System Design Criteria		
Design Hydraulic Load	gal / acre · day	Evaluate in design

Four potential site options for locating a new holding cell and wetland system are outlined in Table 2.4-3. See Drawing 5 in Appendix C for their relative locations.

Table 2.4-3 Evaluation of Holding Cell and Wetland Treatment Sites

Site Option	Environmental Impacts	Land Requirements	Advantages
			Disadvantages
Site Option 1	Land is presently subject to effluent discharge.	Land acquisition required	Located closest to existing cells. Minimal pumping distance.
			Effluent continues to discharge to Brown's Creek Slough
Site Option 2	Loss of natural tundra	Land acquisition required	Discharge drains away from City
			Discharge is more direct to river
Site Option 3	Loss of natural tundra	Land acquisition required.	Discharge drains away from City
			Located furthest from existing cells Requires an 8,000-foot force main Discharge is more direct to river.
Site Option 4	Some loss of natural tundra.	None. Located on City owned land.	All gravity transfer operation Increased detention time Allows for controlled summer discharge Cell 3 would be closer to housing

Holding Cell Alternative, Site Option 4 is the recommended wastewater treatment arrangement for the City of Bethel. A conceptual layout and hydraulic profile for this option is found in Appendix C, Site Option 4 Concept Plan. Although its initial capital cost is similar to other

options, the significantly lower cost to operate and overall utility of Option 4 make it unambiguous choice. Specifically, it:

- ✦ Is located on the existing City lagoon property;
- ✦ Utilizes gravity flow, requiring no pumping or other power equipment;
- ✦ Removes accumulated biosolids from Cell 1;
- ✦ Allows cascading water between ponds to improve aeration;
- ✦ Maintains full level in Cell 1 (primary) Cell 2 (secondary);
- ✦ Improves hydraulic detention time and facultative treatment;
- ✦ Precludes groundwater seepage into cells 1 and 2;
- ✦ Provides storage (Cell 3) of treated effluent for slow release during summer;
- ✦ Allows slow release and polishing treatment through a constructed wetland;
- ✦ Returns high quality effluent through an overland flow area to the point of discharge.

A potential concern for nearby residents is that this option places the holding cell closer to the community. It should be noted, however, that Cell 3 will only contain treated water. In addition, water quality in cells 1 and 2 will improve and thereby reduce the odor problems presently experienced. The proposed option can meet the City's wastewater treatment requirements with sufficient redundancy and flexibility to accommodate anticipated demands and at a considerably lower operational cost.

Constructed wetlands have performed well in the Lower 48 states for more than 30 years without signs of diminished treatment capability. Recent projects in Alaska are proving just as durable. In Alaska, constructed wetlands must cope with slower treatment rates due to the cooler and shorter summers. Nonetheless, wetland treatment systems can and do function in this environment, typically as an additional step associated with a stabilization pond. Construction is straightforward, utilizing organic mat and topsoil from cell 3 construction as the wetland topsoil base. This creates a root zone for cattails, softstem bulrush, calla lily, sedges, and other selected wetland plants indigenous to this region of Alaska.

In combination with a wetland treatment system, the improvement in effluent quality would be significant due to the longer retention time, improved aeration, and slow release. If the effluent quality can meet the States 18 AAC 70 discharge requirement for fecal coliform, an APDES permit could be obtained without the need for a mixing zone study. This would give the City flexibility in applying for and obtaining a future Permit.

2.3.4. Scope and Cost Estimate

The scope of this project includes a new holding Cell 3, rehabilitation of the existing lagoon treatment system and utilization of a wetlands treatment system.

For Options 1, 2 and 3, a new pump station would be required to transfer effluent to the wetland treatment area. Pumps would vary from 5 to 20 horsepower depending upon the site. Option 3 is furthest away and requires larger pumps and pumping energy. Stand-alone wind powered pumps and a utility interface system for wind powered pumps were investigated. However, the study found that wind turbine power generation was not cost effective compared to diesel powered pumps or electrical pumps powered by extension of the utility power supply. The pumps would be located near the existing discharge structure on the north dike of Cell 2.

Options 1 through 3 would require land acquisition—at least two of which are native allotments. Acquisition may be time-consuming and may ultimately be unsuccessful. Option 4 removes the need for pumping and land acquisition and allows the City to optimize the existing lagoon site.

A construction cost estimate for the Holding Cell Alternative at Site Option 4, based upon the site plan shown in Appendix C, is \$9,070,908. In addition, approximately \$544,254 has been estimated for bid phase services, construction administration and administrative costs. See Appendix E for more detailed cost estimates. Maintenance call outs for the lagoon will be lowest for this option and should also be reduced from the current system.

2.4. SUMMARY OF OPERATIONS AND MAINTENANCE COSTS

The operations and maintenance cost impacts of the proposed water and sewer projects are summarized in Table 2.4-1.

Table 2.4-1 Summary of Operations and Maintenance Costs

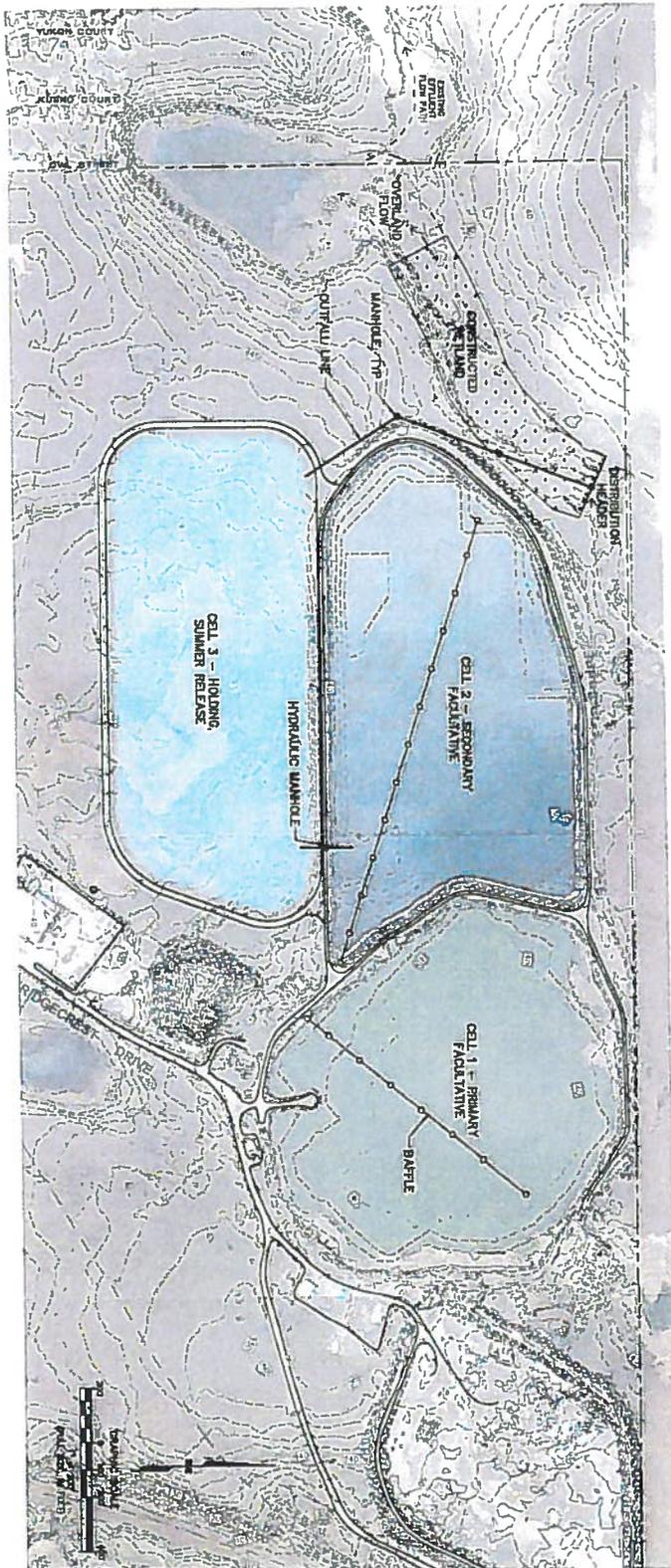
No.	Project Description	Annual O&M Cost Impact
6.1	Water Loop C	\$80,000
6.2	Water Loop A & B Replacement	\$72,000
6.3	Sewage Lagoon Upgrade -- Site Option 4	\$5,000
	TOTAL O&M COST IMPACT	\$137,000

The overall objective for the proposed projects is to reduce operations and maintenance costs for the City's water and sewer utilities.

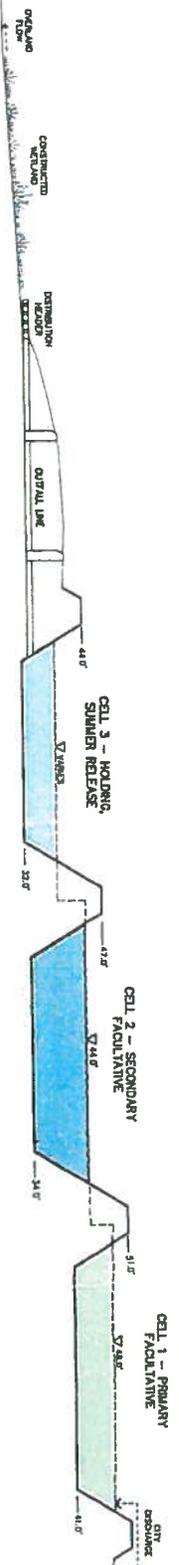
2.5. DESIGN CRITERIA AND REGULATORY REQUIREMENTS

Design Criteria:

- + Design Year Population 2030 - 7298
- + Mean Annual Temperature 29.1° F
- + Mean Minimum Temperature - 0° F
- + 99% Design Temperature - minus 48°F
- + Mean Annual Precipitation - 16 inches
- + Mean Annual Snowfall - 55 inches
- + Design Thawing Index - 3,200 ° F -days
- + Design Freezing Index - 4,400 ° F -days
- + Design Wind Speed (3 sec gust) - 120 miles per hour
- + Seismic Load - Per current edition of International Building Code
- + Snow Load - 40 PSF
- + Active Layer Depth - 2 to 7 feet
- + Permafrost - Generally continuous



TREATMENT PLAN
SCALE: 1" = 500' FULL SIZE



HYDRAULIC PROFILE - SCHEMATIC
SCALE: 1" = 500'

NO.	DATE	BY	REVISION
1	05/04/2014	ASB	AS BIDDING
2	05/04/2014	ASB	REVISION
3	05/04/2014	ASB	REVISION
4	05/04/2014	ASB	REVISION
5	05/04/2014	ASB	REVISION
6	05/04/2014	ASB	REVISION
7	05/04/2014	ASB	REVISION
8	05/04/2014	ASB	REVISION
9	05/04/2014	ASB	REVISION
10	05/04/2014	ASB	REVISION

**CITY OF BETHEL
 WASTE WATER LAGOON**
 SITE OPTION 4
 CONCEPT PLAN



5710 Woodland Dr.
 Suite 2100
 Anchorage, AK 99517
 (907) 243-8363

CITY OF BETHEL

Frank NEITZ
Chairman, Public Work, Comm.

01/02/2013

Dear Frank,

Effective JAN 1, 2013 I am
resigning my position on Public Works
Committee. Been a pleasure ^{servicing} with
all of you.

Jeff

JEFF SANDERS

Rec'd Jan 2, 2013
Frank Neitz