Executive Summary
Citizens Criteria Repository Siting Process Memorandum
Upper Basin Repository Site Ranking Process
March 12, 2010

Cleanup activity at the Bunker Hill Superfund Site results in the need to safely store the metals-contaminated soil and other waste materials. Even though cleanup activities have been underway for nearly a decade in the area from Elizabeth Park to Mullan, over one million cubic yards of contaminated material identified for excavation and disposal still remain in this area. The current repository at Big Creek is nearly full. More repository space is needed to continue the cleanup to provide Silver Valley residents with a safe place to work, live and recreate.

DEQ and EPA recognize that repositories should be sited in locations that meet the needs of the local residents as well as the needs of the overall cleanup. In an effort to incorporate citizens' input into the repository siting process early on, DEQ and EPA held two workshops in Wallace in Spring 2009. Citizens were asked to identify the important factors we should consider when siting the next repository.

Well over fifty written and oral comments were received during the workshops. DEQ and EPA reviewed the comments and grouped them by issue. Nine citizen criteria were developed from these comments. The nine criteria to consider in siting a new repository are:

- Impacts to wetlands
- Impacts to surface water, fish and wildlife
- Impacts to the floodplain
- Location relative to mapped faults and landslides
- Impacts to people living and working near the repository
- Truck traffic
- Minimize trucking costs
- Preservation of development potential
- Size (large size better than small size)

After developing the criteria, the next step was to assign relative weighting to each. This way the most important criterion had a greater influence on the final ranking than the least important criterion. This step was carried out by asking Silver Valley elected officials and their representatives, the Tribes, and public agency representatives to rate the relative importance of each criterion. The criteria weighting process resulted in this order of importance:

Criteria	Relative Importance
1. Impacts to people living and working near the repository	100 (most important)
2. Preservation of development potential	84
3. Size (large size better than small size)	75
4. Impacts to the floodplain	69
5. Impacts to surface water, fish and wildlife	65
6. Minimize trucking costs	63
7. Truck traffic	55
8. Impacts to wetlands	52
9. Location relative to mapped faults and landslides	42 (least important)

Scores for each of the nine weighted criteria were compiled for the eight sites being considered. The site with the highest score was the site judged most suitable for development using the citizen criteria. Lower-scored sites were thus less suitable for use as a repository. The ranking of the eight sites, in order from most to least suitable using the citizen criteria, is:

Site	Score
1. Osburn Tailings Impoundment	82.6 (most suitable)
2. Star Tailings Impoundment	63.4
3. Field near Cole and Larson Roads east of Mullan	61.5
4. Burns – Yaak	53.4
5. Willow Creek east of Mullan	46.7
Site	Score
6. Former Smelterville Gun Range	44.2

7. Government Gulch	42.7
8. Former RV Park in Smelterville	41.6 (least suitable)

Details of the citizen criteria ranking are described in the Citizens Criteria Repository Siting Process Memorandum. We appreciate all the citizen input in the process. Your participation helps guide DEQ and EPA in selecting the next repositories for the Upper Basin.

Citizens Criteria Repository Site Ranking Summary

TO: Ed Moreen, US EPA
Andy Mork, Idaho DEQ

COPIES: Stoupa, Joan/SEA
Don Vernon, TerraGraphics

FROM: Dan Pitzler

DATE: March 12, 2010

This memorandum presents the methods and results of a detailed screening analysis of the top 8 sites identified for a waste repository for the Upper Basin of the Coeur d'Alene River. During a public workshop held in Wallace, May 14, 2009, the results of an initial screening analysis was presented. In that analysis, more than 90 sites were investigated to identify sites that met two key criteria:

1. Site is not being actively used by its owners.
2. A capacity of at least 500,000 cubic yards.

The following eight sites were identified as meeting those criteria:

- Star Tailings Impoundment
- Willow Creek – East Mullan
- Burns-Yaak
- Osburn Tailings Impoundment
- Vacant RV Park, Smelterville
- Smelterville Gun Range East of Drive-In
- Government Gulch
- Cole and Larson Roads

An overview of the methodology used to screen these 8 sites, the results of the analysis, and a recommended short list of sites for further analysis follows.

Methodology Overview

The methodology used for the site screening analysis is called multiobjective decision analysis (MODA), which is a quantitative technique for making decisions that involve multiple financial, environmental, and social objectives. The technique is based on the principles of multi-attribute utility theory[1]. MODA proceeds through a series of defined steps, including:

[1] Keeney, Ralph L. and Raiffa, Howard. 1976. *Decisions with Multiple Objectives*. Cambridge University Press, and a specific application of the technique called the simple multiattribute rating technique with swings (SMARTS),"SMARTS and SMARTER: Improved Simple Methods for Multi-Attribute Utility Measurement." *Organizational Behavior and Human Decision Processes.* 60, 306-325).

- Establish the decision goal and key assumptions.
- Identify and specify fundamental objectives or siting criteria.
- Develop performance scales and measures for each criterion.
- Score how well each site meets each criterion.
- Assign relative value weights to the criteria.
- Calculate total scores for each site and conduct sensitivity analysis.

Decision Goal, Siting Criteria and Performance Measures

The decision goal, siting criteria, measurement scales and performance measures are shown in Exhibit 1. The criteria were developed by the project team using input received at the May 14, 2009 public workshop, and other criteria (such as hauling distances) deemed to be important factors to consider in the siting decision. The measurement scales establish how well each site met each criterion, and the performance measures show the best and worst possible outcome for each criterion. Note, also that there are seven key assumptions listed at the top of the exhibit that were in effect during the analysis.

Measurement scales can be quantitative or qualitative, depending upon the criterion. Wherever possible, quantitative measures were used to measure the performance of sites against the criteria. For example, truck travel times from one location to another were measured in minutes. When a quantitative measure could not be developed, such as minimizing the impact to surface waters, a 1-5 scale is used where one is the worst potential outcome, and five is the best potential outcome for that criterion.

Performance Scores for Each Criterion

Staff from TerraGraphics conducted analyses to assign performance scores to each site for each criterion. Exhibit 2 provides the performance scores, and Exhibit 3 provides documentation of the rationale for each score that was assigned.

Relative Value Weights

Exhibit 4 shows the relative value weights assigned to each criterion. Relative value weights reflect the relative importance of each criterion in selecting a preferred site. There are five columns in Exhibit 4: the first three columns repeat information provided in Exhibit 1, and the fourth column shows the relative value weights for this analysis. These weights are a representation of the relative value received as each measurement scale is varied from its worst outcome to its best outcome. When assigning relative value weights, one should consider both the relative importance of a criterion AND the variability of the criterion. For example, if someone is asked about what is more important to the choice of a car: its color or its price – their initial response would probably be price. However, the response would probably be the opposite if the color choices given were blue-gray versus zebra-striped, and the price choices were $17,000 and $17,100.

Weight:	x% **Color**	y% **Price**
		$17,000
		$17,100

Exhibit 1

Siting Criteria and Performance Measures

Goal Statement: Select a site for development of a repository for material excavated during remedial actions and from ICP projects in the Coeur d'Alene Basin.

Key Assumptions:

1. The repository will be sited in the upper basin, the drainage basin of the South Fork Coeur d'Alene River .
2. The site must have at least 500,000 cubic yards of capacity and currently be inactive.
3. The site preferably will be located in an area already contaminated with metals from mining and ore processing wastes.
4. All sites will be designed to minimize the potential for groundwater contamination.
5. After closure, the site must be able to be secured and maintained to prevent contaminant release.
6. Ths site must be reasonably flat.
7. The site must be accessible from existing roads.

	Siting Criteria	Measurement Scale	Performance Measures	
			Worst	Best
1	Minimize potential for impact to wetlands and related wildlife	1-5 scale reflecting likelihood of wetlands impacts	Wetlands clearly present onsite and site is near an area conducive to the presence of wetlands	No wetlands in vicinity of site
2	Minimize potential for impact to surface waters and fish and wildlife	1-5 scale reflecting distance to surface water	Surface waters clearly present onsite	No surface waters in vicinity of site
3	Minimizes potential for impact to floodplain	Percent of site estimated to lie within floodplain	Located completely within floodplain (100%)	Located completely outside floodplain (0%)
4	Site is not near a mapped fault or likely to be affected by a landslide	Distance to fault (feet). Divided by 2 if landslide potential	Site is directly on top of a fault and there is landslide potential	Site is 2,000 feet from a fault with no landslide potential
5	Site not likely to result in impacts to persons living or working near the repository (residences, schools, urban areas)	Parcels with residential or commercial structures within 5 zones (1-100yd, 101-200yd, 201-300yd, 301-400yd, 401-500yd). Parcels multiplied by the following factors: 16, 8, 4, 2, 1, for the respective zones	255 residential, business, or institutional parcels within a 500 yd radius = total score of 1,145.	Two residential, institutional, or business parcels within a 500 yd radius = total score of 5.
6	Truck route from I-90 to the repository not likely to affect existing persons or businesses	1-5 scale reflecting the estimated number of residences and businesses along truck route multiplied by 1=state highway; 2 = urban paved; 3 = rural	65 residential, business, or institutional parcels along urban paved road = 130	Two residential, institutional, or business parcels along urban paved road = 4
7	Minimize trucking costs by locating site close to removal areas	Estimated haul time from Canyon Creek - I-90 interchange	19 minutes	3 minutes
8	Site preserves potential economic benefits by not using land that would otherwise be readily developable	1-5 scale reflecting the extent to which the site preserves developable land	Site considered to be currently developable and siting of repository would hinder future development	Significant constraints exist to developing this site
9	Site can accommodate large quantity of material	Estimated cubic yards of capacity	500,000 cy	2.8 million cy

Exhibit 2
Scores

			Measurement Scale Endpoints		Scores							
					Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
	Siting Criteria	Measurement Scale	Best	Worst	Star Tailings Impoundment	Willow Creek - East Mullan	Burns-Yaak	Osburn Tailings Impoundment	Vacant RV park, Smelterville	Former Smelterville Gun Range East of Drive-In	Government Gulch	Cole and Larson Roads
1	Minimize potential for impact to wetlands and related wildlife	1-5 scale reflecting likelihood of wetlands impacts	5	1	5	3	5	5	5	5	5	5
2	Minimize potential for impact to surface waters and fish and wildlife	1-5 scale reflecting distance to surface water	5	1	3	1	5	3	3	3	1	5
3	Minimizes potential for impact to floodplain	Percent of site estimated to lie within floodplain	0%	100%	0%	20%	0%	0%	100%	100%	25%	0%
4	Site is not near a mapped fault or likely to be affected by a landslide	Distance to fault (feet). Divided by 2 if landslide potential	2000	0	0	2000	900	500	600	600	0	600
5	Site not likely to result in impacts to persons living or working near the repository (residences, schools, urban areas)	Parcels with residential or commercial structures within 5 zones (1-100yd, 101-200yd, 201-300yd, 301-400yd, 401-500yd). Parcels multiplied by the following factors: 16, 8, 4, 2, 1, for the respective zones	5	1,145	955	57	1,145	5	143	20	10	7
6	Truck route from I-90 to the repository not likely to affect existing persons or businesses	1-5 scale reflecting the estimated number of residences and businesses along truck route multiplied by 1=state highway; 2 = urban paved; 3 = rural	4	130	60	51	130	45	4	4	30	30
7	Minimize trucking costs by locating site close to removal areas	Estimated haul time from Canyon Creek - I-90 interchange	3	19	3	14	8	9	16	16	19	13
8	Site preserves potential economic benefits by not using land that would otherwise be readily developable	1-5 scale reflecting the extent to which the site preserves developable land	5	1	5	1	1	5	1	1	1	1
9	Site can accommodate large quantity of material	Estimated cubic yards of capacity	2,800,000	500,000	1,600,000	800,000	2,800,000	2,800,000	500,000	650,000	850,000	700,000

Exhibit 3

Rationale for Scoring [a]

		Scoring Rationale							
		Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
	Siting Criteria	Star Tailings Impoundment	Willow Creek - East Mullan	Burns-Yaak	Osburn Tailings Impoundment	Vacant RV park, Smelterville	Former Smelterville Gun Range East of Drive-In	Government Gulch	Cole and Larson Roads
1	Minimize potential for impact to wetlands and related wildlife	No obvious wetlands observed on top of filled ponds or near river level on east side. Score: 5	Aerial photo interpretations suggests potential for wetland areas at site. Score: 3	No obvious wetlands at site. Score: 5	No obvious wetlands at site. Score: 5	No obvious wetlands at site. Score: 5	No obvious wetlands at site. Score: 5	No obvious wetlands at site. Score: 5	No obvious wetlands at site. Score: 5
2	Minimize potential for impact to surface waters and fish and wildlife	Canyon Creek is adjacent to Site. Score: 3	Willow Creek passes through the Site. Score: 1	SF Coeur D'Alene River is distant (>400 feet) from Site. Score: 5	SF Coeur D'Alene River is adjacent to Site. Score: 3	SF Coeur D'Alene River is adjacent to Site. Score: 3	SF Coeur D'Alene River is adjacent to Site. Score: 3	Government Gulch Creek passes through the Site. Score: 1	S.F. of Coeur River is distant (>400 feet) from Site. Score: 5
3	Minimizes potential for impact to floodplain	Although floodplain is present on site, proposed development area well above floodplain. Score: 0%	Significant portion of site in 100-year floodplain. Score: 20%	Not in 100-year floodplain. Score: 0%	Outdated FEMA FIRM map shows site in floodplain. Probably not in floodplain due to subsequent fill activity after FIRM map was issued. Score: 0%	In 100-year floodplain. Score: 100%	In 100-year floodplain. Score: 100%	About 25% of site in floodplain. Score: 25%	Not in 100-year floodplain. Score: 0%
4	Site is not near a mapped fault or likely to be affected by a landslide	A mapped fault crosses the north end of the site. Score: 0	Closest mapped fault >2,000 feet from site. Score: 2,000	Closest mapped fault >900 feet from site. Score: 900	Closest mapped fault >500 feet from site. Score: 500	Closest mapped fault >600 feet from site. Score: 600	Closest mapped fault >600 feet from site. Score: 600	A mapped fault crosses the north end of the site. Score: 0	Closest mapped fault >600 feet from site. Score: 600
5	Site not likely to result in impacts to persons living or working near the repository (residences, schools, urban areas)	See proximity scale results. Score: 955	See proximity scale results. Score: 57	See proximity scale results. Score: 1.145	See proximity scale results. Score: 5	See proximity scale results. Score: 143	See proximity scale results. Score: 20	See proximity scale results. Score: 10	See proximity scale results. Score: 7
6	Truck route from I-90 to the repository not likely to affect existing persons or businesses	Truck route has 60 parcels adjacent to it; along State highway. Score: 60	Truck route has 17 parcels adjacent to it; along rural roads. Score: 51	Truck route has 65 parcels adjacent to it; along urban paved roads. Score: 130	Truck route has 15 parcels adjacent to it; along rural paved roads. Score: 45	Truck route has 2 parcels adjacent to it; along urban paved roads. Score: 4	Truck route has 2 parcels adjacent to it; along urban paved roads. Score: 4	Truck route has 15 parcels adjacent to it; along urban paved roads. Score: 30	The truck route has 10 parcels adjacent to it; along rural paved roads. Score: 30
7	Minimize trucking costs by locating site close to removal areas	2 miles from I-90 on paved rural state highway; travel time estimate 3 minutes. Score: 3	7 miles along I-90, 1.5 miles rural paved road, 0.5 miles on rural unpaved road; travel time estimate 14 minutes. Score: 14	6 miles along I-90, 2 miles urban paved road; travel time estimate 8 minutes. Score: 8	6 miles along I-90, 1 mile rural paved road; travel time estimate 9 minutes. Score: 9	15 miles along I-90, 1 mile on urban paved road; travel time estimate 16 minutes. Score: 16	15 miles along I-90, 1 mile on urban paved road; travel time estimate 16 minutes. Score: 16	15 miles along I-90, 2 miles on urban paved road; travel time estimate 19 minutes. Score: 19	7 miles on I-90 and 3 miles on a rural, paved road. Estimated time of 13 minutes. Score: 13
8	Site preserves potential economic benefits by not using land that would otherwise be readily developable	Inactive tailings impoundment, low redevelopment potential. Score: 5	Suitable for development but remote from current development centers. Score: 1	Suitable for development, large level site within city limits. Score: 1	Inactive tailings impoundment, low redevelopment potential. Score: 5	Suitable for development, level site adjacent to city limits. Score: 1	Suitable for development, level site within Kellogg city limits. Score: 1	Suitable for development, water and wastewater utilities installed, large sloping site. Score: 1	Suitable for development but remote from current development centers. Score: 1
9	Site can accommodate large quantity of material	Score: 1,600,000 cy	Score: 800,000 cy	Score: 2,800,000 cy	Score: 2,800,000 cy	Score: 500,000 cy	Score: 650,000 cy	Score: 850,000 cy	Score: 700,000 cy

[a] See Exhibit 2 for a description of the measurement scales used for scoring each criterion.

Exhibit 4

Relative Value Weights

Goal Statement: Select a site for development of a repository for material excavated during remedial actions and from ICP projects in the Coeur d'Alene Basin.

Key Assumptions:

1. The repository will be sited in the upper basin, the drainage basin of the South Fork Coeur d'Alene River .
2. The site must have at least 500,000 cubic yards of capacity and currently be inactive.
3. The site preferably will be located in an area already contaminated with metals from mining and ore processing wastes.
4. All sites will be designed to minimize the potential for groundwater contamination.
5. After closure, the site must be able to be secured and maintained to prevent contaminant release.
6. Ths site must be reasonably flat.
7. The site must be accessible from existing roads.

				Baseline: Geometric Mean of Responses	
		Endpoints of Performance Scales			
	Siting Criteria	Worst	Best	Change in Relative Value As Measurement Scale Goes from Worst to Best	Relative Value Weights, Percent of Total
1	Minimize potential for impact to wetlands and related wildlife	Wetlands clearly present onsite and site is near an area conducive to the presence of wetlands	No wetlands in vicinity of site	52	8.6%
2	Minimize potential for impact to surface waters and fish and wildlife	Surface waters clearly present onsite	No surface waters in vicinity of site	65	10.7%
3	Minimizes potential for impact to floodplain	Located completely within floodplain (100%)	Located completely outside floodplain (0%)	69	11.4%
4	Site is not near a mapped fault or likely to be affected by a landslide	Site is directly on top of a fault and there is landslide potential	Site is 2,000 feet from a fault with no landslide potential	42	6.9%
5	Site not likely to result in impacts to persons living or working near the repository (residences, schools, urban areas)	255 residential, business, or institutional parcels within a 500 yd radius = total score of 1,145.	Two residential, institutional, or business parcels within a 500 yd radius = total score of 5.	100	16.5%
6	Truck route from I-90 to the repository not likely to affect existing persons or businesses	65 residential, business, or institutional parcels along urban paved road = 130	Two residential, institutional, or business parcels along urban paved road = 4	55	9.1%
7	Minimize trucking costs by locating site close to removal areas	19 minutes	3 minutes	63	10.4%
8	Site preserves potential economic benefits by not using land that would otherwise be readily developable	Site considered to be currently developable and siting of repository would hinder future development	Significant constraints exist to developing this site	84	13.9%
9	Site can accommodate large quantity of material	500,000 cy	2.8 million cy	75	12.4%

These relative value weights were developed during a meeting with the Project Focus Team (PFT) on August 20, 2009. The PFT consists of representatives from Shoshone County, the Coeur d'Alene and Spokane Tribes, the Citizens Coordinating Council, and local, state, and federal agencies. In the August 20 meeting, participants were asked to think about relative value of each criterion as it is varied from the worst to best outcome compared to the value received as the other criteria were varied in a similar manner. Each participant submitted his or her weights, and the results were discussed. The group weighting provided is the geometric mean of the project team's responses, and the differences in the weights assigned by various individuals or groups of individuals were considered during sensitivity analysis (discussed below).

The final column of Exhibit 4 shows the relative value weights as a percent of total value, where the sum of the relative value weights equals 100%. This information is used in the calculation of the total value score for each site.

The Result – Total Value Scores

The total value score is calculated as a weighted average of normalized performance scores and relative value weights. Performance scores were normalized by arithmetically transforming each measure to a scale of zero-to-one, where the worst outcome is given a score of zero and the best outcome is given a score of one. For example, for a criterion with a 1-5 scale, a score of 3 was transformed to a normalized score of 0.5; a score of 4 was transformed to a normalized score of 0.75.

The total value score was calculated as follows: [Normalized performance score * relative value weight in percent * 100], summed over all nine criteria.

The results of the analysis using the group weights are shown in Exhibits 5 and 6. As shown, the Osburn Tailings Impoundment is the highest scoring site followed by the Star Tailings Impoundment site.

Exhibit 5

Calculation of Final Value Scores

	Siting Criteria	Measurement Scale	Worst Score	Best Score	Final Value Score = (Scores Normalized to 0-1 scale) * (Weights) * (100) Site 1 Star Tailings Impoundment	Site 2 Willow Creek - East Mullan	Site 3 Burns-Yaak	Site 4 Osburn Tailings Impoundment	Site 5 Vacant RV park, Smelterville	Site 6 Former Smelterville Gun Range East of Drive-In	Site 7 Government Gulch	Site 8 Cole and Larson Roads
	Total Score				**63.4**	**46.7**	**53.4**	**82.6**	**41.6**	**44.2**	**42.7**	**61.5**
1	Minimize potential for impact to wetlands and related wildlife	1-5 scale reflecting likelihood of wetlands impacts	1	5	8.6	4.3	8.6	8.6	8.6	8.6	8.6	8.6
2	Minimize potential for impact to surface waters and fish and wildlife	1-5 scale reflecting distance to surface water	1	5	5.4	0.0	10.7	5.4	5.4	5.4	0.0	10.7
3	Minimizes potential for impact to floodplain	Percent of site estimated to lie within floodplain	100%	0%	11.4	9.1	11.4	11.4	0.0	0.0	8.6	11.4
4	Site is not near a mapped fault or likely to be affected by a landslide	Distance to fault (feet). Divided by 2 if landslide potential	0	2,000	0.0	6.9	3.1	1.7	2.1	2.1	0.0	2.1
5	Site not likely to result in impacts to persons living or working near the repository (residences, schools, urban areas)	Parcels with residential or commercial structures within 5 zones (1-100yd, 101-200yd, 201-300yd, 301-400yd, 401-500yd). Parcels multiplied by the following factors: 16, 8, 4, 2, 1, for the respective zones	1,145	5	2.8	15.8	0.0	16.5	14.5	16.3	16.5	16.5
6	Truck route from I-90 to the repository not likely to affect existing persons or businesses	1-5 scale reflecting the estimated number of residences and businesses along truck route multiplied by 1=state highway; 2 = urban paved; 3 = rural	130	4	5.1	5.7	0.0	6.1	9.1	9.1	7.2	7.2
7	Minimize trucking costs by locating site close to removal areas	Estimated haul time from Canyon Creek - I-90 interchange	19	3	10.4	3.3	7.2	6.5	2.0	2.0	0.0	3.9
8	Site preserves potential economic benefits by not using land that would otherwise be readily developable	1-5 scale reflecting the extent to which the site preserves developable land	1	5	13.9	0.0	0.0	13.9	0.0	0.0	0.0	0.0
9	Site can accommodate large quantity of material	Estimated cubic yards of capacity	500,000	2,800,000	5.9	1.6	12.4	12.4	0.0	0.8	1.9	1.1

EXHIBIT 6
Total Value Scores

Site		Total Value Score
1	Osburn Tailings Impoundment	82.6
2	Star Tailings Impoundment	63.4
3	Cole and Larson Roads	61.5
4	Burns-Yaak	53.4
5	Willow Creek - East Mullan	46.7
6	Former Smelterville Gun Range East	44.2
7	Government Gulch	42.7
8	Vacant RV park, Smelterville	41.6

More information about these results is shown in Exhibit 7, which is a graphical presentation of the relative contribution of each criterion to total value.

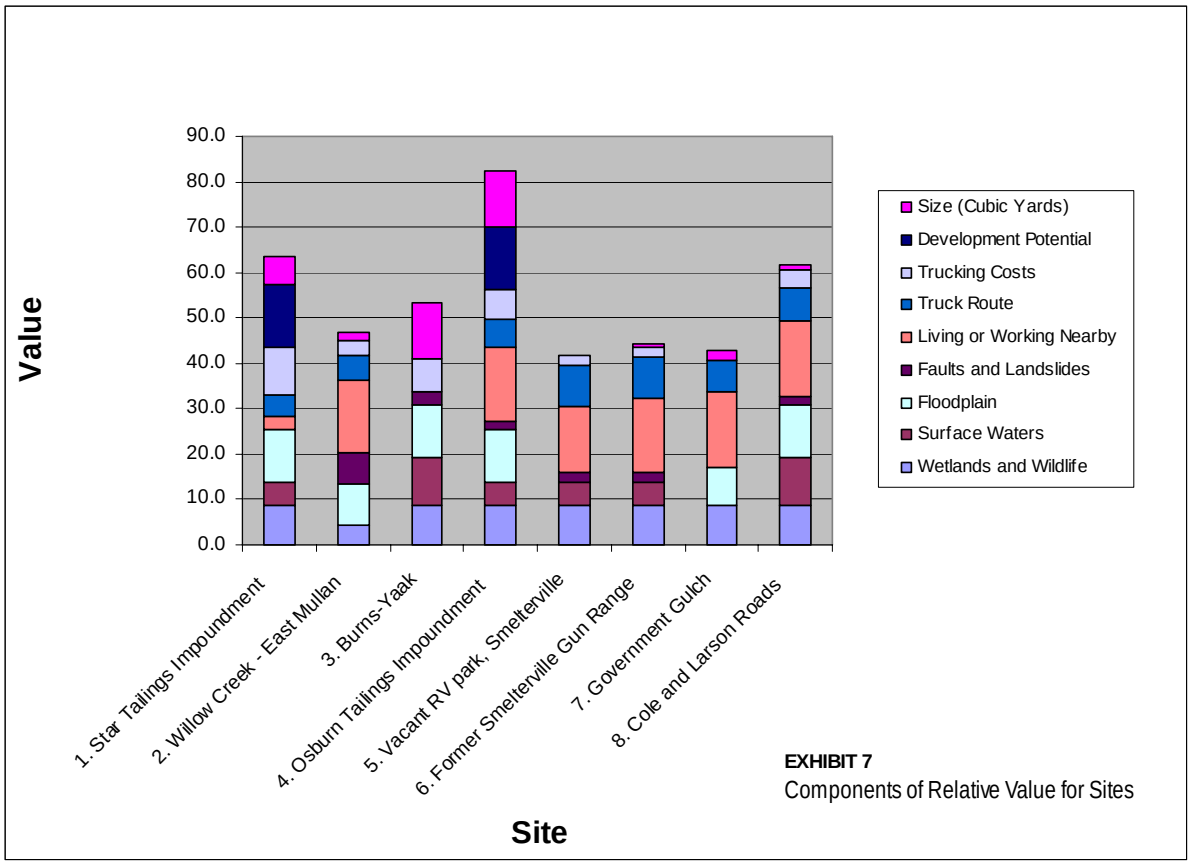

EXHIBIT 7
Components of Relative Value for Sites

Sensitivity of the Results to Changes in Relative Value Weights

Relative value weights are inherently subjective. Every individual will feel differently about the relative value associated with each criterion and its associated scale endpoints. Thus, a sensitivity analysis was conducted to test the sensitivity of the results to changes in weights.

The sensitivities tested are shown in Exhibit 8 and the results of the analysis are shown in Exhibit 9. As shown in Exhibit 8, the sensitivities tested represented the weights assessed by various participants or groups in the PFT meeting. Elected officials from Osburn and Kellogg also provided their weights or a suggested ranking of the different sites.

The results shown in Exhibit 9 indicate that the results are somewhat sensitive to the relative value weights assigned to criteria. A few observations about the results follow:

- Osburn Tailings Impoundment and Star Tailings Impoundment are rated as one of the top two or three sites in the main group weighting and all seven of the sensitivity analyses conducted.
- The Cole and Larson Roads site rated 3rd of 8 sites in all but three sensitivities: two in which it rated 2nd and the other where it rated 5th. There are two issues not explicitly modeled that affect its relative desirability. First, based on knowledge of the site it is most likely not contaminated with metals from mining and ore processing wastes: the State of Idaho Department of Environmental Quality (IDEQ) and the United States Environmental Protection Agency (EPA) would prefer that the repository be sited on land that is already contaminated. Second, the site is located east of Mullan meaning that Silver Valley projects needing to dispose of Institutional Controls Program (ICP) waste would have to be trucked through the City of Mullan further east of town to the Cole and Larson Road site. This is likely to create unintended pressure on the City of Mullan ICP disposal site and would likely be untenable. This has the potential to result in unanticipated increases in the rate at which the City of Mullan ICP site would fill.
- The Willow Creek and Burns-Yaak sites rated between 4th and 7th of 8 sites for all but one sensitivity analysis.
- The Government Gulch site was relatively sensitive to relative value weights: it rated between 3rd and 8th depending on the sensitivity tested.
- The two adjacent sites in Smelterville, the Vacant RV Park and the Former Gun Range East of Drive-In, rate between 6th and 8th in all but one sensitivity analyses (where the Former Gun Range site is rated 5th of 8 sites).

Recommendation

After reviewing the analysis, the State of Idaho and EPA felt that the results merited developing a short list of sites for further analysis. In this analysis, a decision was made to keep cost out of the analysis. Many criteria (such as trucking cost and wetlands) are proxies for cost, but there are likely to be site-specific issues that affect the construction cost and long-term operating costs of different sites. Thus, it was decided to select a short list of sites to develop additional information about costs prior to making a final decision.

On the basis of the analysis done to date, the following two sites are recommended for further analysis:

- Osburn Tailings Impoundment
- Star Tailings Impoundment

Exhibit 8

Relative Value Weight Sensitivity Analysis

				Baseline: Geometric Mean of Responses		Sensitivity Analysis											
						Relative Value Weights						Relative Value Weights in Percent					
	Siting Criteria	Performance Measures: Worst	Performance Measures: Best	Relative Value Weight	Relative Value Weights, Percent of Total	SV	SV w/ Tribes	EM	AM	Tribes	Osburn	SV	SV w/ Tribes	EM	AM	Tribes	Osburn
1	Minimize potential for impact to wetlands and related wildlife	Wetlands clearly present onsite and site is near an area conducive to the presence of wetlands	No wetlands in vicinity of site	52	8.6%	16	35	100	70	100	25	3.8%	6.9%	13.9%	11.5%	14.3%	4.2%
2	Minimize potential for impact to surface waters and fish and wildlife	Surface waters clearly present onsite	No surface waters in vicinity of site	65	10.7%	28	49	100	70	100	25	6.7%	9.7%	13.9%	11.5%	14.3%	4.2%
3	Minimizes potential for impact to floodplain	Located completely within floodplain (100%)	Located completely outside floodplain (0%)	69	11.4%	55	73	80	40	100	25	13.1%	14.5%	11.1%	6.6%	14.3%	4.2%
4	Site is not near a mapped fault or likely to be affected by a landslide	Site is directly on top of a fault and there is landslide potential	Site is 2,000 feet from a fault with no landslide potential	42	6.9%	43	38	90	10	70	50	10.2%	7.5%	12.5%	1.6%	10.0%	8.3%
5	Site not likely to result in impacts to persons living or working near the repository (residences, schools, urban areas)	255 residential, business, or institutional parcels within a 500 yd radius = total score of 1,145.	Two residential, institutional, or business parcels within a 500 yd radius = total score of 5.	100	16.5%	100	100	80	100	80	100	23.8%	19.8%	11.1%	16.4%	11.4%	16.7%
6	Truck route from I-90 to the repository not likely to affect existing persons or businesses	65 residential, business, or institutional parcels along urban paved road = 130	Two residential, institutional, or business parcels along urban paved road = 4	55	9.1%	20	37	50	80	70	100	4.8%	7.3%	6.9%	13.1%	10.0%	16.7%
7	Minimize trucking costs by locating site close to removal areas	19 minutes	3 minutes	63	10.4%	25	38	80	80	50	100	6.0%	7.5%	11.1%	13.1%	7.1%	16.7%
8	Site preserves potential economic benefits by not using land that would otherwise be readily developable	Site considered to be currently developable and siting of repository would hinder future development	Significant constraints exist to developing this site	84	13.9%	96	87	70	90	60	100	22.9%	17.2%	9.7%	14.8%	8.6%	16.7%
9	Site can accommodate large quantity of material	500,000 cy	2.8 million cy	75	12.4%	37	48	70	70	70	75	8.8%	9.5%	9.7%	11.5%	10.0%	12.5%

Exhibit 9

Value Score Summary - Sensitivity to Changes in Relative Value Weights

	Value Scores							
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Weighting Sensitivities	Star Tailings Impoundment	Willow Creek - East Mullan	Burns-Yaak	Osburn Tailings Impoundment	Vacant RV park, Smelterville	Former Smelterville Gun Range East of Drive-In	Government Gulch	Cole and Larson Roads
"Group" Weighting (geometric mean)	63.4	46.7	53.4	82.6	41.6	44.2	42.7	61.5
Silver Valley Residents	59.9	51.3	41.1	85.2	37.0	40.2	42.5	57.2
Silver Valley Residents with Tribes	62.9	49.6	49.2	84.3	40.2	42.9	44.7	62.6
Ed Moreen	63.1	48.0	61.9	77.3	43.4	45.2	40.3	64.3
Andy Mork	67.1	42.1	50.7	83.8	47.7	50.2	44.9	62.7
Tribes	63.7	49.3	62.3	79.4	45.8	47.7	45.8	68.8
Osburn	61.8	46.9	40.2	80.0	43.2	45.8	39.0	52.2
Mayor Pooler	Sites ranked, but not scored.							

	Site Rankings for Different Sensitivities (Highest Valued Site is Ranked #1)							
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Weighting Sensitivities	Star Tailings Impoundment	Willow Creek - East Mullan	Burns-Yaak	Osburn Tailings Impoundment	Vacant RV park, Smelterville	Former Smelterville Gun Range East of Drive-In	Government Gulch	Cole and Larson Roads
"Group" Weighting (geometric mean)	2	5	4	1	8	6	7	3
Silver Valley Residents	2	4	6	1	8	7	5	3
Silver Valley Residents with Tribes	2	4	5	1	8	7	6	3
Ed Moreen	3	5	4	1	7	6	8	2
Andy Mork	2	8	4	1	6	5	7	3
Tribes	3	5	4	1	8	7	7	2
Osburn	2	4	7	1	6	6	8	3
Mayor Pooler	1	4	6	2	7	8	3	5

The Osburn Tailings Impoundment and Star Tailings Impoundment sites are the top two sites in most all of the sensitivity analysis tested. Thus, they are obvious candidates for further evaluation. As mentioned above, the Cole and Larson Road site is probably not contaminated with metals from mine and ore processing wastes and its location could result in unintended pressure to dispose of additional wastes at the City of Mullan ICP disposal site more rapidly than would otherwise be the case.

Additional analysis is currently being conducted on the Osburn and Star Tailings Impoundment sites to evaluate costs and refine data used to measure the performance of sites against the criteria. It is anticipated that after this analysis is complete, and EPA and IDEQ review the results, a recommendation to perform additional site analysis and potentially design neither, one, or both sites will be made in the Winter 2010.