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MEMORANDUM

TO: Regional Coordinating Group

FROM: Peter Paquet

SUBJECT: Report on Level 3 Technical Activities

At our last meeting we discussed the need to develop examples of the products being developed at the regional level to assist the subbasin assessment process. Examples include products from regional models and data bases such as Ecosystem Diagnosis and Treatment (EDT), Qualitative Habitat Assessment (QHA) and the Interactive Biodiversity Information System (IBIS). To accomplish this we discussed the need to quickly develop some prototypes of the expected results using pilot subbasins where completed products were available and to re-form the Level 3 Technical Group to assist in the process.

Since the July 22, meeting there have been several Level 3 technical meetings which have focused on the development of the examples referred to above. We have agreed to focus the first pilot efforts on the Yakima and Flathead subbasins since they represent basins where we have examples of completed products from EDT, QHA and IBIS. More recent efforts have been focused on the development of map based products (GIS) as the preferred method for displaying the results of the Level 3 assessment products and as the basis for integrating the results of the aquatic and terrestrial components of the assessments. **Attachment 1** provides a summary of the assessment products and possible mapping and integration opportunities. Staff will update the committee on the results of further technical meetings being held this week, which will further refine the process and schedule for the pilot projects.

SUBBASIN MAPPING PRODUCTS & INTEGRATION PROCEDURES

For Discussion: August 20, 2003

Subbasin Assessment Procedures with Special Reference to Map Products

Assessment Steps	EDT	QHA	IBIS
	<p><u>Summary:</u> Anadromous fish, single species focus; primarily mapped using linear reaches but sometimes 6th field hucs</p>	<p><u>Summary:</u> Mostly resident fish, some anadromous fish, single species focus; primarily mapped using 6th field hucs, but may be reaches or a combination.</p>	<p><u>Summary:</u> Wildlife, multiple species and ecosystem focus; Uses a triad approach of habitats, species, and functions; outputs can be mapped as a series of polygons that can be transferred to 6th field hucs.</p>
1. Determine environmental (habitat) conditions	<p>Characterize patient (current) and template (reference or historic) character for 46 environmental attributes, using 0-4 scale.</p> <p><u>Map opportunities:</u> For each of patient and template, up to 46 individual maps (92 total with each stream reach depicted in one of five colors.¹ (This would, of course, be overwhelming and not particularly useful. Two maps depicting patient and template for one factor might be illustrative.)</p>	<p>Characterize patient (current) and template (reference or historic) character for 12 environmental attributes, using 0-4 scale.</p> <p><u>Map opportunities:</u> For each of patient and template, up to 12 individual maps (24 total with each stream reach depicted in one of five colors. (As with EDT, this would be overwhelming and not particularly useful. Two maps depicting patient and template for one factor might be illustrative.)</p>	<p>Characterize current and historic presence of 32 wildlife habitats types plus bar charts for structural conditions, species counts for Key Environmental Correlates (KECs), and Key Ecological Function (KEFs) profiles.</p> <p><u>Map opportunities:</u> Two maps, one for current and one for historic, showing one factor – wildlife habitat types, using up to 32 colors. (A very useful map commonly used for illustration purposes.)</p>
2. Determine change in conditions	<p>Calculate the change between patient and template.</p>	<p>Calculate the change between patient and template.</p>	<p>Calculate the change between current and historic.</p>

¹ Mapping for EDT assumes stream reaches have been linked to an electronic stream hydrography datalayer.

Attachment 1

	<u>Map opportunities</u> : Up to 46 maps depicting relative change. Possibly produce an example?	<u>Map opportunities</u> : 12 maps depicting relative change. Possibly produce an example?	<u>Map opportunities</u> : Amount of change for each habitat type is mapped in context of the subbasin to its ecoprovince to depict where change has or has not occurred.
3. Determine effects of conditions and condition changes on species	Apply biological rules to environmental data to develop “biological responses. <u>Map opportunity</u> : 16 biological response maps for each of patient and template conditions (32 total), depicting relative gap between current and reference.	Apply user-defined hypothesis to weight the relative importance of habitat factors. <u>Map opportunity</u> : Depict restoration and protection potential. (Note: How does this differ from step 6, below?)	Apply IBIS procedures to integrate species, structural conditions, KECs, and KEFs with habitat type data. <u>Map opportunities</u> : A variety of map outputs (total functional diversity, as but one example (This provides a <u>great</u> opportunity to illustrate IBIS concepts.)
4. Calculate productivity.	Yes <u>Map opportunity</u> : Many possibilities. Example: Map productivity of trajectories starting at different points along the stream.	Not applicable No mapping opportunities.	Not applicable No mapping opportunities.
5. Identify factors to protect and limiting factors (factors to restore).	Develop classic EDT consumers report diagram <u>Map opportunity</u> : Create a map or maps depicting where the most significant limiting factors occur.	Create protection and restoration habitat ranking table. <u>Map opportunity</u> : A series of maps depicting where one or more factors warranting protection or restoration occur.	Create tables for species, habitats and functions that have decreased from historic to current conditions. <u>Mapping opportunity</u> : A series of maps that depict a species range or habitats that warrant protection or restoration based on species, habitats, and functional factors.
6. Identify areas warranting protection or	Calculate where protection and restoration are indicated based on	Calculate where protection and restoration are indicated based on	Determine where protection and restoration are indicated by

<p>restoration.</p>	<p>the extent to which either would result in high productivity.</p> <p><u>Map opportunities</u>: 2 maps, one depicting protection priorities and one restoration priorities. (This is the highest priority among all of the potential map products!)</p>	<p>habitat ranking scores.</p> <p>Priorities should be identified in rank order from high to low. Three categories (high, medium, low) are preferred but not required. How categories are distinguished is up to individual planning groups. Information depicted as polygons or lines, 6th field hucs preferred.</p> <p><u>Map opportunities</u>: 2 maps, one depicting protection priorities and one restoration priorities. (This is the highest priority among all of the potential map products!)</p>	<p>applying generic region-wide or user defined criteria to IBIS.</p> <p><u>Map opportunities</u>: 2 maps, one depicting protection priorities and one restoration priorities. (This is the highest priority among all of the potential map products!)</p>
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Multi-species Analyses and GIS Product

(This is a continuation of the above table that blends EDT, QHA, and IBIS products for multiple species.)

<p>7. Compare resident fish findings with anadromous fish:</p> <p>a) compare resident fish protection to anadromous fish protection, then resident fish protection to anadromous restoration. Then resident fish restoration to anadromous fish restoration. (<u>See matrix below for an example.</u>)</p> <p>b) identify protection to protection and restoration to restoration overlaps. Identify protection to restoration overlaps.</p> <p><u>If no anadromous fish go to #8.</u></p>	<p>These will be depicted as high and medium based on a prearranged protocol. (Note that we are identifying “potential” compatibilities and conflicts. <u>Actual</u> will be determined later.)</p> <p><u>Map opportunities</u>: spatial data layer that identifies: potential compatibilities, and potential conflicts. (This an internal product not suitable for distribution.)</p>
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<p>8. Compare wildlife findings with aggregate fish findings:</p> <p>a) compare wildlife protection to aggregate fish protection, then wildlife protection to aggregate fish restoration. Then wildlife restoration to aggregated fish restoration. (See matrix below for an example.)</p> <p>b) identify protection to protection and restoration to restoration overlaps. Identify protection to restoration overlaps.</p>	<p>Same as #7 above.</p>
<p>9. Identify environmental factors that would be the subject of protection or restoration for each species group (i.e., anadromous, resident, wildlife)</p>	<p>See step 5 above.</p> <p><u>Map opportunity:</u> May be able to produce an overlay of product from 7 or 8 with the product from #5. (This is probably an internal interim product.)</p>
<p>10. For high and medium compatibility and conflict areas, determine whether treatment of these factors for one species group would have a positive, neutral, or negative effect on another species group.</p>	<p>This is a professional judgment exercise, using GIS maps as a guide.</p> <p><u>Map opportunity:</u> Product is a map for each of restoration and protection with compatibilities and (if any) conflicts clearly depicted.</p>

Comparison example: resident fish to anadromous fish

	Res. fish protection	Res. fish restoration
Anadro. fish protection	I.D. potential compatibilities	I.D. potential conflicts
Anadro. fish restoration	I.D. potential conflicts	I.D. potential compatibilities

Comparison example: wildlife to aggregated fish

	Wildlife protection	Wildlife restoration
Aggregated fish protect.	I.D. potential compatibilities	I.D. potential conflicts
Aggregated fish restorat.	I.D. potential conflicts	I.D. potential compatibilities

Summary of Mapping Opportunities

(from above tables; ranked in order of value as a presentation tool, with 1 being highest and 4 the lowest. **Priority 1 are highlighted.**)

	EDT	QHA	IBIS
Step 1	Example of environmental conditions for one attribute (priority 4)	Example of environmental conditions for one attribute (priority 4)	Historic and current wildlife-habitat types map (priority 4)
Step 2	Example of environmental change for one attribute (priority 2)	Example of environmental change for one attribute (priority 2)	Current Habitat Protection and Land Ownership (priority 3)
Step 3	Example of one biological response category depicting gap between current and reference. (priority 3)	Map restoration and protection potential (Note: How does this differ from step 6, below?) (priority 2 or 3)	Habitat change map (priority 2)
Step 4	Map productivity of select trajectories.	NA	NA
Step 5	Map of locations of significant limiting factors (priority 2)	Map of locations of significant limiting factors (priority 2)	Map of total functional diversity, possibly other similar concepts (priority 1 or 2)
Step 6	Protection and restoration priority maps (priority 1)	Protection and restoration priority maps (priority 1)	Protection and restoration priority maps (priority 1)
	Multi-species Analyses		
Step 7	Products would be primarily internal in nature, though they could be made available for technical inspection.	--	--
Step 8	Products would be primarily internal in nature.	--	--
Step 9	Products would be primarily internal in nature.	--	--
Step 10	Map of the subbasin showing areas where there is opportunity	--	--

Attachment 1

	<p>for multi-species benefits from restoration of specified habitat characteristics. (priority 1)</p> <p>Map of the subbasin showing areas where there is opportunity for multi-species benefits from restoration of specified habitat characteristics. (priority 1)</p> <p>Map of potential conflicts. (These will likely be few and far between.) (priority 1)</p>		
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