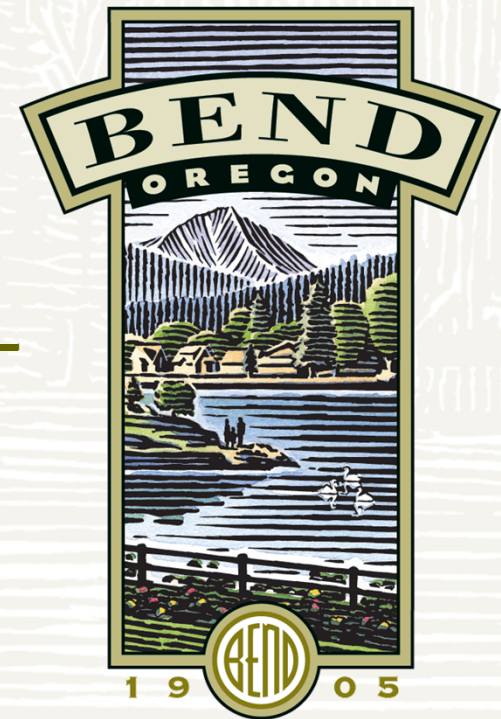




# WRF Secondary Expansion

## Final Design



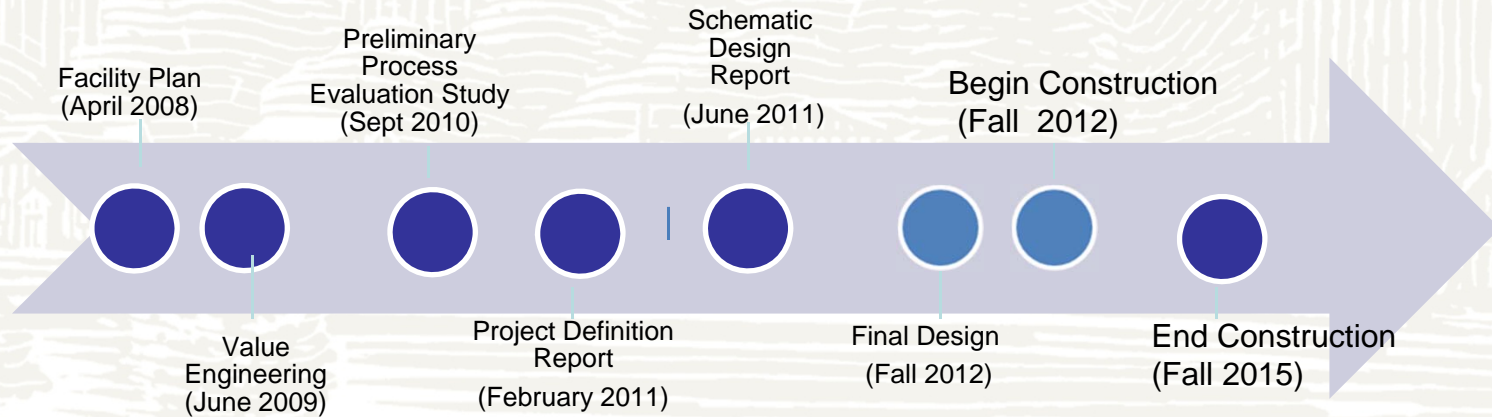
October 19, 2011  
City of Bend

# Existing Water Reclamation Facility





# Project Overview – Schedule



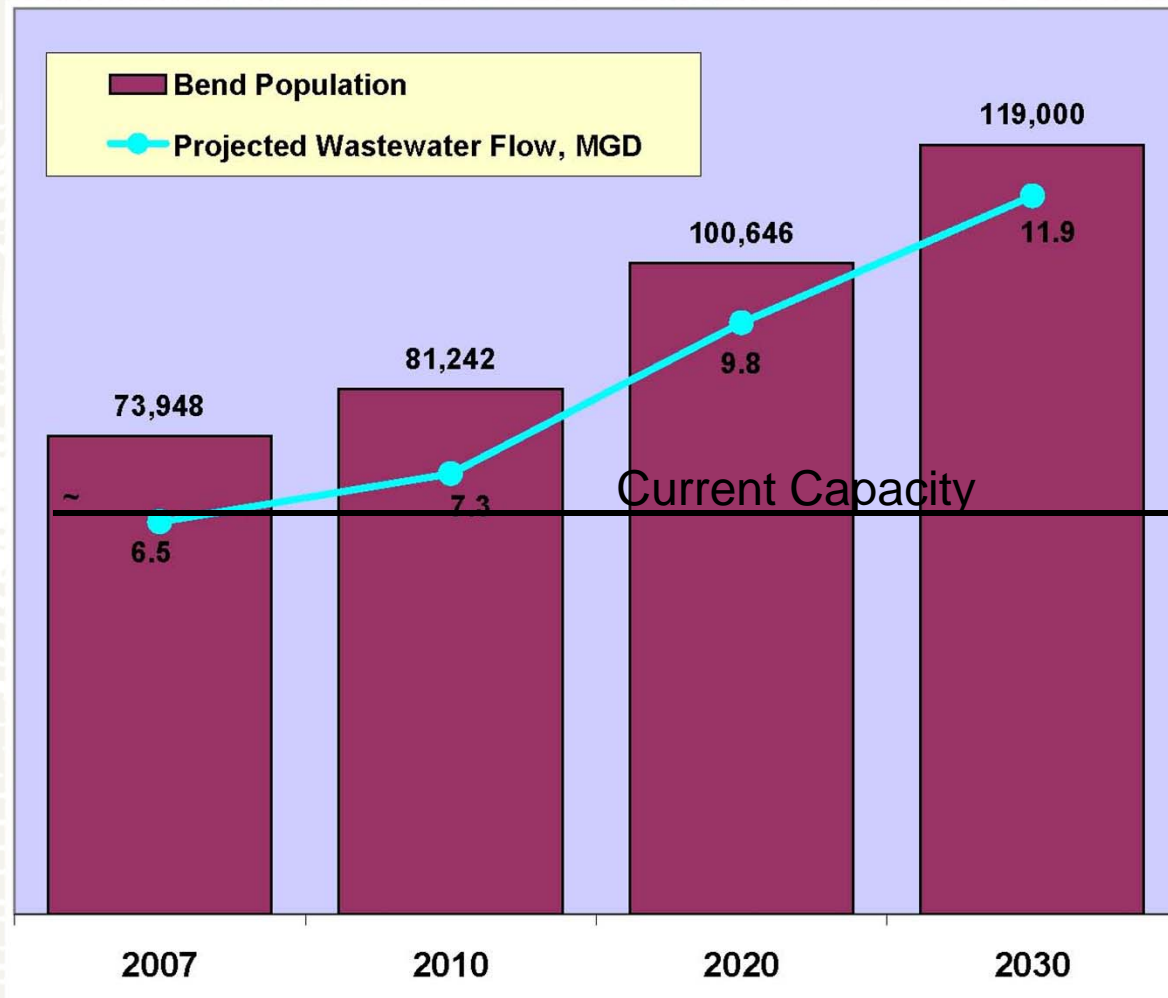
# WRF Facilities Plan

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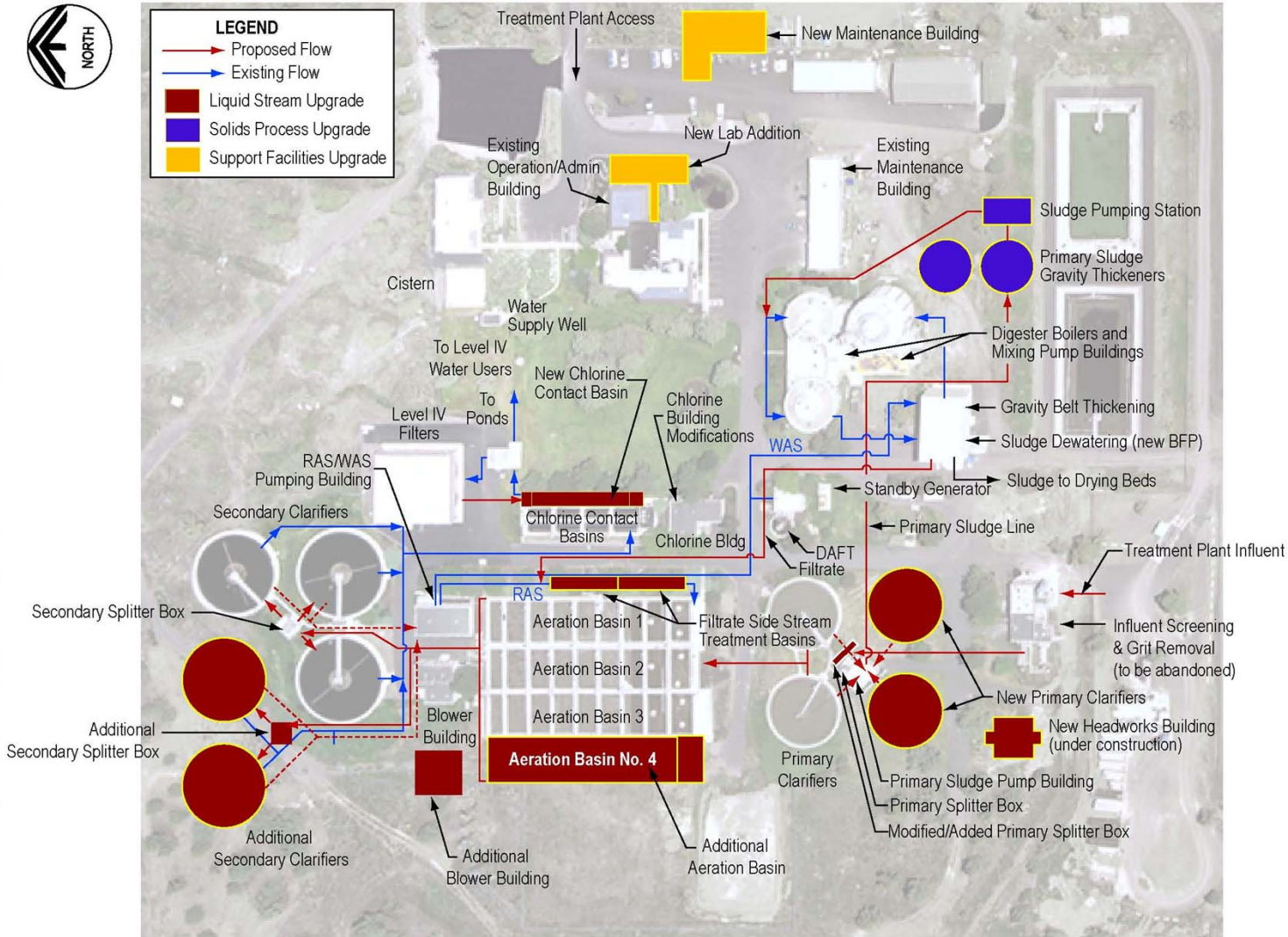
- Completed June 2008 by Carollo Engineers
- Approved by Oregon DEQ
- Provides a guidance document to treat wastewater to year 2030 with a Bend population of 119,000
- Current secondary treatment system deemed “insufficient to meet future flows and loads”

# Increased Population & Flow Requires Major Expansion at the WRF





# WRF Facilities Plan at 2030



# 2008 Facilities Plan Phased Capital Improvements Project Costs



Item Description	Construction Year					Total
	2008-2010	2011-2013	2014-2016	2017-2019	2020-2030	
<b>Liquids Treatment</b>						
Primary Splitter Box	\$370					\$370
Primary Clarifier	\$2,320			\$2,320		\$4,640
Aeration Basin				\$3,930		\$3,930
Contact Stabilization Piping Mods	\$310					\$310
Blower Building	\$580					\$580
Blowers	\$510			\$510	\$510	\$1,530
Secondary Clarifier Splitter		\$370				\$370
Secondary Clarifier		\$3,120			\$3,120	\$6,240
Side Stream Aeration Basins	\$3,290					\$3,290
Blower Piping Exterior	\$330			\$330	\$330	\$990
Influent Piping Mods	\$1,210					\$1,210
Secondary Clarifier Piping Mods		\$1,960				\$1,960
Upgraded RAS Pumps	\$2,460					\$2,460
Upgraded WAS Pumps				\$1,640		\$1,640
PAX Feed System	\$510					\$510
Chlorine Contact Basin	\$1,120					\$1,120
Hypochlorite System	\$920					\$920
<b>Evaporation/Percolation Ponds</b>						
Repairs to Ponds 1 and 2				\$1,310		\$1,310
<b>Solids Treatment</b>						
Gravity Thickener System			\$3,300			\$3,300
Belt Filter Press	\$1,250					\$1,250
<b>Support Facilities</b>						
Renovate Admin. Building		\$3,550				\$3,550
New Laboratory		\$3,280				\$3,280
Maintenance Upgrades		\$2,550				\$2,550
<b>Miscellaneous</b>						
Misc Site Improvements (5%)	\$760	\$740	\$170	\$500	\$200	\$2,370
Site Piping (5%)	\$760	\$740	\$170	\$500	\$200	\$2,370
<b>TOTALS (In \$1,000)</b>	<b>\$16,700</b>	<b>\$16,310</b>	<b>\$3,640</b>	<b>\$11,040</b>	<b>\$4,360</b>	<b>\$52,050</b>

**Construction  
\$43M Million  
EAL \$9 Million  
Of Total Project  
Costs**

**Year 2008-2016 Project \$37 million**



# WRF Facilities Plan

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- June 2008 Facilities Plan Estimate
  - Total Project Costs to be \$52 million
  - Construction totaling \$43 million
  - Engineering, Admin, Legal (EAL) Costs estimated at \$9 million
- City of Bend applied for and awarded Low Interest –State Revolving Fund Loan to help with funding project



# Design Phase

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- CH2M-Hill and WH Pacific were selected through a formal procurement process in 2009.
- Original solicitation anticipated this work.
- Original contract made it clear there were multiple anticipated phases with the original contract only for the first phase.
- At the time the original contract was written the City had not yet established the practice of receiving estimates for future phases up front.

# Design Phase

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- **First step** - Verify findings of 2008 WRF Facilities Plan- Value Engineering (VE)
  - VE Study reviewed the proposed technology and looked at numerous potential alternatives
- **Second Step** - Schematic (Conceptual) Design now completed 2011.
- **Next Step** - Final Design and Construction Bidding Document Preparation (to be completed 2012)

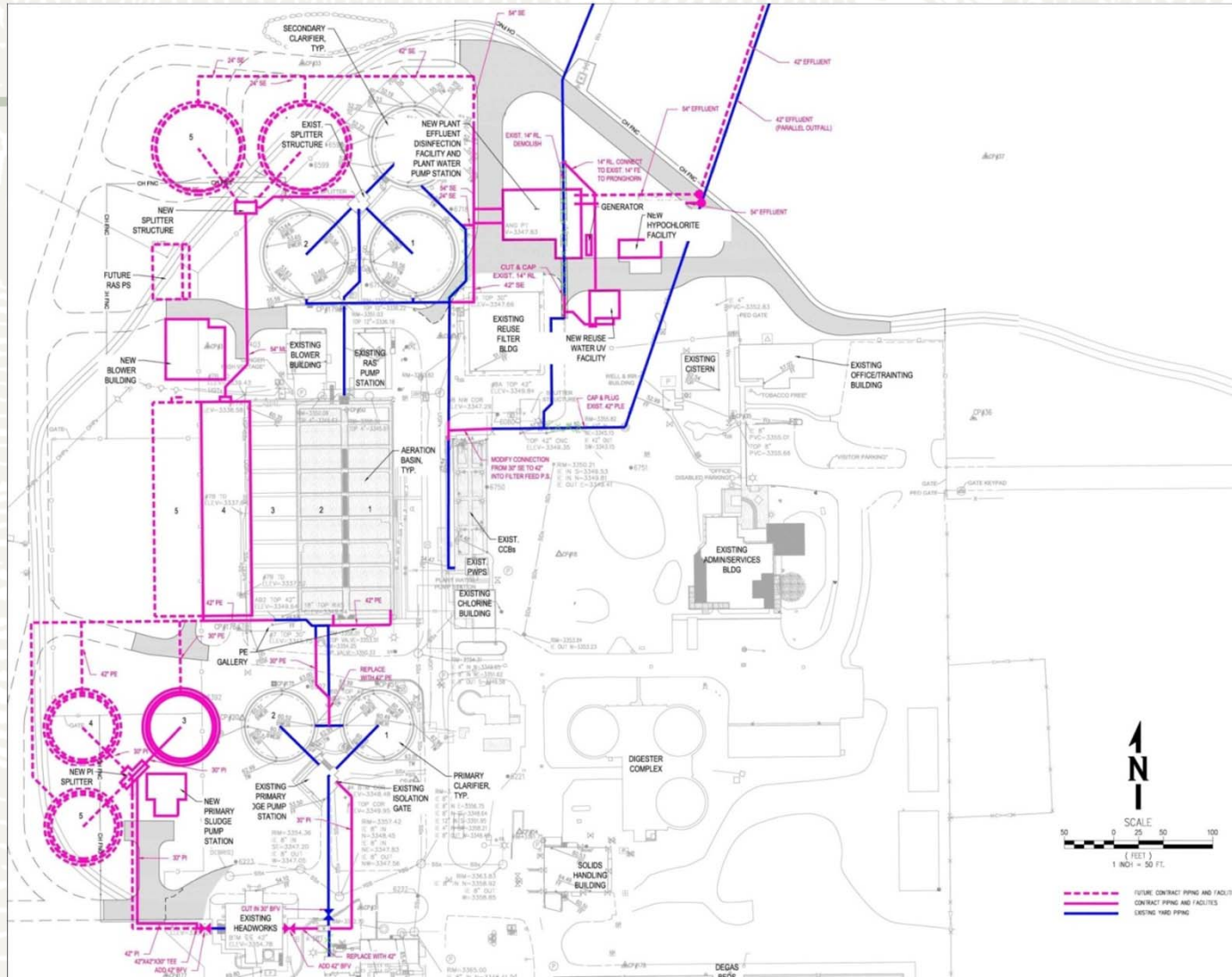




# Final Design based on a Phased Approach to Reduce the Chances of Stranded Investment

- Phase Capacity Upgrades as more capacity is needed. Allows us to add plant capacity to match the pace of growth.
- Postpones \$10 million Secondary Clarifiers Project when/if flows reach 11.0 mgd

# Current Design Facilities





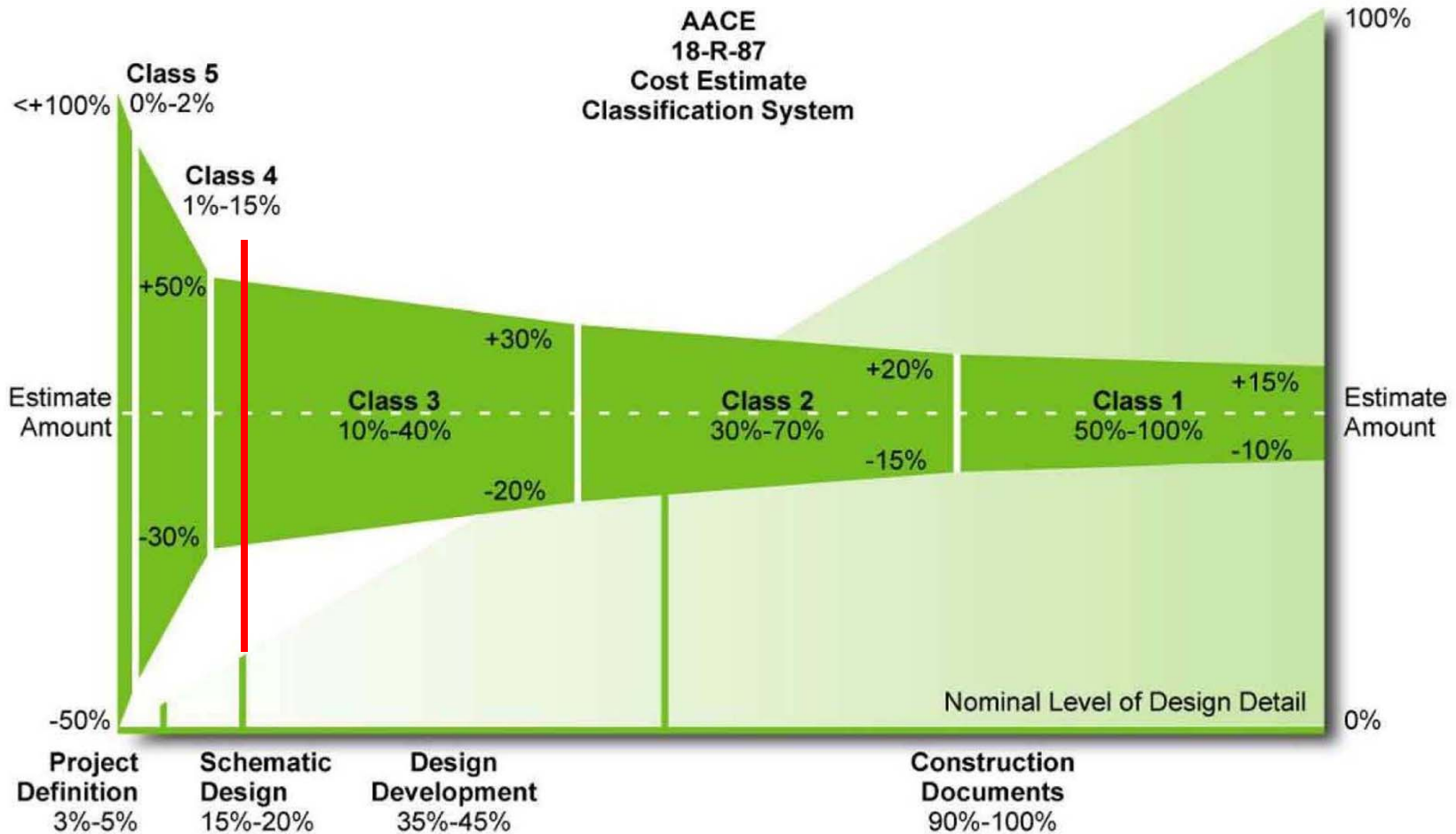
# Project Costs Phased Approach to Meet City of Bend's Wastewater Capacity Needs



Project Costs														
Item Description	Construction Phase Year 2012 to 2015									Phases Years 2015-2030			11.0 mgd	
	Phase 1a	Phase 1b	Phase 1c	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Total	Phase 7	Phase 8	Total		
<b>Aeration Basin Upgrades</b>	\$13,500									\$13,500				
Civil and Yard Piping														
Mixed Liquor Splitter Box														
Blower Building														
Aeration Basin 4														
<b>Aeration Basin Retrofits</b>														
Retrofit Aeration Basin 3					\$3,000					\$3,000				
Retrofit Aeration Basin 2						\$3,200				\$3,200				
Retrofit Aeration Basin 1							\$2,600			\$2,600				
<b>Disinfection Upgrades</b>		\$9,500								\$9,500				
Site Civil, Outfall Piping														
Reuse Building Modifications														
Disinfection NaOH Upgrades														
Plant Effluent Disinfection														
Reuse Disinfection Upgrades														
<b>Primary Clarification Upgrades</b>			\$3,200							\$3,200				
Site Civil, Primary Clarifier Piping														
New Primary Clarifier														
New Primary Sludge Pumping														
New Primary Influent Splitter Structure														
Retrofit Primary Sludge Pump Station 1				\$500						\$500				
<b>Solids Building Upgrades</b>									\$3,000	\$3,000				
<b>TOTALS (In \$1,000)</b>	\$13,500	\$9,500	\$3,200	\$500	\$3,000	\$3,200	\$2,600	\$3,000	\$38,500					
<b>Secondary Clarifier Upgrades</b>														\$10,000
Evaporation/Percolation Pond Upgrades											\$1,300		\$1,300	
<b>Support Facilities</b>												\$9,400	\$9,400	
Laboratory														
Maintenance Facilities														
Administration Building Renovation														
<b>TOTALS (In \$1,000)</b>											\$1,300	\$9,400	\$10,700	\$10,000

# Schematic Design Report

## Costs





# WRF Design Summary

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## Contract to Date:

Pre-design/Survey/Geo-tech	\$204,358
Amend for Value Engineering	\$65,914
Amend for Schematic Design	\$1,065,129
Amend for Additional Survey/Geo-Tech	<u>\$63,016</u>

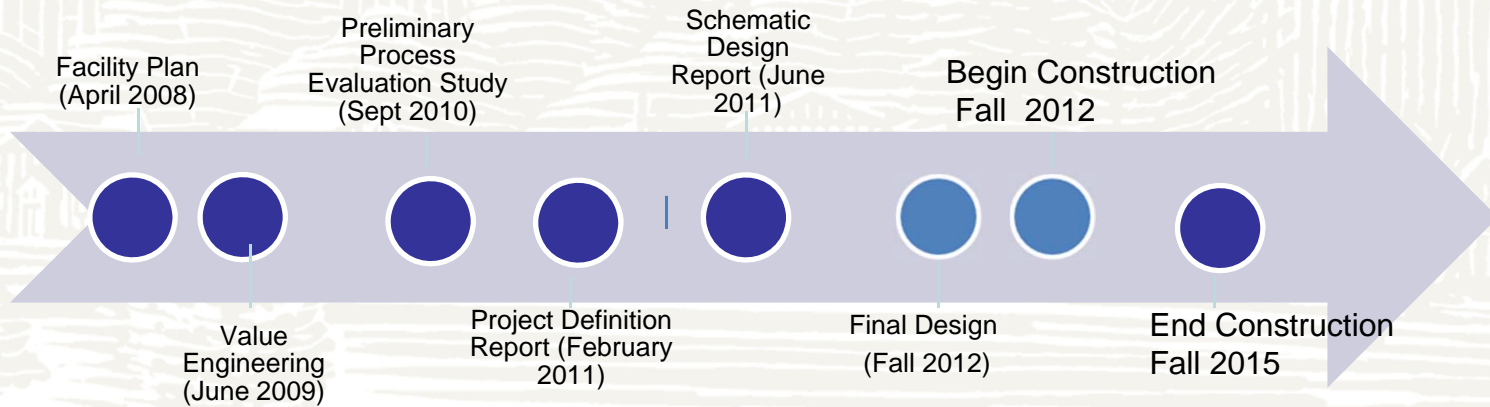
**Current Contract** **\$1,398,417**

**Proposed Final Design** **\$4,192,525**

**Total Proposed Contract** **\$5,590,942**

Engineering Services During Construction will be negotiated in Fall 2012.

# Project Overview – Schedule





# Questions?

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