Burrard Inlet Environmental Action Program

BIEAP

FREMP

Fraser River Estuary Management Program

Updating the FREMP Habitat Classifications

February 2005

Prepared by the Water and Land Use Committee,
Fraser River Estuary Management Program

BIEAP-FREMP
501-5945 Kathleen Ave
Burnaby, BC
V5H 4J7

CONTENTS

BACKGROUND

Habitat inventory and classification maps were first produced for the FREMP area in 1989 (Kistritz, R.U. 1988; Williams, G.L. 1990). They show classes of intertidal and riparian habitat types and rate their biological productivity and suitability for development according to a three-colour system of red, yellow and green. The habitat classifications or "colour codes" are based on an inventory of all habitat types in the estuary, for example intertidal marsh or riparian trees.

It was initially recommended that the FREMP maps be updated every five years. A mapping update occurred in 1996, when 75 sites were reviewed with a focus on habitat compensation sites in the estuary; of the sites considered, a total of 25 colour coding changes were made along with several updates to the habitat inventory (FREMP Technical Report, 1996).

The colour coding of a small number of individual shoreline segments has been reviewed in the intervening years, based on requests from agencies or municipalities. These reviews were conducted by the former FREMP Habitat Classification Review Committee comprised of agency partners, reviewed by the Water and Land Use Committee and approved by the BIEAP-FREMP Management Committee. With the digitizing of the FREMP habitat inventory and classification maps onto a Geographic Information System (GIS) in 1998, these later colour coding updates were made directly on the FREMP GIS and updated in the metadata.

Ecological Features and Functions Approach

In 1999 FREMP began a review of improvements to the habitat inventory and classification systems, culminating in 2002 with agreement on an "ecological features and functions approach" (EFFA) to management. The EFFA attempts to identify the natural and human processes like fish migration or port operation that need to be preserved in any given location, then identifies the types of activities that can occur in these places without compromising these processes.

Implementation of the EFFA led to a number of key projects beginning in 2002. New FREMP orthophotos were flown in April 2002, followed by an update of the FREMP habitat inventory in 2003 using a new innovative mapping technique. For the habitat inventory update, the five FREMP habitat types that had been mapped in the 1980s were re-mapped (intertidal marsh, mudflat, sandflat, riparian grasses and shrubs, and riparian trees) while an associated Access database captured more information on upland structures like bank type or condition. The GIS polygon layer and database reside on the FREMP GIS and were also made available in a web-based FREMP Atlas on the Community Mapping Network www.shim.bc.ca. With the habitat inventory revised in 2003, the next step was to update the habitat classifications and this project was undertaken in 2004.

As part of the EFFA improvements, FREMP revised the colour code definitions (see Appendix A) and developed a process for considering habitat reclassifications that would be responsive to the needs of the planning and development communities (see Appendix B). Both the revised colour code definitions and the approved reclassification policy were reflected in the updated Estuary Management Plan approved by the FREMP partners in 2003.

PURPOSE

The habitat inventory and classification systems need to be updated on an ongoing basis. While a process is in place at FREMP to respond to specific habitat reclassification requests as noted above, natural changes along the river need to be captured from time to time through a broader review of the FREMP habitat classifications. This was the purpose of the review in 2004-2005.

The colour code review was based on the updated habitat inventory, revised colour code definitions, on-site inspections, and criteria for how a shoreline segment is coded. This criteria chart provides more background for how a shoreline segment is coded and ensures that classification is more objective (see Appendix C).

SCOPE

The geographical scope of the map updating project was the FREMP area: the wet side of the dike of the Fraser River downstream from Kanaka Creek and Pitt Lake to the Strait of Georgia, along with Sturgeon Bank, Roberts Bank and Boundary Bay. The FREMP area of interest is the wetted site of the dike, but using the ecological features and functions approach resulted in some upland information such as bank type being recorded in the updated habitat inventory, with the goal of providing a better interface between water and upland issues.

MAP UPDATE PROCEDURE

Following approval of the project workplan in May 2004, a working group of FREMP agency partners was established involving Fisheries & Oceans (Brian Naito/Brad Mason), Environment Canada-Canadian Wildlife Service (Ken Brock/Blair Hammond), Ministry of Water, Land and Air Protection (Ross Neumann/Rob Knight), Fraser River Port Authority (Nures Kara/Danielle Wensauer) and North Fraser Port Authority (Gary Williams). FREMP staff facilitated the meetings of the working group and provided regular project updates to the Water and Land Use Committee.

Coding Review Meetings

Two project meetings were held in June and July 2004 to begin reviewing the colour coding along the river and highlight areas for change. These areas included where the shoreline shape had changed or erosion had occurred, where the colour coding was inaccurate (for example where it was green-coded but a marsh had developed, or where it was red-coded but the bank was simply riprap), and any habitat compensation sites along the river that had been established since the 1996 colour coding update. In some cases habitat features and/or colour coding changes were clear, and working group participants were able to reach agreement on reclassifications at the meeting.

Boat Reconnaissance

Forty sites were highlighted for on-site inspections, which took place August 26 and 27, 2004 on the Fraser River Port Authority patrol boat. The site visits allowed the agency partners to inspect the shoreline and discuss proposed coding changes, take photos where required, and record agreement on the rationale for coding changes based on the classification criteria.

Representatives involved in the boat tours were Brian Naito and Brad Mason (Fisheries and Oceans, DFO), Nures Kara and Danielle Wensauer (Fraser River Port Authority), Gary Williams (North Fraser Port Authority), Ken Brock (Environment Canada), and Ross Neumann and Rob Knight (Ministry of Water, Land & Air Protection, MWLAP). The Fraser Arm Main Arm in the Fraser Port's jurisdiction was inspected with the representatives from DFO, Environment Canada, MLWAP and Fraser Port; sites in the North Fraser Port's jurisdiction were reviewed by DFO, Environment Canada, MWLAP and North Fraser Port. Anna Mathewson from FREMP participated in both tours.

Updating Process

A hard copy set of the 2002 FREMP aerial photos at a scale of 1: 20,000 were used in both the coding review meetings and on the boat tour. The coding review meetings also made use of the FREMP GIS datasets at various scales to view the entire FREMP area, zooming in where required to see more detail using the 0.25m resolution orthophotos. Map changes were made on the hard copy

aerial photos during the coding review meetings, along with detailed notes about locations and changes.

For the site visits by boat, the 2002 FREMP orthophotos, existing colour coding and 2003 habitat inventory data were loaded on a laptop. This allowed for critical data to be available for agency representatives as they considered coding changes. Segment changes were recorded on the GIS in a separate linework file, based on GPS technology that recorded that boat's location relative to each segment. Use of this technology allowed for more precise segment changes. During the boat reconnaissance, some coding changes were also noted on hard copy aerial photos and detailed notes were made. A small number of sites were considered for update and rejected following confirmation of habitat features and the existing coding during the boat reconnaissance.

Following the August 2004 site visits, recommendations for coding changes were summarized and reviewed by the working group. Draft coding segment changes were included on the FREMP GIS and made available in the on-line FREMP Atlas for ERC and WLUC members to review.

Approval Process

Recommendations on colour code changes were made on the basis of the habitat criteria chart (see Appendix C). All recommended changes were reviewed by the agency working group, followed by the FREMP Environmental Review Committee and Water and Land Use Committee in November 2004. Final approval was received by the BIEAP-FREMP Management Committee in January 2005.

RESULTS

Tables 1 and 2 in Appendix D list the sites where the habitat reclassifications were considered and approved. Sites are sorted by Port jurisdiction, with sites in the North Fraser Port jurisdiction contained in Table 1 and those in the Fraser Port jurisdiction listed in Table 2. Site location and (where available) site number are provided; site numbers were only used for the boat reconnaissance sites. The locations are described in general terms, however it should be noted that the GPS readings from the boat reconnaissance provided an excellent degree of certainty with respect to segment changes.

The column headings in the tables are as follows:

- Site Number (if available from boat reconnaissance)
- Location
- Coding (Existing coding and recommended change in coding)
- Rationale
- Site Visit (Yes, where on-site inspection done)
- Municipality (to facilitate any changes required to Area Designation agreements)

Table 3 lists the sites which were considered by the agency working group and where the colour coding was not updated. In these cases, the existing coding was confirmed during the site inspections. Some GIS line-work updates are also noted.

REFERENCES

Fraser River Estuary Management Program, 1996. *Updating the FREMP Habitat Inventory and Classification Maps, April 1996.* Technical Report H-96-1. New Westminster, BC.

Fraser River Estuary Management Program, 2003. *A Living Working River: the updated Estuary Management Plan for the Fraser River.* Burnaby, BC.

R.U. Kistritz Consultants Ltd, 1990. *Habitat Inventory and Classification of the Fraser River Main Arm, Pitt River, Sturgeon Bank, Roberts Bank and Boundary Bay: User's Guide for the Map Sheets.* Fraser River Estuary Management Program, New Westminster, BC.

Williams, G.L., 1990. *Habitat Inventory and Classification of the Fraser River North and Middle Arms (North Fraser Harbour): User's Guide for the Map Sheets*. Fraser River Estuary Management Program, New Westminster, BC.

Appendix A: FREMP Habitat Classification Definitions

Green Coded (Low Productivity) Habitat

Green coded habitats include areas where habitat features and functions are limited due to existing conditions (e.g., developed for port or other urbanized uses). Development may occur in green coded areas provided that environmental impacts are mitigated through appropriate location, scheduling, design and operation and No Net Loss, and where possible a Net Gain, in the productive capacity of the site is achieved.

Yellow Coded (Moderate Productivity) Habitat

Yellow coded habitats include habitat features that are of moderate value in structure or diversity due to existing conditions (e.g. surrounding land uses or productivity) and support moderate fish and wildlife functions. Development may occur in yellow coded areas provided that mitigation and/or compensation measures are incorporated into the project design to ensure that there is No Net Loss, and where possible a Net Gain, of productive capacity as a result of the project. Mitigation options must be pursued to the maximum extent possible prior to consideration of compensation for unavoidable impacts to habitat features and functions.

Red Coded (High Productivity) Habitat

Red coded habitats include productive and diverse habitat features that support critical fish and wildlife functions onsite or as part of a more regional context and/or areas where habitat compensation has been previously constructed to offset habitat losses. Development in red coded areas is restrictive but may occur provided that mitigation is applied through site location and/or design to avoid impacts on habitat features and functions of the area. Habitat compensation is not an option as a rule. The only circumstances whereby exception to the above guideline can be considered are where the project is specifically undertaken in the interest of public health and safety. Even in these cases alternative siting and design mitigation must be pursued to the maximum extent possible.

Appendix B: Policy for Reviewing Habitat Reclassification Requests

Shorelines that include intertidal and near-shore riparian areas within FREMP have been classified and colour-coded on the basis of the relative values of their habitat features. Examples of habitat features include mudflat, marsh, and bottomland forest.

The codes are intended to guide prospective developers in selecting appropriate sites and identifying suitable design concepts prior to making application for approval of their projects. Such approvals are obtained through application to the appropriate Lead Agency and subsequent review through the FREMP Coordinated Project Review Process.

Shorelines are inherently dynamic areas in any river estuary. Consequently, habitat features are likely to change over time. The habitat classification system is based on a habitat inventory of the five main habitat types in the estuary: marshes, riparian grasses, riparian shrubs and trees, mudflats and sandflats. On a regular basis and as resources permit, FREMP updates this habitat inventory and as a result, periodic review and updating of colour coding is required. Colour coding changes that arise from these inventory updates will be reviewed and approved by FREMP. The Geographic Information System (GIS) which houses these codes at the FREMP office will be updated accordingly.

On occasion, proponents, agencies and others may wish to submit a request to FREMP to reclassify a segment of foreshore habitat. FREMP will consider and respond to habitat reclassification requests as they are submitted.

Requests will be reviewed by the Environmental Review Committee according to a number of habitat functional attributes. Following an initial review of these attributes, if the request is found to have merit, a site visit may be conducted by FREMP partner representatives. The visit would be coordinated by FREMP staff at the appropriate time of year. Based on the site visit, the representatives will recommend that the colour-coding change stay the same or change according to the request.

Any recommendation goes through the Water & Land Use Committee for consideration. Additional municipal input can be sought for reclassifications that are recommended, in recognition of the fact that it may have implications for municipal agreements and regulations.

WLUC forwards the recommendation to Management Committee, and if appropriate, a supplementary report may be prepared to identify any municipal concerns. Management Committee makes the final decision on whether the request is approved or denied, and FREMP staff notify the proponent immediately.

Appendix C: Habitat or Functional Attributes – Habitat Classifications

Habitat or Functional Attributes	Highly Productive Habitat	Moderately Productive Habitat	Low Productive Habitat
1. Compensation Habitat, Wildlife Management Area, or Conservation Area	By definition	No	No
2. Number and/or importance of habitat functions	High	Reduced	Low
3. Connectiveness versus isolated habitat	Connected	Partially Connected	Isolated
4. Habitat Diversity - trees, grass & shrub, marsh, mudflat, sandflat	High	Moderate	Low
5. Size - area, length, and/or width	- Large area; - Long and/or wide	- Moderate area - Medium length and/or width	- Small - Short &/or narrow
6. Quality - biophysical characteristics (e.g. substrate, slope, exposure, species diversity, complexity, native versus invasive species)	High	Moderate	Low

Appendix D: Summary of Habitat Reclassifications

FREMP Colour Code Review 2004-2005
Summary of approved habitat reclassifications

Table 1- Coding updates in North Fraser Port Authority jurisdiction

Site # (if available)	Location	Coding	Rationale	Site visit?	Municipality
1.1	North Arm Jetty, north side	Some sections of red, yellow and green. Change ALL to yellow	Patchy marsh and sandflat. Provides some bird habitat (feeding).	Yes	Vancouver
1.2 & 1.3	North Arm Jetty, north side	Yellow: Change yellow to red on parts of jetty (see map)	Treated as continuous band of salt marsh, and log booming protects habitat	Yes	Vancouver
1.4	North Arm Jetty, north side	Yellow: Change to green	Low productivity	Yes	Vancouver
2.1	North Iona Jetty, south side	Green: Change to red	Mudflat value, similarity to continuous red-coded mudflat on same side of the jetty.	Yes	Vancouver
	Musqueam slough	At red/green interface at upstream end of slough. Red should wrap around more on eastern edge.			Vancouver
3	At road dividing Musqueam golf course	At access road where red/green interface, where currently red: change to yellow with red section where stream is located. (Rest of section yellow OK as is since eroded marsh.)		Yes	Vancouver

Table 1 NFPA Coding Changes

Site # (if available)	Location	Coding	Rationale	Site visit?	Municipality
5	Deering Island	1) Change north side of slough from green to yellow. 2) South side of Slough behind the intertidal marsh bench, change from green to yellow. 3) South side of Slough toward the east end of Slough, change from green to yellow up to the most distant ramp.	1 and 2) Riparian vegetation on slope and narrow band of intertidal marsh lower portion of slope. 3) riparian vegetation on slope and narrow band of intertidal marsh on lower portion of slope extending to the most distant ramp.	Yes, on land	Vancouver
6	Jimmy Island	In Slough on north side, extend yellow until compensation site (marsh bench). On south side of Jimmy Island, green area should be yellow for portion where trees upland.	Riparian values and proximity to compensation site marsh.	Yes	Vancouver and Richmond
7	Middle Arm, near Dinsmore Bridge	South side red all ok. At red/green interface (between Dinsmore and #2 Bridges) extend red upstream a bit.			Richmond
7.1	Middle Arm, near Dinsmore Bridge	Green area south of Dinsmore Bridge: Site 7.1 change green to yellow south of Dinsmore since marsh pocket and vegetation bench.	Marsh pocket and vegetation bench	Yes	Richmond
7.2	Middle Arm, near Dinsmore Bridge	North Dinsmore: Site 7.2 two green sections change to yellow since pocket marsh and vegetation developing.	Pocket marsh and vegetation developing.	Yes	Richmond
7.3	Middle Arm, near Dinsmore Bridge	At North Arm Bridge: green and red sections under the new bridge should be yellow since pocket marsh.	Pocket marsh	Yes	Richmond

Table 1 NFPA Coding Changes

Site # (if available)	Location	Coding	Rationale	Site visit?	Municipality
8	Tree Island	Extend yellow in both directions (downstream to the "bump" and extend to the marsh), i.e. no green at the end of the small slough. Land site visit recommended that: 1) Change shoreline on north side of Tree Island Slough from green to yellow. 2) Change shoreline at the head or east end of Slough from green to yellow.	Connectivity to adjacent segments. Considering riverbank where recent works conducted as being vegetated similar to riverbank areas immediately adjacent to the works.	Yes, on land	Richmond
9.1	East of Q'borough Bridge on north shore	At Scott Paper change green to yellow since vegetation developing.	Vegetation developing	Yes	New Westminster
9.2	East of Q'borough Bridge on north shore	Site 9.2 change to yellow since wider riparian values.	Wider riparian values	Yes	New Westminster
10.1	East of Q'borough Bridge on south side	For Site 10.1 where currently a comp site, extend red under QB bridge to the outfall at Wood St.	Compensation site	Yes	New Westminster
10.2	East of Q'borough Bridge on south side	For Site 10.2 change yellow to green to end of facility, then keep yellow as move eastward to Stanley St.		Yes	New Westminster
	MacDonald Slough	Red/green section. Should have yellow between the red and where riprap begins (this is currently green)			Richmond
	Celtic Shipyards	Some of yellow ok since marsh, but short angular yellow section should be green. (2) Further upstream some green area should be yellow (where boat dock) since marsh where boat dock. (3) At eastern edge of property, yellow section should be green until end of the property.			Vancouver

Table 1 NFPA Coding Changes

Site # (if available)	Location	Coding	Rationale	Site visit?	Municipality
	McCleery Golf Course/Marine Drive Golf Course	Currently changes to red upstream but until end of Marine Drive Golf Course it should be yellow (then red is appropriate as is where trees end, as get into Fraser River Park).	Small patch of relatively moderate habitat diversity.		Vancouver
	Fraser River Park	Yellow section should be green. Extended the red section (upstream) further downstream a bit AND tip of park where green should be red.			Vancouver
	SICA	North Arm fix polygon; currently yellow but should be red.			Richmond
	Sea Island	West side near barge facility; red should be yellow. Comp sites are yellow but should be red to cover two sites. Then yellow to green under the north arm bridge until the habitat compensation site (in the green area), which should be red. And this green area should be yellow and join existing yellow section downstream. Near Flying Beaver, red ok as is from Richmond bridge to ditch outfall, but then red to yellow at South Terminal all the way to marsh at corner where floating breakwater.	Compensation sites		Richmond
	White Pine	East of White Pines trees - currently green but should be yellow.	Riparian trees		Burnaby

Table 1 NFPA Coding Changes

Site # (if available)	Location	Coding	Rationale	Site visit?	Municipality
	Bby Foreshore Park	Where red changes to yellow, extend red upstream a bit (to end of Byrne Rd), then existing yellow section stays as is where tall trees are.	Tall trees		Burnaby
	River Rd, Richmond south side of river opposite Bby Foreshore Park. (Past CN Rail Bridge on south side near Queen's Rd at New Westminster Highway)	Red ok but extend downstream to end of trees (where currently yellow). Where yellow should be red between Nelson Rd and #8 Road until comp site #86050027.		Yes	Richmond
	West of Queensborough Bridge on north shore	Yellow should be green, and all red sections where hab comp sites are being done.	Red for habitat compensation sites		New Westminster
	Shenker's	Downstream of Shenker's (Meadow Ave) where habitat compensation site and green meet should be red. Then yellow to join existing yellow.	Red for habitat compensation sites		New Westminster
	East of Q'borough Bridge on north shore	Then green where residential development begins, and yellow should change to green in front of that development past the New West rail bridge.	Green where development		New Westminster
	East of Q'borough Bridge on south side	West of rail bridge, yellow should be red where a comp site and extend yellow east of rail bridge to the corner. Also small embayment on south side of Q'borough area (currently yellow and green) should be red.	Embayments should be red coded		New Westminster

FREMP Colour Code Review 2004-2005
Summary of approved habitat reclassifications

TABLE 2 - Coding updates in Fraser River Port Authority Jurisdiction

Site #	Location	Coding	Rationale	Site visit?	Municipality
11	West of Annacis swing bridge (Ron Francis' son property)	Change green to yellow up to Annacis Swing since riparian tree value and mudflat in embayment.	Riparian tree value and mudflat in embayment.	Yes	New Westminster
	Q'borough area south shore	Red Ok to Alex Fraser, but downstream of AF extend yellow upstream to meet the green (not quite until bridge). Then red changes to yellow up to the house on Dyke Rd (upriver of Sovereign).			New Westminster
12	Q'borough area south shore	At Sather Boatworks (Jardine St), wide intertidal marsh strip, so change yellow to red.	Wider intertidal marsh strip and improves connectivity to red on other side.	Yes	New Westminster
13	North of Hamilton Rd, across Patrick Island foreshore reserve	In yellow-green-yellow section, green should actually be yellow. Red to corner (where trees) then all yellow upstream, except green where retaining wall. Behind the floats at Riverhouse Marina and Bader & Davidson, red/green section should be all yellow (except for retaining wall which stays green) due to willows, high pockets of bulrush, some marsh and some erosion behind floathomes.	willows, high pockets of bulrush, some marsh and some erosion behind floathomes.	Yes	Richmond
	Lafarge	Extend yellow downstream further to end of trees.			Richmond

Site #	Location	Coding	Rationale	Site visit?	Municipality
	West of Nelson Road, Richmond.	All red (where currently a mix of red and yellow coding). At end of road, yellow OK (#8 Rd ramp) next to red comp site polygon and #7 canal ditch all yellow OK.			Richmond
14	Steveston Highway and #6 Road	#6 Rd Slough (ditch) should be red. And upstream comp site is yellow should be red.	Rare back-tidal channel with high habitat value (red wraps into Woodward Slough).	Yes	Richmond
	Fraser Wharves, downstream from #6 Rd	Should be green, no yellow and extend yellow up (not red).			Richmond
	Deas Basin	Extend yellow at entrance to Deas Basin. Extend green further, to mudflat.	Mudflat lower habitat value		Delta
	End of #5 Road	Stock sandpile area - small embayment should be green.			Richmond
	West of #5 Road	Red should be yellow, then yellow should be green (at Dyke Road)			Richmond
	West of Finn Slough	Embayment red, extend west (no yellow)	Embayment has habitat value and should be red-coded		Delta
	Crown Packaging	Extend yellow upstream to the dock area			Delta
15	Dyke Rd and #3 Rd, Richmond	All yellow along Dyke Rd. For the red section in between the yellow sections, change all to yellow.	Patches of marsh benches and connectivity.	Yes	Richmond
16	Steveston	Landing #2 Rd, should be red at side of dock. Along Imperial Landing, marsh is filling in naturally so change green to yellow between the piers. For Site 16.1 all red section (not green) where compensation site, and marsh infilling naturally.	Improves connectivity between compensation sites. Also infilling marsh.	Yes	Richmond
	Garry Point	Two compensation sites are yellow, but should be red.			Richmond

TABLE 2 FRPA Coding Changes

Site #	Location	Coding	Rationale	Site visit?	Municipality
	Steveston Island	Yellow section is appropriate, but change yellow to green on south side (where sandflat).			Richmond
17	Canoe Pass	In yellow-red green section, change red to yellow since not highly productive. Plus change some yellow to green between Easting 490293 / Northing 5435648 to 490010 / 5435416.		Yes	Delta
	Alaksen	Yellow section is too large, some of this should be red.			Delta
	West Arm Marshes	Yellow section on training wall ok, but part on south side should be red.			Delta
18.1 and 18.2	Delta, south side of river, upstream of Westham Island Bridge	Site 18.1: in red-yellow-green-red section, keep yellow but check whether compensation site (and if not change small red section to yellow). Around Warren Roberts/fish packing plant in red-yellow-green section (Site 18.2 along River Rd), change small yellow section to green because no riparian or intertidal values.	Green to reflect low habtiat values	Yes	Delta
19-19.3	Ladner Harbour, south side	Site 19.0 small yellow outcrop=red Site 19.1 green section=yellow all the way. Site 19.2 Seven Seas yellow=green in front of the building and a bit eastward. Site 19.3 remaining yellow=red to join existing red segment.	Connectivity improvements	Yes	Delta

Site #	Location	Coding	Rationale	Site visit?	Municipality
20	Deas Slough, south side	Red to boat ramp, then green continues through yellow until the clumps (riparian trees plantings). These clumps should be red.	The riparian trees are part of habitat compensation and by definition should be red however we do not want to penalize people. All partners agreed to change the coding to red with the above notation in database.	Yes	Delta
	Head of Deas Slough	East of dock is red (where rowing club). Trees west is all red.			Delta
	Tilbury Island	Upriver of CBR Aggregates is green at outlet, but should be yellow downstream to green			Delta
	Hopcott Road	Compensation site should be red, not yellow. Red-y-g-y-g-r section: the first red section should extend past the yellow to the end of the mudflat (so into the green section).			Delta
	Coast Mtn Hardwoods -- this comes before "Hopcott Road"	Marsh area is yellow but should be red.	Red coding for marsh habitat		Delta
	Huston Road, old chemical pumping facility	Yellow should be red (green part is OK)			Delta
	Bar fishing site upriver of Chatterton petrochemicals	Yellow should be red			Delta
	Ed Dahl property	Red-yellow-green section: red extends upstream a bit to end of marsh, and green starts either downstream at the dock structure. Further east where trees is green but should be red.	Red coding for marsh habitat and riparian tree value		Delta

TABLE 2 FRPA Coding Changes

Site #	Location	Coding	Rationale	Site visit?	Municipality
	West of Alexander St.	Floating structure, green line should go straight across, then red ok, then green should be yellow.			Delta
	Along River Rd	Small green section at Bridgeview Marina should be narrower.			Delta
21 (new)	West of Alex Fraser Bridge, on south shore or Annacis	Yellow west of outfall should be red-coded.		Yes	Delta
	Abbott Concrete	Green should be yellow (west side) where meets the red section. And comp site 12-002 should be red, not yellow.	Compensation sites are red coded		
22	Vito Steel to Bella Coola Fish	Where straight line should be green, not yellow. Further east, yellow should be green in corner area across from Instaspace. Near Bella Coola Fish, some of yellow should be green (for section where there is riprap).	Green coding where riprap bank	Yes	
	Blue Water Systems	Red Extends downstream (not green)			
	Alex Fraser Bridge, south side	Embayment west of bridge is red, but should be yellow (outside CS area).			Delta
23	Annacis Island South side going west from AF Bridge	Site 23 mostly change to red. Site 23.1 change end of red section to yellow at Alex Fraser Bridge.	Change to red since overhanging tall trees and vegetation and width of riparian. For Site 23.1, overhanging but not as wide and no marsh, just sand.	Yes	Delta
	Heading west on Annacis Island, south side	Where marsh begins on right, extend the red further east (currently yellow coding there) Already covered at site 21 above.	Red coding where marsh habitat		Delta

TABLE 2 FRPA Coding Changes

Site #	Location	Coding	Rationale	Site visit?	Municipality
	Northwest side of Annacis, rounding the Island clockwise	At red-yellow transition: marsh is along there (mapped as mudflat and trees in the habitat inventory) and should be red. Then yellow-red section is fine as is at Patrick Island Foreshore Reserve.	Presence of marsh		Delta
	East of AF Bridge at CIPA lumber	Red-*yellow*-green section: Extend red to the property line then change to green (not yellow)			
	Q & T	Red-*green*-yellow-red section: green should be yellow (all yellow in the middle)			
	Cadet Base	At the building should be green (not yellow), and yellow to the end of the mudflat where the riprap begins.	Green where building; yellow for presence of mudflat		
	At Swing Bridge	Extend yellow downstream to where the mudflat begins (change from green)	Change to yellow for presence of mudflat		
24.1	Annacis Island, south side	Site 24.1 where two red pockets east of the Bridge (near Auldford Avenue), first red section should be yellow, but second section ok as is.		Yes	Delta
	South side of River across from Alex Fraser Bridge	Outside CS area, where red changes to yellow: extend the yellow section slightly.			Delta
	Approaching Gunderson Slough	Long yellow section is OK. Red Ok, then small yellow embayment (where outfall) should be red.	Red to mark embayment		Delta

TABLE 2 FRPA Coding Changes

Site #	Location	Coding	Rationale	Site visit?	Municipality
25	Gunderson Slough	At south side of the Slough at the bottom end: extend red into yellow (see map). Red-yellow transition is ok where the buildings begin but marsh may not be correct. The Slough should not be all yellow but some adjustments need to be made (see linework from boat tour).		Yes	Delta
	Gunderson Slough/ Fraser Surrey Docks	Rest of green is OK at Interfon Acorn Mill and training wall is appropriate as green. Extend green (change from yellow) and then change to red where the marsh begins. Red to the Silvan property barge ramp, then green to join existing green.	Marsh should be red-coded.		Delta
	Timberland Basin	Small yellow section at the end of the Basin should be red.			
	Mountainview Reload/Tandry	Yellow change to red where marsh; then tip on east bank can be green (so extend the green a bit). And green on the west side where a retaining wall should be yellow.	Marsh should be red-coded.		
	CS 13-008, fronting Ed Haddith's site (Vacant Lot)	Coding should be red.			
	At Sky Train Bridge on south side of river	Tidal embayment is green, but should be red through to the compensation site.	Embayment has habitat value and should be red-coded		Surrey
	West of Brownsville Bar	Red is appropriate, but extend the yellow west a bit to where riprap begins.			Surrey
27 and 27.1	Georgia Pacific	Site 27 at embayment, change yellow to red. Then westward, green to the trees. Site 27.1 westward, change yellow to green from embayment to the trees since low habitat value sandflat.	Green where low habitat value sandflat	Yes	Surrey

Site #	Location	Coding	Rationale	Site visit?	Municipality
	Upriver at Interfor, Mackenzie and 130th North of 132A	Red embayment ok but extend this coding back to the road.			Surrey
28 and 28.1	CN Rail Thornton	Yellow should be green to the trees habitat polygon (ID#), then yellow OK further east. Boat tour found that yes all yellow since not highly productive. Site 28.1 where trees end, red should be green since riprap and no habitat value.	Moderate productivity so yellow coding. Riprap at Site 28.1 has low habitat value and should be green.	Yes	Surrey
30	North side of river, west of Port Mann Bridge	Change yellow to green since no habitat value.	Low habitat productivity	Yes	Coquitlam
31	Coquitlam boat launch	Green is ok where ramp, then on west side should be red to join existing red Under hydro lines change green to yellow where trees end on west side.	Yellow where riparian trees	Yes	Coquitlam
32	Columbia /Lafarge	Red inlet is OK, then green ok around the point, then yellow continues (change to this from red)			Coquitlam
32.1-32.4	Pacific Custom Log Sort	Site 32.0 Change some red to yellow. Site 32.1 east of ramp is green up until the trees. Site 32.2 West of barge ramp should be yellow (not red) since not a very wide site and f&f indicate moderate habitat value. Site 32.3 at Como Creek; change yellow to red at the mouth of Creek since habitat value. Site 32.4 Very small green segment should be yellow, with a note that retaining wall (PCLS).	Changes to reflect features and functions.	Yes	Coquitlam

TABLE 2 FRPA Coding Changes

Site #	Location	Coding	Rationale	Site visit?	Municipality
	North of Como Creek	Should be red west to the riprap (where the trees end) - west of Como Creek Park to the mouth of Como Creek.	Extension of red to reflect riparian trees		
	Old Fraser Mills Site	West of the site, straight red strip should be changed to yellow. Red starts at the building and extends into the yellow since it is forested here, up to where the forest ends. Then the rest is ok as is.	Extension of red to reflect riparian trees		
	Brunette diversion	At bottom of Capilano Way, extend the yellow upriver (trees) and downstream to trees, then green ok.			New Westminster
	East of Brunette Creek at Corporate Ventures	All green	Low habitat productivity		New Westminster
	Brunette Creek	Should be all red wrapped around (starting at the building on the east side)			New Westminster
	Sapperton Park	Tidal channel on inside should be red, but outside riprap can be green. Where CS at marsh benches should be red. Then downriver, change the yellow section to green.	Red coding to reflect tidal channel and marsh benches.		New Westminster
	North side of river, going west to the rail bridge	Should be green all the way to New West Quay	Low habitat productivity		New Westminster
33	Barnston Island, southwest side	Site 33: Change yellow to red. Continuity with red segment on east side and intertidal marsh habitat. Yellow continues on for a while, then start red where the riprap begins (past the house with the dock).	Extension of red to improve continuity and to reflect intertidal marsh	Yes	Electoral Area
34	Barnston Island, moving counter - clockwise, on the north side	Change riprapped bank from red to yellow.	In riprapped area, while not overhanging vegetation there are still some riparian values.	Yes	Electoral Area

Site #	Location	Coding	Rationale	Site visit?	Municipality
	Surrey, across from Barnston Island (so south side of river), starting at north end.	Big mix of green and yellow in this area. Should be red to the end of the trees, then change to all green past the access ramp. South of access ramp yellow is ok to the riprap, then green to the end of the riprap.			Surrey
	Staggs Lumber	Green continues on the trees, but then should be changed to yellow where the trees begin. Green where sheet pile wall.	Yellow where riparian trees.		Surrey
	Mouth of Creek	Small red bit, then green to end of the buildings. Where trees, yellow all the way to the log boom. And where red, should be changed to yellow here. So becomes yellow downstream to the end of 182A Ave. So yellow going east to 182A, then red to 186.			Surrey
35.1 and 35.2	S & R Mills	Site 35.1 yellow to green section Site 35.2 small green segment should be yellow since trees/riparian vegetation.	Yellow where riparian trees.	Yes	Surrey
	Parsons Channel	All yellow to the compensation site, then red appropriate at the site itself. At smaller green section; extend the red on the left to the conveyor. Upstream of the conveyor, change red to yellow since this is a narrow strip with fill behind it so not highly productive.	Moderate productivity so yellow coding.		Surrey
	Katzie Property	Red should be green where there is riprap.	Riprap, low productivity		Katzie First Nation
	Yorkson Creek	Extend the red up the creek, to the road.			Township of Langley

TABLE 2 FRPA Coding Changes

Site #	Location	Coding	Rationale	Site visit?	Municipality
36.1 and 36.2	Derby Reach Park	Riprapped beach, change from red to yellow at Allard Cres. Site 36 change to red since long valuable habitat strip near park. Site 36.1 at western end of park, small red segment should be yellow, joins existing yellow on eastern side.	Improves connectivity between sections of shoreline	Yes	Township of Langley
	Kanaka	Extend (existing, red) coding upstream to the highway bridge.			Maple Ridge
38.1 and 38.2	Interfor Hammond Mill	Site 38.1 green to yellow Site 38.2 yellow to red since highly productive habitat, width of habitat, and connectivity to existing red patch. Yellow strip is ok since intertidal marsh vegetation behind barges/conveyor at the mill. And yellow continues through current red, then it stays green..	Yellow to reflect intertidal vegetation; red to reflect high productivity/width/connectivity	Yes	
39-39.4	Prince Street and Wharf Street in Maple Ridge	Currently two red sections: CS 14-003 should be red coded. Downstream, extend the yellow along Wharf St. Site 39.1 green segment should be yellow since vegetation present. Adjacent, Site 39.2 yellow to green to join adjacent green sections. Site 39.3 change yellow to green (to dock) since very little habitat value. Site 39.4 red-green segment changes to ALL yellow.	Changes to reflect features and functions.	Yes	Maple Ridge
	Outside Katzie IR	Marsh should be red coded (so extend it a bit east and west)	Red coding where marsh habitat		Pitt Meadows/Katzie

TABLE 2 FRPA Coding Changes

Site #	Location	Coding	Rationale	Site visit?	Municipality
	Katzie Dock	Yellow can be green outside the reserve, but keep yellow as is on the east side of the dock.			Pitt Meadows/Katzie
	West of old Interfor site	Extend the yellow a bit east, then change yellow to red.			Pitt Meadows
	Foot of Baynes Road	Green section is ok, but extend the red into the channel further (see Anna's notes for rough sketch)			Pitt Meadows
	Seaplane base in Pitt Meadows	Extend the red (through yellow) and then green ok. And between Spicer Road it should be all red coding.			Pitt Meadows
	Pitt River PoCo bulkhead	Should be small green section.	Low habitat productivity		Port Coquitlam
	Log sort north of rail bridge	Change yellow to green here. And between the bridge, CS# should be red. North of this (on west side of Pitt River), extend the red to the edge of the marsh.	Red where compensation site		Port Coquitlam
	South of Deboville Slough	Small yellow section should be red.			Port Coquitlam
	South of Minnekahda	Yellow embayment should be red.	Embayment has habitat value and should be red-coded		Coquitlam
	Little Norway	Green should be changed to sections of yellow and red.			Coquitlam
	Lehigh	Extend red coding up to Lehigh Quarry Small section of green where a conveyor, then should be red where the trees begin again (going north).			Coquitlam
	Sturgeon Slough, east side of Pitt River	Change yellow to green. And green is appropriate where a quarry.			Pitt Meadows
	Mouth of Alouette River	Extend the coding to the bridge. Yellow on the north side where riprap, red on the south side.			Pitt Meadows

TABLE 2 FRPA Coding Changes

Site #	Location	Coding	Rationale	Site visit?	Municipality
	At Marina	Should be green/yellow.			Pitt Meadows
	East side Pitt River between bridges	Red-green-red sections (internal maps for more detail).			Pitt Meadows

FREMP Colour Code Review 2004-2005

TABLE 3 - Sites considered for coding change in 2004 but rejected
(where site visit confirmed existing coding or where only linework changes needed)

Site #	Location	Coding	Site visit?
2	North Arm breakwater (Point Grey Booming Grounds)	No change, keep red.	Yes
4	Point Grey Golf Course	Checked yellow section and ok as is.	Yes
	Williams Rd and Triangle Rd, Richmond		Fix linework where red coding
	Roberts Bank		Fix linework, including comp site #07-004 which has the wrong placement.
	Float seaplane area along River Rd	Sandflat in front, currently green and ok as is.	Yes
23	Annacis Island south side, going west of Alex Fraser Bridge	Small red section further west of storm outfall - ok as red.	Yes
	Between Annacis west and main bridges	Red is appropriate since a compensation area.	Compensation area is not showing here This HabComp site is not in FREMP dbase - B.Naito will include it in next annual update to FREMP.
24	Annacis Island, south side	Green ok but fix shoreline (not on training wall). Rest is ok (see map). Site 24 green ends at riprap east of Alex Fraser Bridge (north side) then red is OK where a marsh and red-yellow transition ok as is.	Yes
	Pattulo Bridge, south side, going east	Underneath bridge red is ok, then green is ok in front of Ritchie Bros.	
	JJM	Small embayment red should follow marsh outline.	
	Purfleet Point		Fix shoreline at this point, where a compensation site

TABLE 3 No Coding Changes

Site #	Location	Coding	Site visit?
29	Norske	Yellow-red-green interface: small marsh where old BC Hydro generation facility? Green-long yellow strip to Port Mann. All coding fine as is.	Yes
	Port Mann Log Sort		CS 13-003 ends further upriver (not over green coding) and red coding ends there too.
37	West of Kanaka Creek, heading west on the north side At 222nd St. Haney bypass	Downstream (actually was upriver) outside Maple Ridge Golf Course: no change in this area. Going west, yellow ends at the riprap.	Yes
	Boundary Bay	Generally OK, all red. Take out yellow line for rail trestle. Extend red on Serpentine River up to the sea dam (at King George Highway) to be consistent with where coding ends on Nicomekl River.	Fix linework to align with dyke (near Boundary Bay airport). Should be looked at if resource to redigitize all of Boundary Bay.