

Proactive Contract Management Through the Development of a Customized Software Application



**Columbia Gorge Science Conference
April 15, 2014**

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Yakama Nation Fisheries Program**

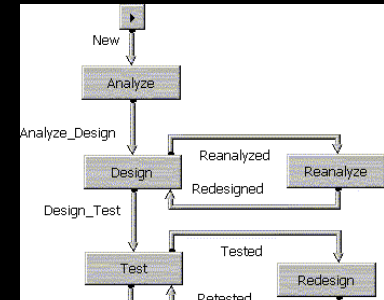
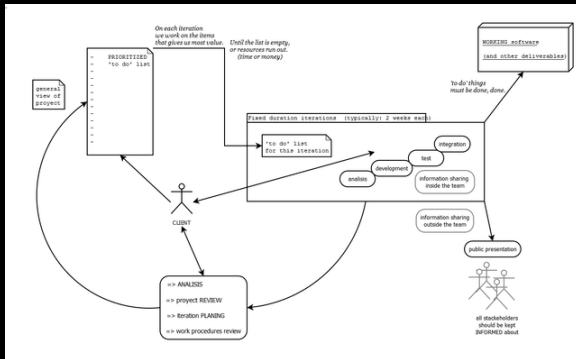
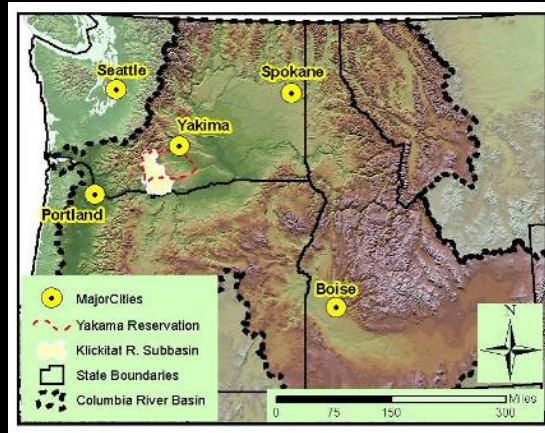


07.11.2013 10:04



RISK = intentional interaction with uncertainty

KWEP



Bid Schedule

Lump-Sum Items

Item	Unit	Quantity	Unit Rate (\$)	Total Cost (\$)
Mobilization (to activate all labor, equipment, and materials available for project)	<u>Lump sum</u>	<u>n/a</u>	<u>n/a</u>	<u>\$20,000.00</u>
Demobilization (to remove and/or deactivate all labor, equipment, and materials associated with project)	<u>Lump sum</u>	<u>n/a</u>	<u>n/a</u>	<u>\$10,000.00</u>

Hourly Rates for Labor and Equipment:

Item	Estimated Quantity (Hours)	Hourly Rate (\$)	Total Estimated Cost (\$)
Track Mounted Excavator #1	<u>80</u>	<u>\$140.00</u>	<u>\$11,200.00</u>
Track Mounted Excavator #2	<u>60</u>	<u>\$155.00</u>	<u>\$9,300.00</u>
Dump Truck #1	<u>50</u>	<u>\$115.00</u>	<u>\$5,750.00</u>
Dump Truck #2	<u>50</u>	<u>\$115.00</u>	<u>\$5,750.00</u>
Dozer or Skidder (Specify)	<u>40</u>	<u>\$120.00</u>	<u>\$4,800.00</u>
Loader or backhoe		<u>\$105.00</u>	
Labor (e.g. falling, bucking, and limbing trees, cabling, implementing erosion control, seeding, etc)	<u>40</u>	<u>\$75.00</u>	<u>\$3,000.00</u>
Water Truck (contingency)		<u>\$115.00</u>	
Log Truck (contingency)		<u>\$115.00</u>	
Other (specify) Log Loader		<u>\$140.00</u>	

Contract Exhibits

Hourly Rates and Budget for Labor and Equipment:

(Specifications in Exhibit A Major Equipment - Mandatory)

Item #	Item	Owner- Estimated Quantity (Hours)	Hourly Rate (\$)	Total Cost (\$)
1	Track Mounted Excavator #1	100	\$140.00	\$14,000.00
2	Track Mounted Excavator #2	70	\$155.00	\$10,850.00
3	Bulldozer with grapples	40	\$120.00	\$4,800.00
4	Articulated dump truck #1	60	\$115.00	\$6,900.00
5	Articulated dump truck #2	60	\$115.00	\$6,900.00
6	Water Truck	20	\$115.00	\$2,300.00
7	Skid Steer	30	\$125.00	\$3,750.00
8	Log Truck	70	\$115.00	\$8,050.00
9	Construction Laborer (general laborer capable of falling, bucking, and limbing trees, cabling, implementing erosion control, seeding, etc)	40	\$75.00	\$3,000.00
	Total			\$60,550.00

Rates for Contingency Items:

(specifications in Exhibit A Major Equipment – Contingency, Construction and Sequencing)

Item #	Item	Owner- Estimated Quantity	Rate (\$)	Total Cost (\$)
10	Front-End Loader*	-	\$105.00/hr	-
11	Stream Bed Stone II (yard)*	200	\$55.10/yard	\$11,020.00
12	Second Mobilization*	1	\$1,000.00	\$1,000.00
	Total			\$12,020.00

*Need and quantity to be determined solely by OWNER.

Fifteen percent (15%) of the amount billed shall be retained until a FINAL RELEASE has been signed by the CONTRACTOR and delivered to the OWNER and all reclamation/restoration has been completed as outlined above.

$$2(y+3) + 4(y+12) = -2(y+10) + 4(y+6) + 3(2y+8)$$

$$2y + 6 + 4y + 48 = -2y - 20 + 4y + 24 + 6y + 24$$

$$3(2x+5y) + 2(4x+6y) = 4(9x+5y) + 3(2x+4y) + 2(4x+5y)$$

$$6x + 15y + 8x + 12y = 36x + 20y + 6x + 12y + 8x + 10y$$

$$3(a+b) + 4(a+2b) + 5(a+3b) = -3(a+4b) + 2(-6a+4b) + 3(2a+5b)$$

$$3a + 3b + 4a + 8b + 5a + 15b = -3a - 12b - 12a + 8b + 6a + 15b$$

$$7(m+2n) + 3(-2m+4n) = 5(6m-7n) + 3(5m+6n)$$

$$7m + 14n - 6m + 12n = 30m - 35n + 15m + 18n$$

$$7(x+4y-6z) = 4(4x-6y-7z) - 2(z+7x+3y)$$

encroachment by filling the bottom. I didn't have a plan/profile sheet for this reach today so I didn't set up the laser down there.

Master Excel Spreadsheet

File Home Insert Page Layout Formulas Data Review View Add-Ins Acrobat

Normal Page Layout Page Break Preview Custom Views Full Screen

Gridlines Headings Show

Zoom 100% Zoom to Selection

New Window Arrange All Freeze Panes Unhide

Split View Side by Side Synchronous Scrolling Reset Window Position Window

Save Workspace Switch Windows Macros

Phase 2 - Construction																				Labor Total	Work Performed
Date	Day	Link-Belt 210 Hours Worked	Link-Belt 4300 Hours Worked	Cat D-4 Hours Worked	Water Truck Hours Worked	Dump Trucks Hours Worked	Backhoe 416 Hours Worked	Skid-Steer (tracked) Hours Worked	Skidder Hours	Log Truck #1 Kenworth Hours Worked	Labor										
											Tim K.	Tim M. Hours	Harvey S.	Matt L.	Joe Hours	Ivan Hours	Levi Hours	Jason/Mitch			
9/9/2013	Monday																				
9/10/2013	Tuesday			0.5					0.5		1	4	8							road brushing, fire watch	
9/11/2013	Wednesday			6.3			4.9				1		8.0							road brushing, fire watch	
9/12/2013	Thursday	2.8									1	3.0								set out signs, cut culvert, fire watch	
9/13/2013	Friday	4.6									2.0		6.0							set out signs, road brushing, fire watch	
9/14/2013	Saturday																				
9/15/2013	Sunday																				
Weekly Total: 9/9-9/15/13		7.4	0	6.8	0	0	4.9	0	0.5	0	5.0	7	22	0	0	0	0	0	3.5	37.5	
9/16/2013	Monday	8	8								1		8							saw work and fire watch	
9/17/2013	Tuesday	8	8								1									fire watch	
9/18/2013	Wednesday	7	7	1							1									fire watch	
9/19/2013	Thursday	7	7	1.5	0.5	13.5			8		1			1						fire watch	
9/20/2013	Friday	8	8			16															
9/21/2013	Saturday																				
9/22/2013	Sunday																				
Weekly Total: 9/16-9/22/13		38	38	2.5	0.5	29.5	0	0	16	0	3.0	0	8	2	0	0	0	0	0	13.0	
9/23/2013	Monday	7	7	7		10.5								1						labor	
9/24/2013	Tuesday	7.5	1			1		8			7		2	1						saw, fire watch	
9/25/2013	Wednesday	5	4.5	3				4			5.5		8							cut trees	
9/26/2013	Thursday	9.5	9	0.5		18		10			2	0.5								cut trees	
9/27/2013	Friday	6	9.5	4		15		12													
9/28/2013	Saturday																				
9/29/2013	Sunday																				
Weekly Total: 9/23-9/29/13		35	31	14.5	0	44.5	0	34		0	14.5	0.5	10	2	0	0	0	0	0	27.0	
9/30/2013	Monday																				
10/1/2013	Tuesday																				
10/2/2013	Wednesday																				
10/3/2013	Thursday																				
10/4/2013	Friday																				
10/5/2013	Saturday																				
10/6/2013	Sunday																				
Weekly Total: 9/30-10/6/13		0	0	0	0	0	0	0		0	0.0	0	0	0	0	0	0	0	0	0.0	
10/7/2013	Monday	8	8	1.5		14.5															
10/8/2013	Tuesday	8.5	8	2		14						0.5									
10/9/2013	Wednesday	8.5				3							5.5								
10/10/2013	Thursday	8											4.5								
10/11/2013	Friday	8		5									3								
10/12/2013	Saturday																				
10/13/2013	Sunday																				
Weekly Total: 10/7-10/13/13		41	16	8.5	0	31.5	0	0		0	0.0	0.5	13	0	0	0	0	0	0	13.5	
10/14/2013	Monday	8	7	4		1.5															
10/15/2013	Tuesday	10	4.5	3							1										
10/16/2013	Wednesday	10	10																		
10/17/2013	Thursday	9	6								1										
10/18/2013	Friday																				
10/19/2013	Saturday																				
10/20/2013	Sunday																				
Weekly Total: 10/14-10/20/13		37	27.5	7	0	1.5	0	0		0	2.0	0	0	0	0	0	0	0	0	2.0	
10/21/2013	Monday	8.5									0.5										
10/22/2013	Tuesday	9									1										
10/23/2013	Wednesday	6	8	4		16.5					2	1	2								
10/24/2013	Thursday	5	9	4		18					1		0.5	1							
10/25/2013	Friday																				
10/26/2013	Saturday																				
10/27/2013	Sunday																				
Weekly Total: 10/21-10/28/13		28.5	17	8	0	34.5	0	0		0	4.5	1	2.5	1	0	0	0	0	0	9.0	
10/28/2013	Monday	3									0.5		3								
10/29/2013	Tuesday	7		2							3		10								

RISK ANALYSIS

Risk IDENTIFICATION
- Select right methods
- Define scope

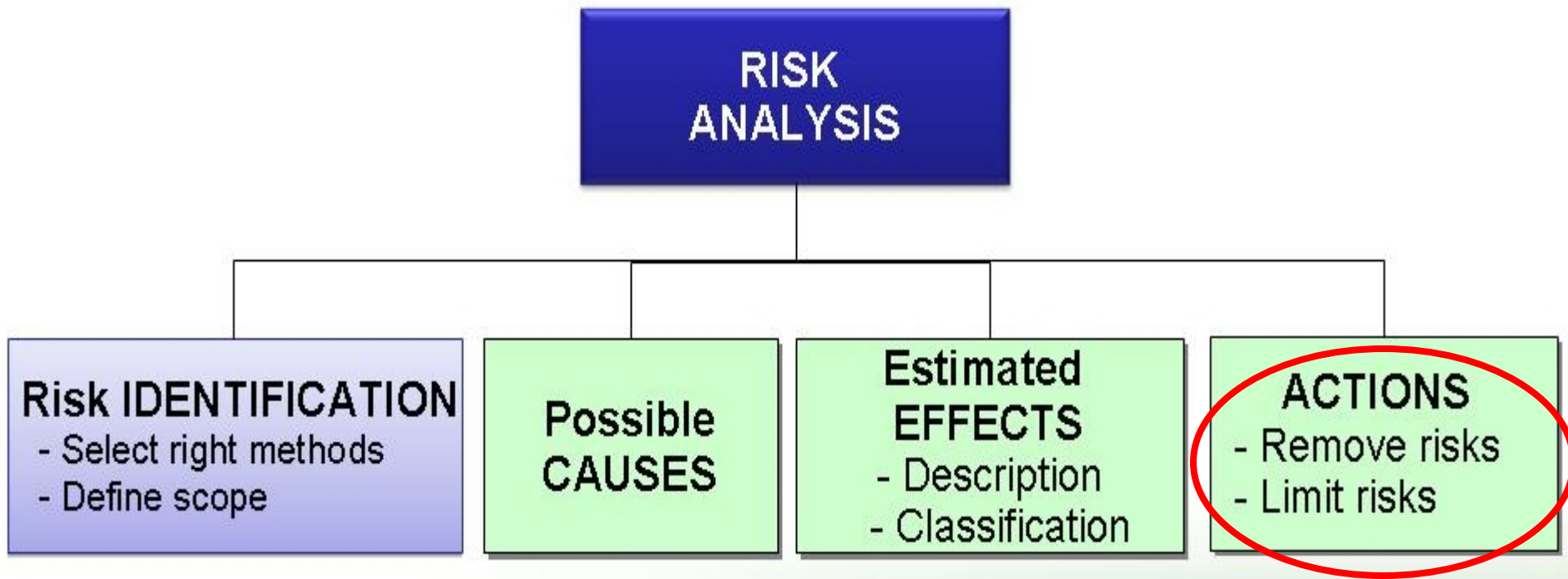
Possible CAUSES

Estimated
\$\$\$\$\$
- Classification

ACTIONS
- Remove risks
- Limit risks

- Inconsistent Data quality

- Data completeness
- Lack of consistency between observers
- Information transfer
- Data summary



- **Development of a standardized data capture platform with a relational database**

iPad 5



FileMaker Pro/Go



LifeProof nuud Case



Klickitat Watershed Enhancement Project Construction Management

Project Name



Tepee2

Stream Name

Location

Tepee Cr

Tepee2 mdws

Contract:

Plans:

Observer

Revisit Previous Date?

Yes No

Working Date

Continue

Export Records



Klickitat Watershed Enhancement Project Construction Management

Back

- Equipment
- Materials
- Hourly
- Activity
- Photos
- Notes

Pay Item	Make	Model	Serial Number	Arrival Hours	Arrival Date	Arrival Time	Departed?
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Unit Name

Unit Billing Rate

OK



Klickitat Watershed Enhancement Project Construction Management

Back

Tepee2

Pay Item	Hours Used	Unit Cost	Total Cost
Kenworth Dump	4	\$115	\$460
		\$	\$
735	1.5	\$	\$
LS-4300	14	\$155.00	\$2170
210	10	\$140.00	\$1400
		\$	\$
D4H	7.5	\$120.00	\$900
		\$	\$
		\$	\$
		\$	\$
		\$	\$
		\$	\$
		\$	\$

Total Equipment Cost for the project:

\$4930



Klickitat Watershed Enhancement Project Construction Management

Back

- Equipment
- Materials
- Hourly
- Activity
- Photos
- Notes

Date	Location	Activity	Activity Status	
9/12/2013	upper	culverts	Completed	X
9/18/2013		Erosion Control	In-Progress	X
9/13/2013		LWD collection	In-Progress	X
9/12/2013		Revegetation	Completed	X
9/23/2013		slash piling & hauling;	In-Progress	X
				X





Klickitat Watershed Enhancement Project Construction Management

Back

Equipment

Materials

Hourly

Activity

Photos

Notes

Photos

Photo Description



strip of trees along 175 shoulder not cleared
2012



Insert Photo...

Photo description...





Klickitat Watershed Enhancement Project Construction Management

Back

- Equipment
- Materials
- Hourly
- Activity
- Photos
- Notes

Date	Time	Field Notes	
10/15/2013	6:58:59 AM	met with Fred and Jim to discuss punchlist	
		Insert notable activities...	

Conclusions

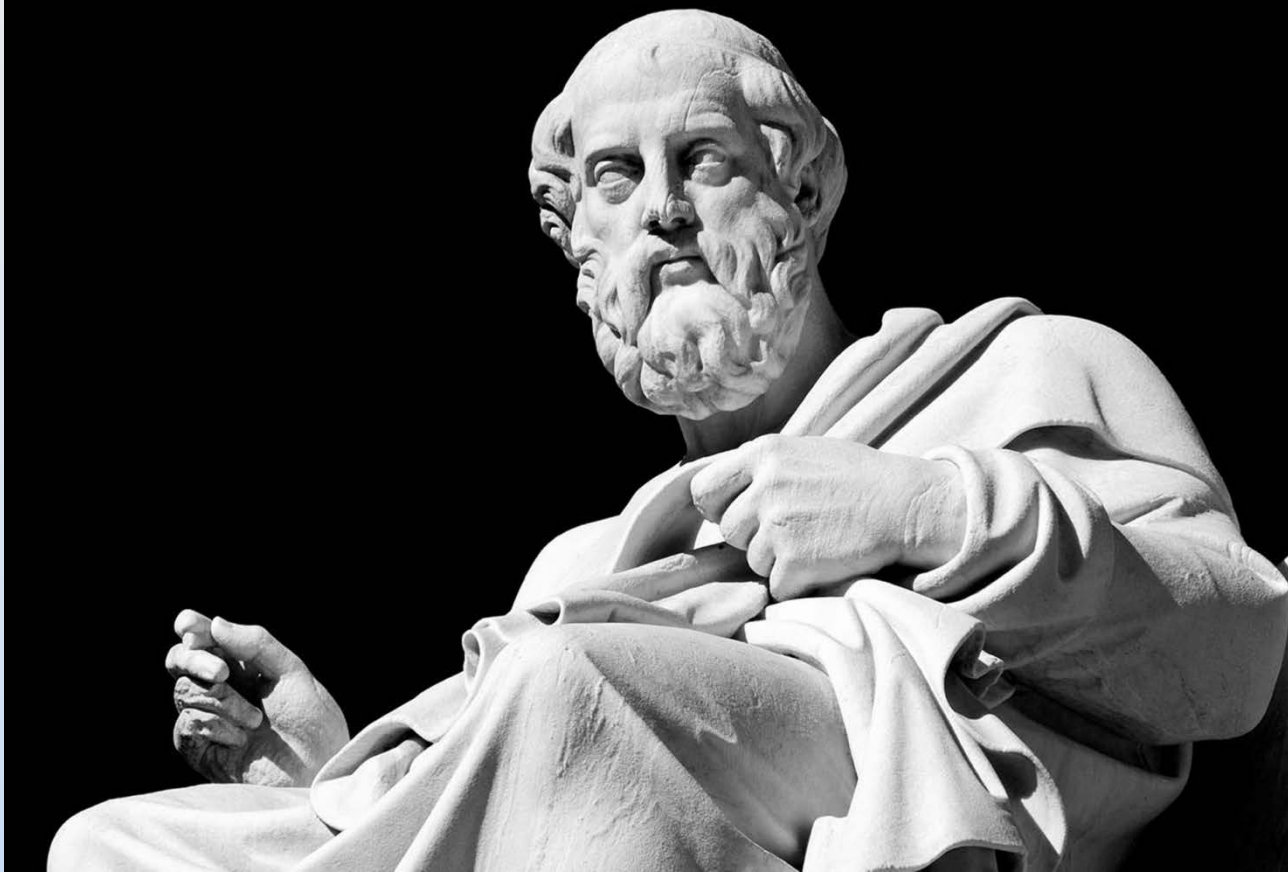
Field testing conducted in 2013 demonstrated that the application was effective at:

- Streamlining information transfer between staff
- Real-time monitoring of project costs
- Field-design and as-built documentation

Reduced uncertainty!

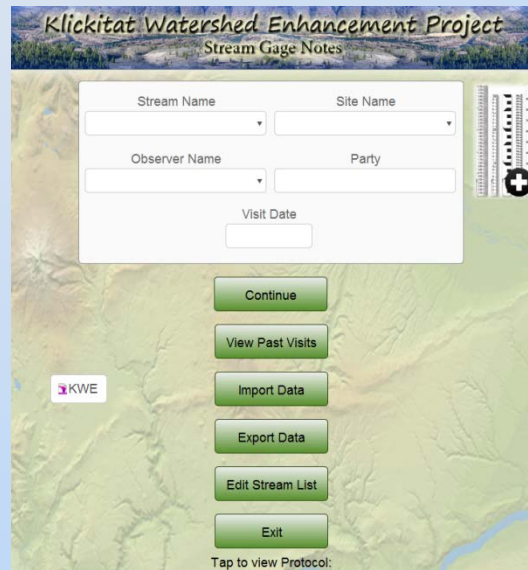


Unexamined project is not worth doing....



Next Steps

- Full implementation of software application during 2014 construction season
 - Further revisions to Application (as necessary)
- Implementation of Stream Gage application



- Continuation of efforts to balance workload with capacity

Acknowledgements



EcoTech Solutions



Questions.....

